

FLOOD RISK & DRAINAGE ASSESSMENT

COMMERICAL CHANGE OF USE APPLICATION

**Unit 7
Riverside Dr
Rochdale
OL16 2SH**

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1 FRA Introduction.

Purpose of Flood Risk Assessment:

The purpose of the assessment is to inform & accompany a planning application for a commercial change of use application.

There are no external changes to the buildings.

Reference:

Flood Risk Assessments are required for the following Sites:

- *Sites in areas at risk of flooding*
- *Sites of 1 hectare (Ha) or more.*

The Environment Agency flood risk area as provided in flood risk planning maps, encroaches onto the south Site boundary and thus triggers the requirement for a flood risk assessment under the Town & Country Planning system.

Flood Risk:

National Planning Policy Framework and the Planning Practice Guidance (flood risk & coastal change notes).

EA mapping data identifies the Application Site as being in flood zone 1, with flood zone 2 encroaching just onto the south boundary. Refer to EA flood map in the Appendix. Flood zone 2 is defined as land assessed as having between a 1:100 & 1:1000 or greater annual probability of river flooding (0.1-1%) in any year (land shown in light blue on the EA flood map). Flood zone 3 is defined as land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) in any year (land shown in dark blue on the EA flood map). Flood zone 1 comprises all areas outside of flood zones 2 & 3.

The Planning Practice Guidance indicates the flood risk vulnerability classification (Table 2) for the Application Site end use to be 'less vulnerable'. The flood risk 'vulnerability' and flood zone 'compatibility' matrix (Table 3) indicates that 'less vulnerable' development is acceptable in flood zone 2.

Preliminary or Full Flood Risk Assessment:

Full to support planning application.

1.1 Plans.

1.1.1 Location plan.

The Application Site (red line boundary on Location Plan, Appendix) is within a small industrial estate off Albert Royds Street, Rochdale. It comprises an existing commercial Site, with a plastisol clad steel shed nominally central to the plot, car park to the northwest side, and external yard & loading area to the southeast.

Riverside Drive, which is the main connecting road for the industrial estate, is to the north of the Site.

The River Roch meanders through the area east to west, close to the southwest Site boundary.

1.1.2 Site plan.

Refer to Existing & Proposed Plans in the appendix.

As the application is for a change of use, and building area will not change.

Site areas are as follows:

Building footprint	1600 sqm.
External hardstanding/car parks, yards	1600 sqm.
Soft landscaping	1300 sqm.
Total area	4500 sqm.

1.2 Derivation of Data, Surveys and Models.

1.2.1 Existing and proposed topography.

Not required.

1.2.2 Geology.

BGS Maps indicate the Site is underlain by Alluvium - clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.

1.2.3 Drainage Surveys.

N/A – not yet undertaken.

1.2.4 Sewer Undertaker Records.

N/A – not obtained.

1.2.5 Landmark Records.

N/A – not obtained.

1.3 Flood Risk Assessment

1.3.1 Existing fluvial & surface water system.

In the wider area, land elevation falls to the south & southeast, ultimately towards the River Roch. Smaller tributaries are generally culverted, and the local drainage systems take surface water, assumedly discharging back to the Roch.

The River Roch passes beneath Albert Royds Street approximately 350m west, and flood risk in the local area appears to result from capacity restriction at the bridge, backing upstream towards the Application Site.

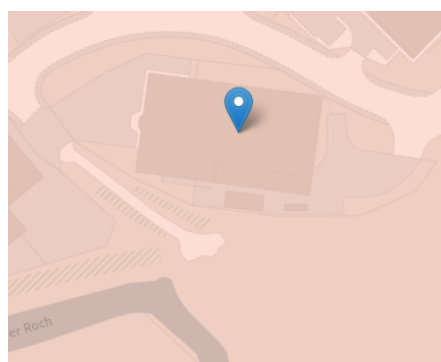
1.3.2 Proposed fluvial & surface water system.

The proposed change of use will not affect the local fluvial & surface water system.

1.3.3 Climate change impacts.

As identified in Section 1, the vulnerability of the development is 'less vulnerable'.

The Planning Flood Maps designate the Site as being within flood zone 2. EA guidance specifies climate change allowances by management catchment areas specific to the catchment the Application Site is within. Peak flow river maps have been produced which specify the climate change allowances to be used in a flood risk assessment:



Irwell Management Catchment peak river flow allowances

	Central	Higher	Upper
2020s	12%	15%	24%
2050s	19%	26%	43%
2080s	35%	46%	75%

EA guidance indicates the peak flow rates that should be used for the vulnerability classification:

- essential infrastructure – use the higher central allowance.
- highly vulnerable – use central allowance (development should not be permitted in flood zone 3a).
- more vulnerable – use the central allowance.
- less vulnerable – use the central allowance.
- water compatible – use the central allowance.

Given the less vulnerable development risk category, the central allowance climate change multiplier should be used as the basis for assessment.

As the Application Site is a commercial end use (change of use), lesser development lifetimes apply, and the '2050s' timeline is appropriate.

Comparing the '2050s' timeline with the central allowance from the peak river flow allowances above, suggests a 19% climate change allowance for the Site.

1.3.4 Fluvial morphological impacts.

The proposed development will not impact or change fluvial morphology.

1.3.5 Potential sources of flooding.

a. Fluvial flooding from main rivers.

Environment Agency Product 4 data has been obtained for the River Roch, the Site, and the local area.

With regard to the flood maps provided by the Environment Agency, various modelled flood outlines for events up to and including the 100yr+70%yr fluvial event (defended & undefended models), were included in the data pack. Refer to Appendix.

The maps clearly show that for the 100yr+70% fluvial flood event (defended & undefended), the flood waters remain outside of the Site boundary, and thus flood risk from fluvial sources is considered low.

b. Surface water flood maps.

The Environment Agency surface water flood maps show in more detail the flow behaviour of surface water overland flow routes caused by periods of heavy rainfall, and thus indicate the mechanisms by which the local area floods & corresponding return periods that flood events occur between.

The surface water flood maps have 4 risk descriptors which correspond to specific return periods as follows:

- High Risk >30yr flood event.
- Medium risk between 30-100yr flood event.
- Low risk between 100-1000yr flood event.
- Very low >1000yr flood event (all areas outside of the high-low categories).

The surface water flood risk maps show minor flooding on Riverside Drive, the majority of which only occur within 100-1000yr flood event. However, close to the Site entrance, minor surface water flooding is shown to the road within a >30yr flood event. Refer to map in Appendix

c. Artificial Watercourse/Canals.

None noted in the locally.

d. Loss of overland flow.

Overland flow routes will not be affected by the application.

e. Loss of Floodplain.

Floodplain will not be affected by the application.

f. Springs and high groundwater levels.

None noted.

g. Surcharging of local drainage & sewerage systems.

No evidence of sewer surcharging in the local area.

h. Reservoirs.

The Environment Agency reservoir flood risk maps show the Site is within the flood risk area should reservoir defences breach. However, this scenario is considered highly unlikely, and advance warning would be given should risks arise.

1.4 Design.

As the Application Site is considered to be outside of the flood zone 2 & 3 areas, and above the fluvial 100yr+70% flood event levels, it does not need specific design mitigation.

2 Emergency Plan

The Adept/Environment Agency guidelines indicate the requirements for flood risk emergency plans (EP) for new development. An EP would generally contain the following sub-sections:

- Section 1. Scope, Objectives and Background.
- Section 2. Location and Proposal.
- Section 3. Risk Summary.
- Section 4. Mitigation Measures.
- Section 5. Flood Warnings and Associated Actions.
- Section 6. Safe Access and Escape.
- Section 7. Temporary Refuge.
- Section 8. After the Flood.
- Section 9. List of Roles.
- Section 10. Plan Upkeep and Awareness.

2.1 Section 1. Scope, Objectives & Background

The reason for making an EP is to ensure the safety of Site users in times of extreme flood events. Although the Site is above the flood zone, the EP shows flooding in the local area and the evacuation routed should they be required.

2.2 Section 2. Location & Proposal

Discussed in earlier sections of the report.

2.3 Section 3. Risk Summary

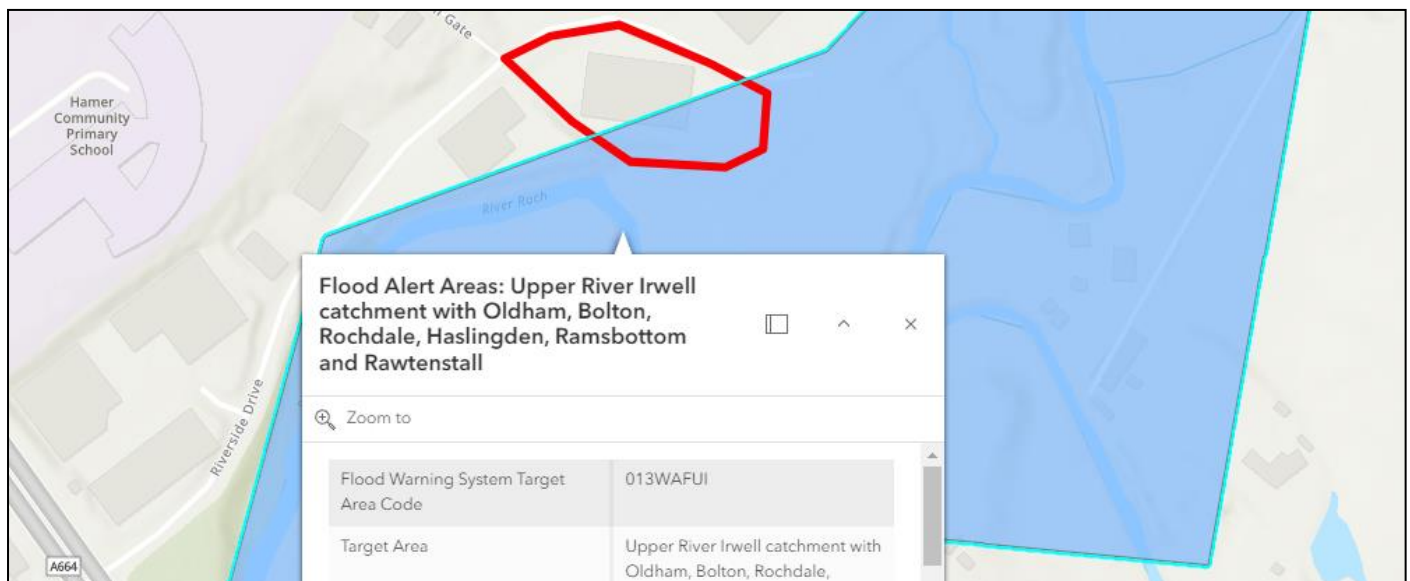
There is no risk to the Site from fluvial flooding, however, the EP will show safe access and egress routes to and from the Site within flood zone 1.

2.4 Section 4. Mitigation Measures

Not required.

2.5 Section 5. Flood Warnings and Associated Actions

The Site is within a flood warning area, refer to associated Flood Warning Map below:



FLOOD INFORMATION SERVICE

Dwellings or businesses in England can sign up for the Environment Agency free flood alert service by phone, email or text message, if either homes or businesses are at risk of flooding.

The Site is within the Environment Agency Flood Warning Area and it is strongly advised that the Owner must sign up to receive flood warnings via the Environment Agency Flood Information Service.

The current & simple flood alert/warnings guidance used by the Environment Agency, including an easy-to-understand statement of the following:

- PREPARE.
- ACT.
- SURVIVE.

The Flood Information Service can be found on the internet using the following URL: <https://flood-warning-information.service.gov.uk/warnings>.

See inset graphic below for additional general details what is required for each warning stage.

Flood alert - Prepare



- prepare a bag that includes medicines and insurance documents
- check flood warnings

Flood warning - Act



- turn off gas, water and electricity
- move things upstairs or to safety
- move family, pets and car to safety

Severe flood warning - Survive



- call 999 if in immediate danger
- follow advice from emergency services
- keep yourself and your family safe

FLOODLINE

Alternatively, people at risk from flooding and without access to the internet can register for flood alert warnings & get in touch by calling Floodline on telephone: 0345 988 1188 OR Type talk: 0345 602 6340 (for the hard of hearing), which is a 24hr service.

For flood alerts/warnings, people will need to provide the following information:

- the address to be registered.
- a phone number for the person or people requesting the service can be contacted on 24hrs a day.
- an email address for the person or people requesting the service.

FLOOD WARDENS

Flood Wardens operate in some areas to provide alerts to the local community when flood warnings are issued. Contact Floodline on 0845 988 1188 to find out if this service is available in the area.

SIRENS/LOUDHAILERS

Sirens/loudhailers operate in some areas at risk from extreme flooding to alert residents that a flood warning is in force. Contact Floodline on 0845 988 1188 to find out if this service is available in the area.

GENERAL MEDIA

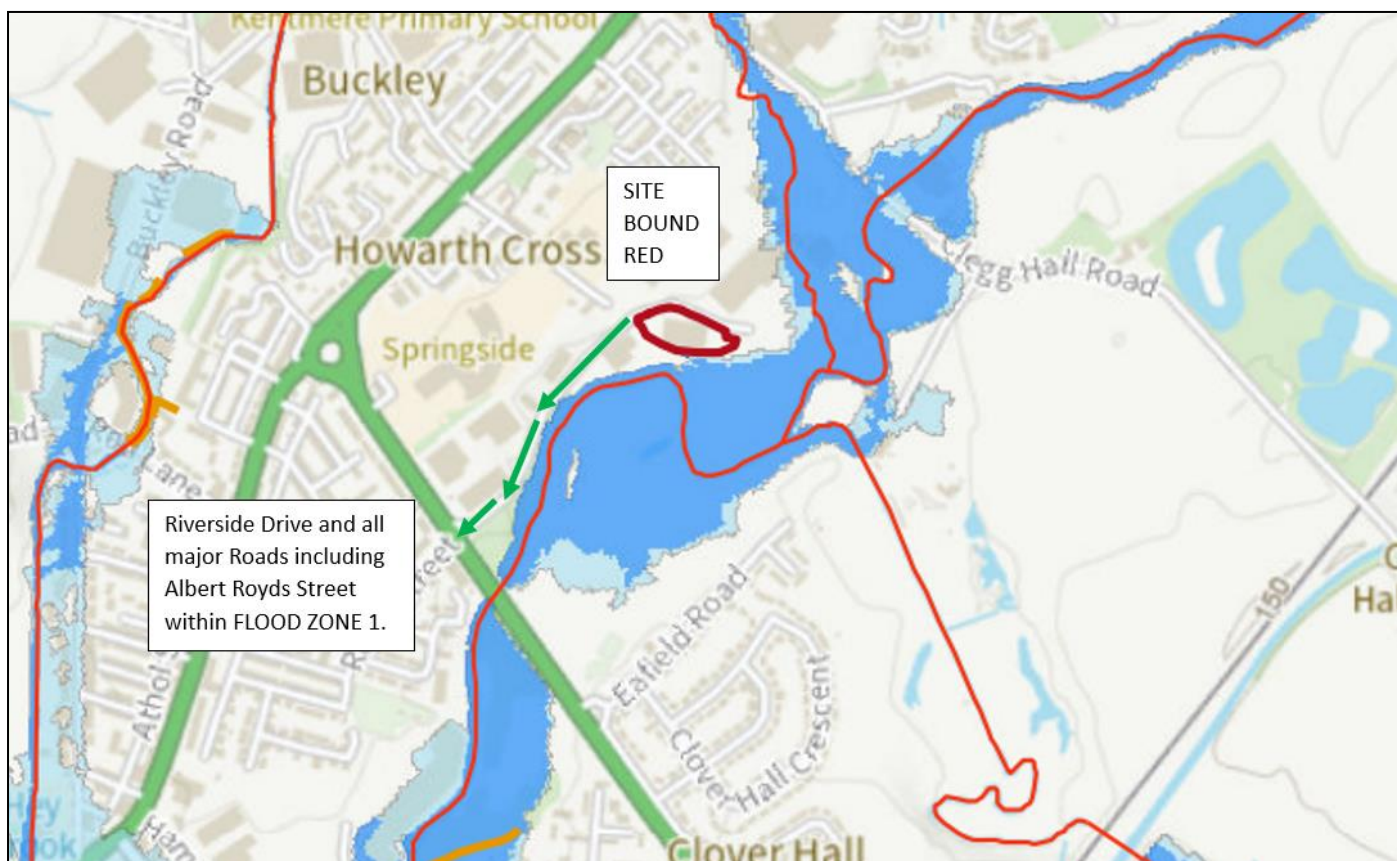
Media such as the Flood Information Service website details maps and current (up-to-date) area specific advice for all areas of England, including the type of flooding and flood alert/warning level in force for those areas. Other websites such as the Met Office have their own flood alert service. TV & radio news channels give warnings.

2.6 Section 6. Safe Access and Escape

In flood risk areas, safe access and egress from new developments should be in accordance with the Adept EP guidance, and that of the referenced background documentation Defra/EA R&D Technical Report FD2320/TR2; and should be in the following order of preference:

- Safe dry route for people and vehicles.
- Safe dry route for people.
- If a dry route for people is not possible, a route for people where the flood hazard (in terms of depth and velocity of flooding) is low and should not cause a risk to people.
- If a dry route for vehicles is not possible, a route for vehicles where the flood hazard (in terms of depth and velocity of flooding) is low to permit access for emergency vehicles. However, the public should not drive vehicles in floodwater.

Riverside Drive to the north side of the Site is completely within flood zone 1 and so access/egress to and from the Site is considered as a dry route for pedestrians and vehicles, refer to the Emergency Evacuation Plan below:



The Environment Agency guidance is clear: when a flood alert to PREPARE is issued, preparations should be enacted in case a further flood warning to ACT is given, and business owners should be ready for this scenario.

When a flood warning to ACT is issued, people should follow instructions to evacuate as per the above Emergency Evacuation Route Plan – assuming a flood event could be imminent.

DRIVING OR PEDESTRIAN MOVEMENTS SHOULD NOT BE ATTEMPTED THOROUGH FLOOD WATERS.

2.7 Section 7. Temporary Refuge

The Site is commercial, and is above flood waters, so temporary refuge is not required.

If flood advice is required in an emergency, the Environment Agency has specially trained Flood Support Officers who provide information and advice during and after floods. Call Floodline (24-hour service) on 0345 988 1188 or type-talk (for the hard of hearing) on 0345 602 6340 to find out if they are active in the local area.

2.8 Section 8. After the Flood

Clean-up information & procedures if required following an extreme storm event are as follows:

- Contact your insurance company.
- Cleaning and repairing the property.
- Specialist advice will likely be required and may need to be undertaken in accordance with insurance company requirements.
- Photographs to document damage and record the flood water height.
- Flood water can be hazardous and contain sewage, chemicals, and animal waste. Care should be taken with personal protective equipment.
- Contact the local council about disposing of large flood damaged items.
- Stay healthy – ensure services are running properly and potable water does not have a change in colour, taste or smell. Ensure food touched by flood water is disposed of.
- Get help via Floodline if required.
- Get emotional support if required from family, friends, GP, or charity organisations.
- Apply for financial aid if required. Apply to the local council for eligibility.

2.9 Section 9. List of Roles

It is the owner's responsibility to follow this EP and keep up to date with current flood warning advice.

2.10 Section 10. Plan Upkeep and Awareness

The owner should ensure they are familiar with the Evacuation Plan and procedures, and keep up to date with latest Environment Agency Guidance.

3 Conclusion & Residual risks.

The Application Site & buildings are safe from fluvial flooding up to and including a 100+70% fluvial flood event.

The change of use will not be subject to flooding, or cause flooding elsewhere.

No residual risks.

Signed.....  .

D.S. Slattery BSc (Hons).

T J Booth Associates.

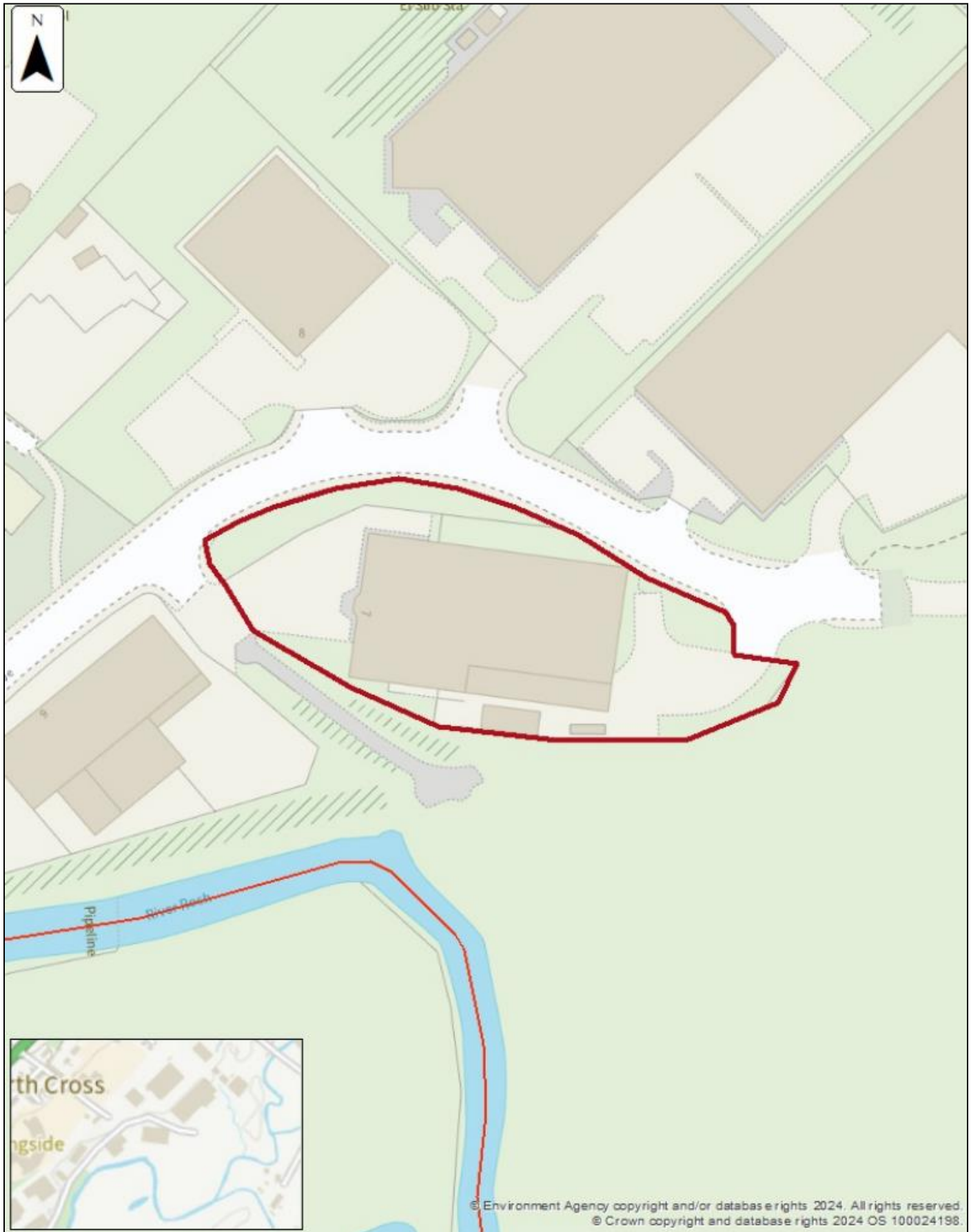
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T J Booth BSc (Hons), C. Eng. C. Env. MICE.

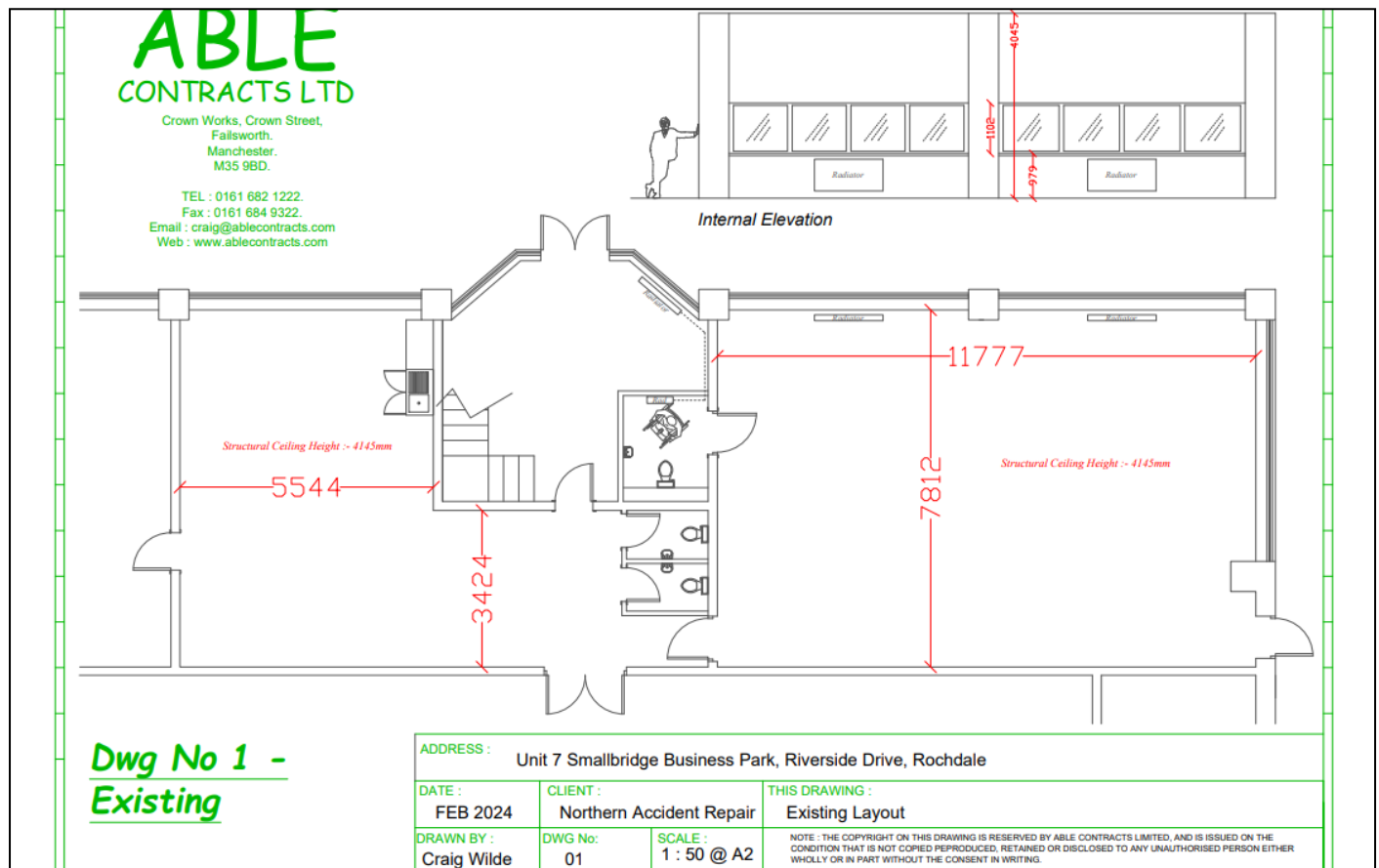
T J Booth Associates.

4 Appendix.

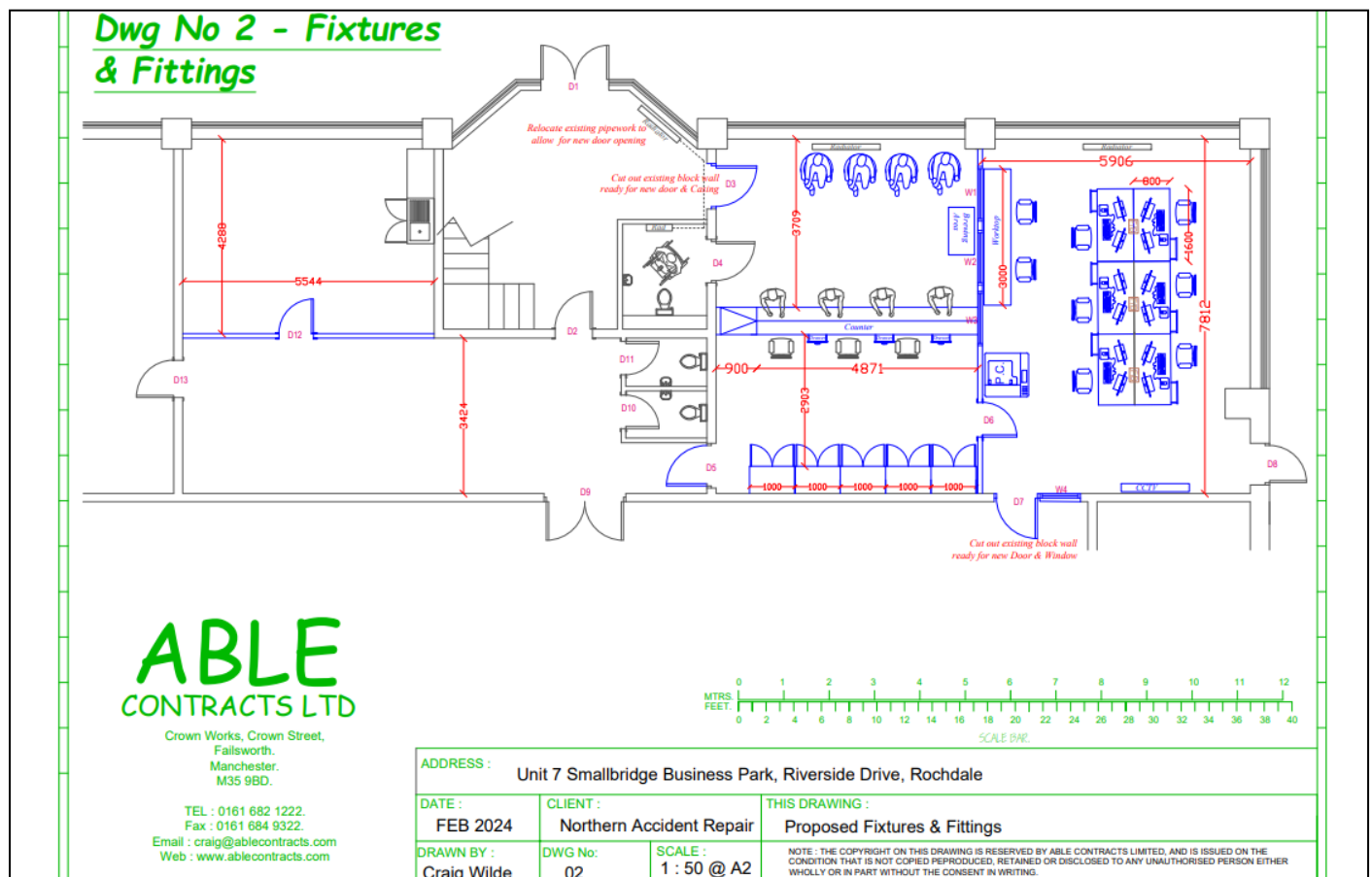
4.1 Location Plan.

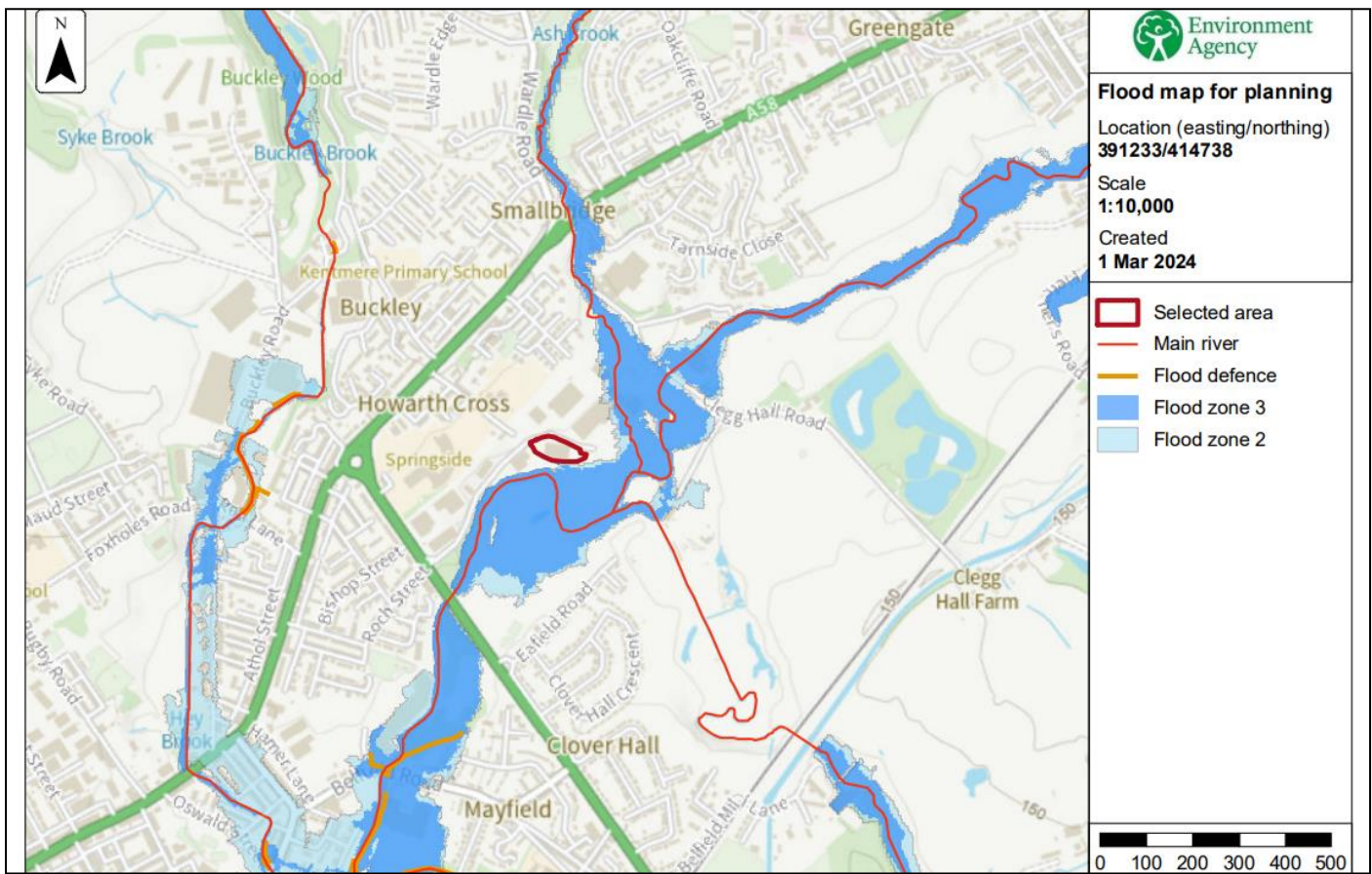
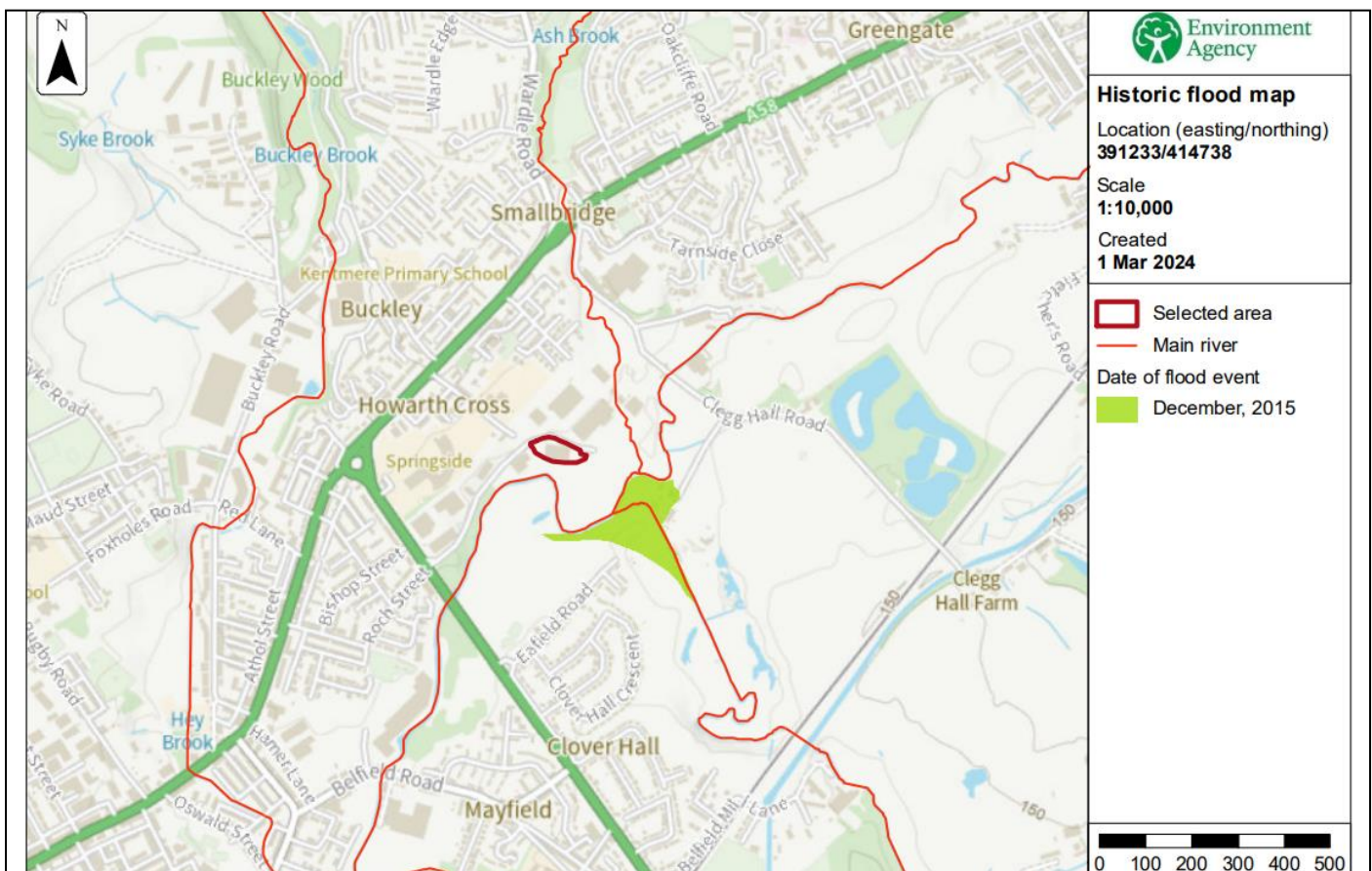


4.2 Existing Plans/Topographic Survey.

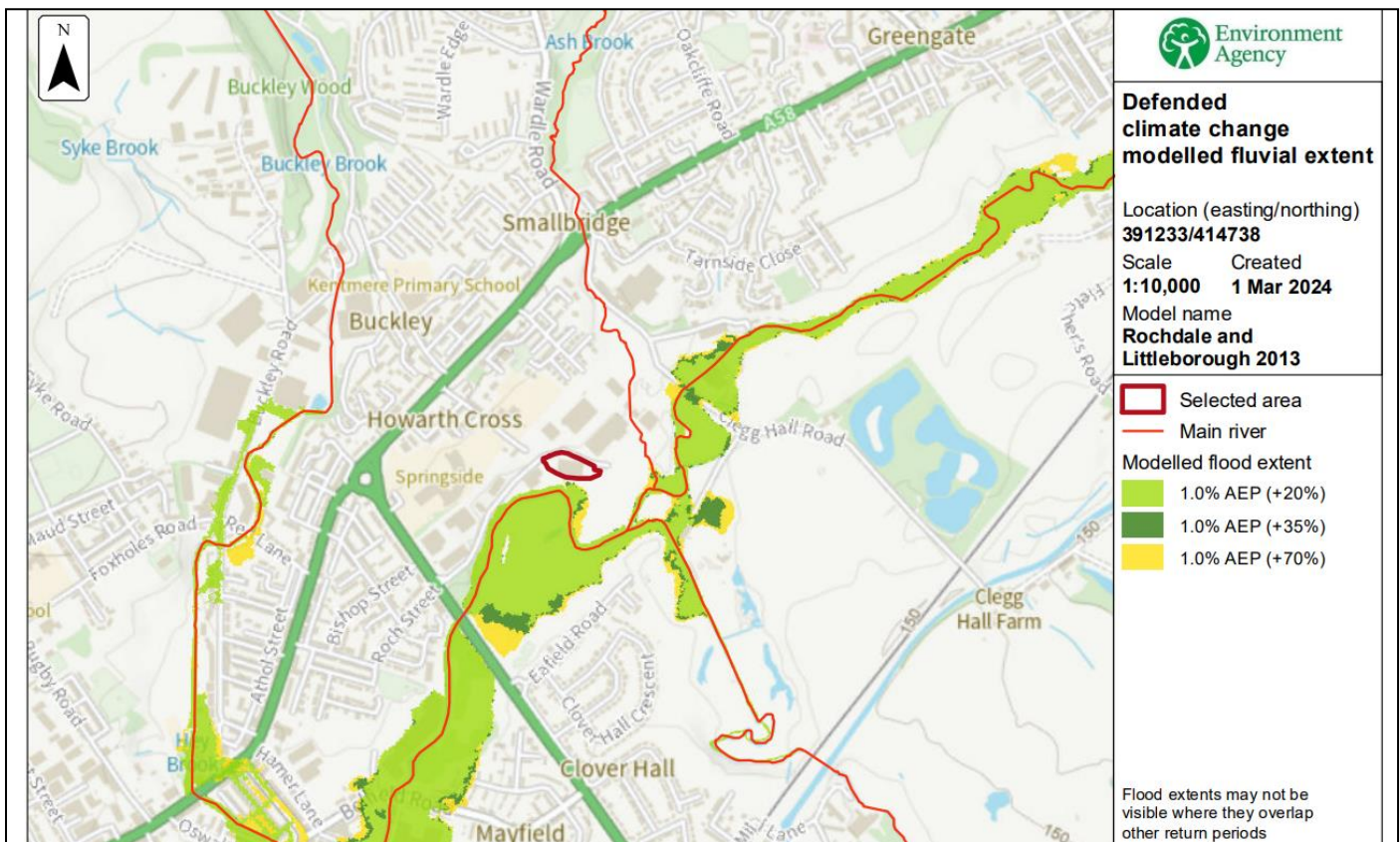


4.3 Proposed Plans.

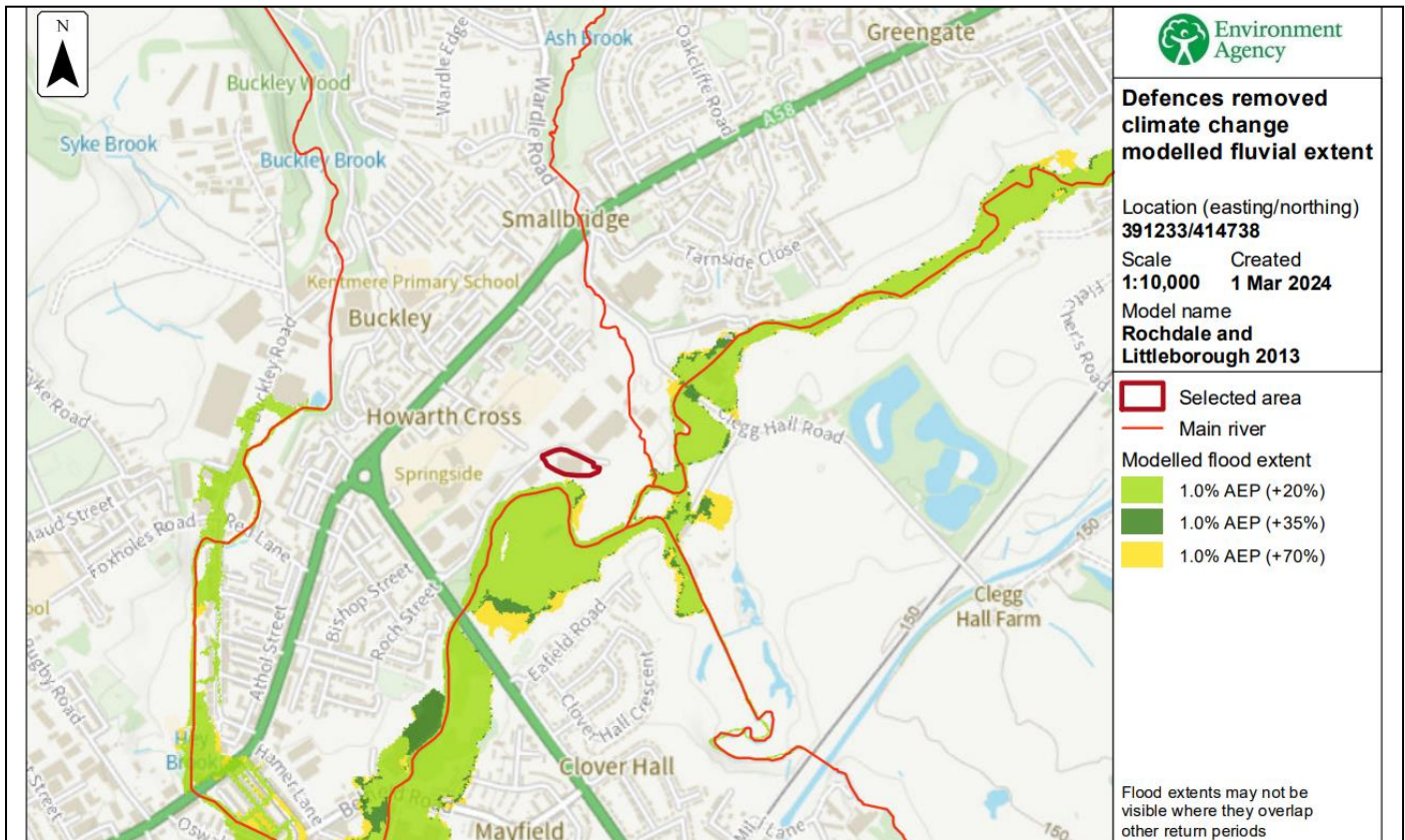


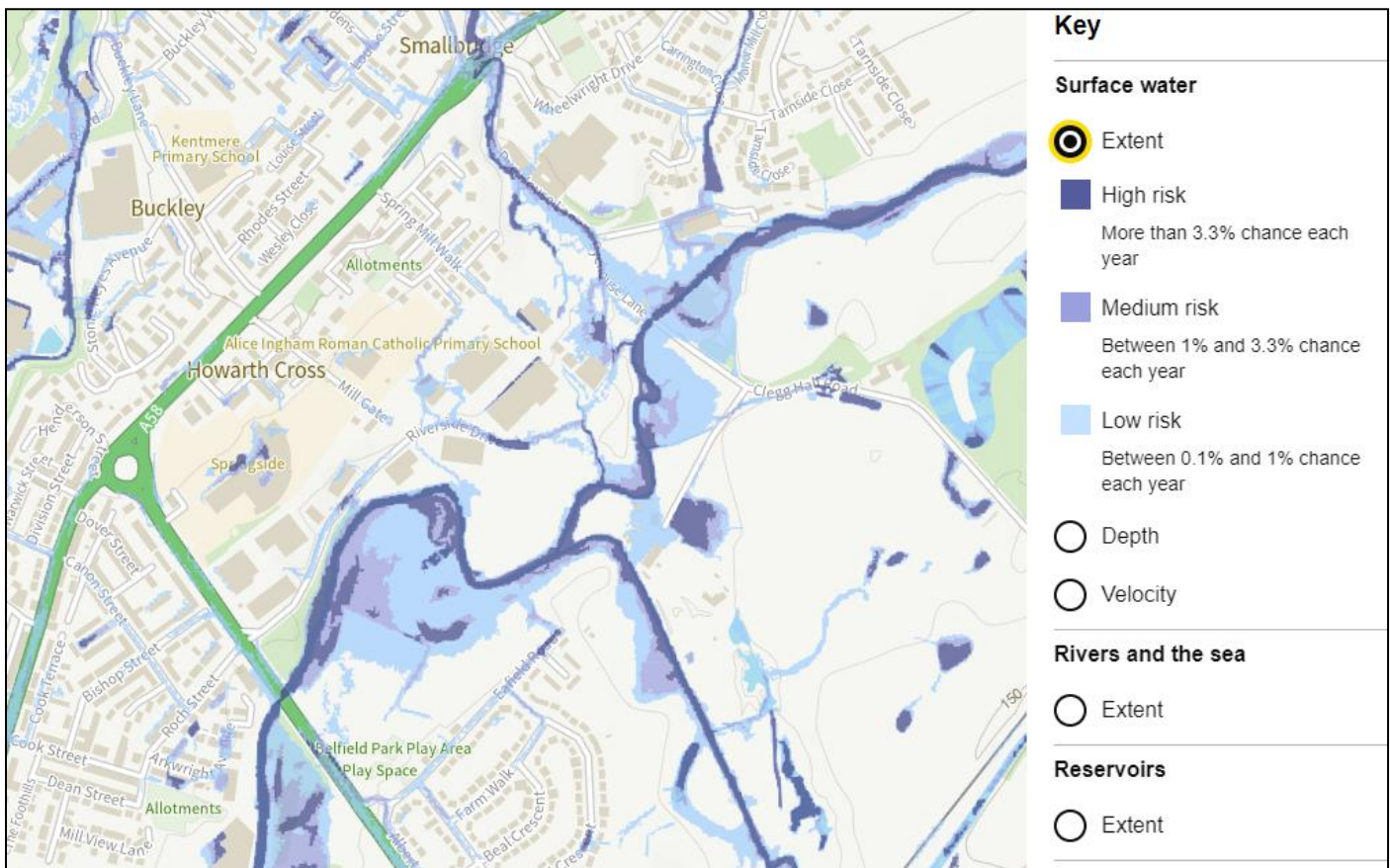
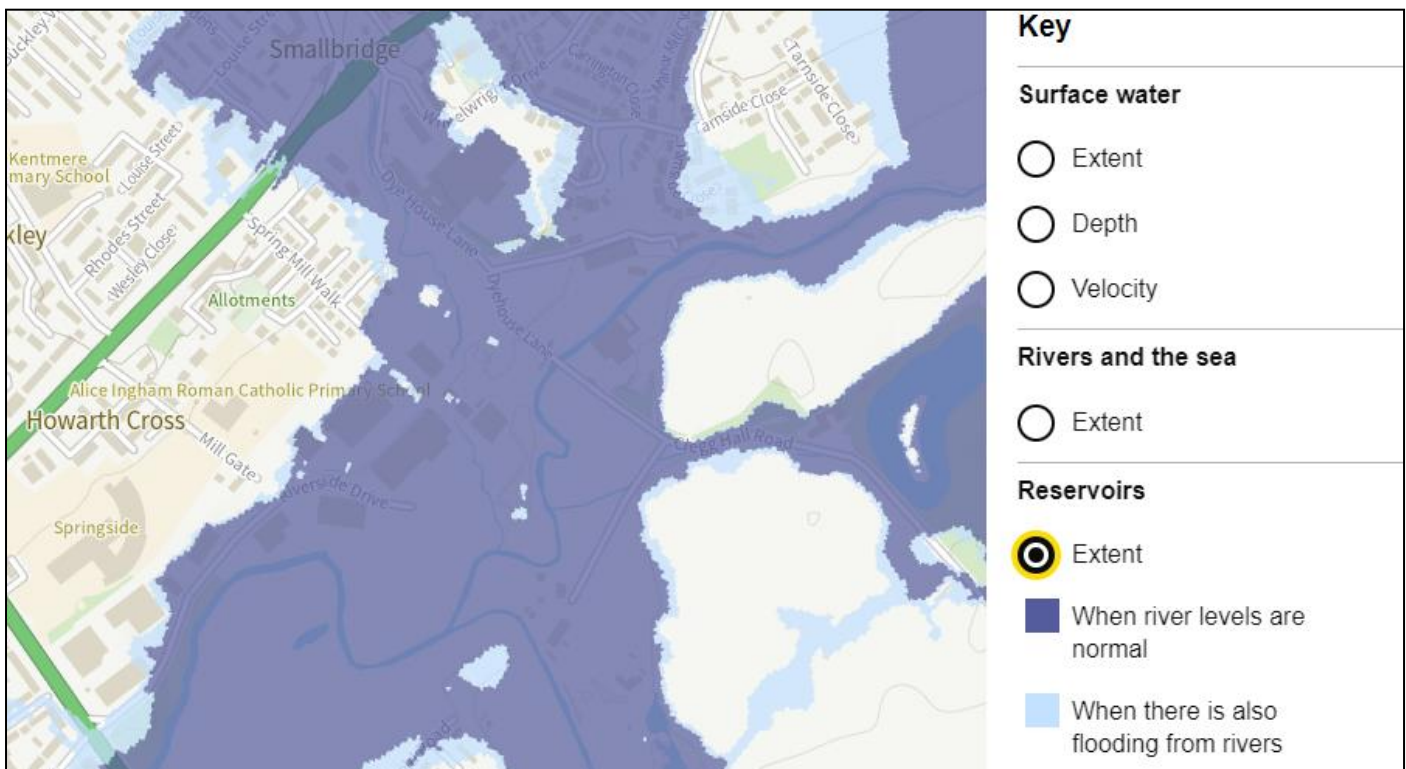
4.4 Environment Agency Fluvial Flood Risk Flood Map.**4.5 Environment Agency Historic Recorded Flood Outline Map.**

4.6 Environment Agency Defended Climate Change Fluvial Extents.



4.7 Environment Agency Undefended Climate Change Fluvial Extents.



4.8 Environment Agency Surface Water Flood Map.**4.9 Environment Agency Reservoir Flood Map.****4.10 United Utilities Sewer Plans.**

N/A – not used.

4.11 NPPF Planning Practice Guidance Table 1.**Table 1: Flood Zones**

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's [Flood Map for Planning \(Rivers and Sea\)](#), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

4.12 NPPF Planning Practice Guidance Table 2.**Less vulnerable**

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.

4.13 NPPF Planning Practice Guidance Table 3.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Notes to table 3:

- This table does not show the application of the **Sequential Test** which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and **Exception Tests** do not need to be applied to **minor developments** and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

4.14 Environment Agency Climate Change Allowances.**Table 1 peak river flow allowances by river basin district (use 1961 to 1990 baseline)**

River basin district	Allowance category	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
North West	Upper end	20%	35%	70%
	Higher central	20%	30%	35%
	Central	15%	25%	30%

In flood zone 2

- essential infrastructure – use the higher central and upper end to assess a range of allowances
- highly vulnerable – use the higher central and upper end to assess a range of allowances
- more vulnerable – use the central and higher central to assess a range of allowances
- less vulnerable – use the central allowance
- water compatible – use none of the allowances

In flood zone 3a

- essential infrastructure – use the upper end allowance
- highly vulnerable – development should not be permitted
- more vulnerable – use the higher central and upper end to assess a range of allowances
- less vulnerable – use the central and higher central to assess a range of allowances
- water compatible – use the central allowance