

FLOOD RISK ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT

No.1

DRAKE STREET

ROCHDALE

OL16 1LU

Author: Daniel Slattery
Client: Cassel & Fletcher Ltd
Doc Ref: rep-tjba-C&F-1 drake st, rochdale-FRA-090125.docx

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0	Jan 2025	Original to support planning application.

T J Booth Associates.
20A Eastgate St,
Rochdale,
Lancs,
OL16 1DH.
Tel: 01706 868288.
Email: office@tjba.co.uk



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1 Introduction.

1.1 Purpose of Flood Risk Assessment.

The purpose of the assessment inform & accompany a planning application for a change of use application into residential apartments. The application concerns the first, second, and third floors of an existing building.

The development will use an existing staircase already in use for residential apartments, exiting onto Smith Street.

1.2 Flood Risk Reference.

Flood Risk Assessments are required for the following Sites:

- *in flood zones 2, 3 or 3b.*
- *within flood zone 1 with a site area of 1 hectare or more.*
- *in areas with critical drainage problems.*
- *within flood zone 1 where the LPA's strategic flood risk assessment (SFRA) shows it will be at increased risk of flooding during its lifetime.*
- *that increases the vulnerability classification and may be subject to sources of flooding other than rivers or sea.*

Environment Agency (EA) mapping data identifies the Application Site as being within flood zone 3, 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 'more vulnerable'.

1.3 Plans.

1.3.1 Location plan/Site Plan.

The Application Site is located to the corner of Drake Street/Smith Street in Rochdale Town Centre.

The local area is well developed and predominantly comprises commercial premises such as financial institutions, retail shops, local government buildings and public houses etc. Most buildings have either apartments or office space to the upper floors.

The existing building is a historic listed building with entrance/exit points to stairwells on both streets. The Drake Street entrance will be disused in the proposal.

The River Roch is culverted locally, and is located nominally 10m north. It is an open river until the Smith Street culvert (100m east), culverted beneath the town centre, and has been partially de-culverted approximately 100m west.

1.4 Data & Surveys.

1.4.1 Existing and proposed topography.

No site-specific topographic survey has yet been undertaken. However, town centre redevelopment topographic surveys reveal the pavement/road level to the northwest corner of the building to be approximately 119.82m aOD. Refer to Appendix.

2 Flood Risk Assessment.

2.1 Existing fluvial & surface water system.

Locally, the Roch is culverted below the town centre. The Smith Street Bridge which forms the start of the culvert has in the past been the throttle point of the river, and thus flooding in the town centre has usually resulted from overtopping of the banks in this location. Flood water has then moved down to the lowest point in the town centre, which is to the north side of South Parade at the bottom of The Butts.

Part of the Roch culvert has been opened in recent years approximately 100m west, which enables flood water to escape back in to the river, lowering flood risk locally.

2.2 Proposed fluvial & surface water system.

The proposed construction will not affect the fluvial surface water system.

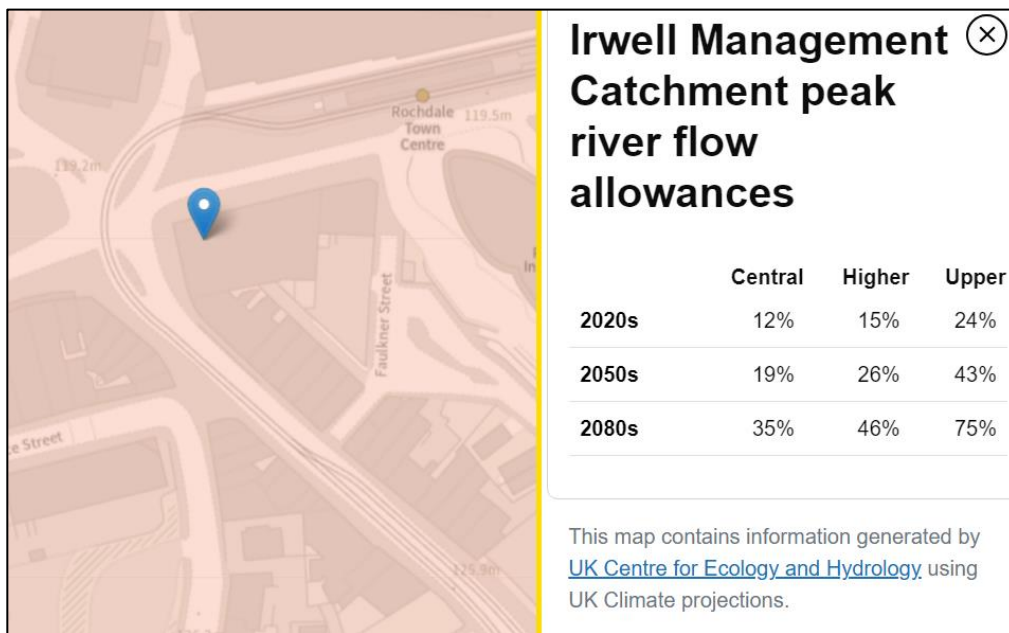
2.3 Climate change impacts.

Climate change impacts on fluvial flooding are measured on the potential increase through the expected development lifetime. With a longer development lifetime, the assessment must consider a greater chance of river level increase.

Residential developments are considered to have the longest potential development lifetimes. Commercial developments have shorter lifetimes owing to higher turnover of changes in use types etc, and therefore a higher frequency of associated redesign & updated flood risk assessment.

The proposed development has a residential end use, and as identified in Section 1, the vulnerability of the development is 'more vulnerable'. The Planning Flood Maps designate the Site as being within flood zone 3.

EA guidance specifies climate change allowances by management catchment specific areas. Peak flow river maps have been produced which specify the climate change allowances to be used in a flood risk assessment, refer to inset image:



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

- 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 more vulnerable development risk category, the central allowance climate change multiplier should be used as the basis for assessing the potential impact of climate change over the development lifetime.

As the Application Site is to be used for a residential end use, the '2080s' timeline is appropriate.

Comparing the '2080s' timeline with the central allowance from the peak river flow predictions above, the data suggests a max 35% climate change allowance for the Site.

2.4 Fluvial morphological impacts.

The proposed construction will not impact fluvial morphology.

2.5 Potential sources of flooding.

- Fluvial flooding from main rivers.

Environment Agency Product 4 data was obtained for the local area in Jan 2025.

Upstream of the Site, the River Roch benefits from flood defences around the Rochdale Council Offices and Smith Street Bridge culvert. The defences keep flood flows in the river for longer, and subsequently raise levels slightly. Due to this the defended model shall be used which indicates slightly higher flood levels for the local area than the undefended model.

The flood data obtained from the Environment Agency included spot flood levels around the Site.

In particular, node 17 to the front of the building is approximately in the location of the entrance/egress from the building, and can be used to define worst case flood levels for the Site which are tabulated below:

RIVER ROCH FLOOD MODEL			
Node Location	Defended Model Return Period Levels		
	75yr	200yr	100yr+35%
Node 17 Smith Street entrance.	119.99m aOD	120.98 m aOD	121.64 m aOD

The max design flood level in the vicinity of the Site is 121.64m aOD.

Given the pavement level of around 119.82m aOD, flood water up to 1.82m can be expected at the Site in a 100yr+35% flood event.

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).

For the high to low-risk categories, coloured hatching on the maps relates to surface water depths designating approximate depths of <300mm (light blue), between 300-900mm (medium blue), and >900mm (dark blue).

The current maps show surface water flooding around the Application Site, and generally associated with the Roch flooding as described above. There is thus no additional surface water risk not already identified.

c. Artificial Watercourse/Canals.

None noted in the local area.

d. Loss of Floodplain & Flow Routes.

The application is for a change of use and therefore no external construction is required, and no loss of floodplain or flow routes are associated with proposed development.

e. Springs and high groundwater levels.

None noted.

f. Surcharging of local drainage & sewerage systems.

No evidence of sewer surcharging in the local area. This is more of an issue for developments with a basement where surcharge and backup may cause an issue.

g. Reservoirs.

Reservoir flood maps show the Site is impacted by reservoir flooding. However, this is considered unlikely and secondary to the fluvial flood risk.

2.6 Design.

The first floor level where the lowest apartments are to be located is around 123.90m aOD, greater than 2m above the 100yr+35% predicted flood level of 121.64m aOD.

There is no proposal to redesign the entrance stairwell, which was designed in accordance with a previous flood risk assessment c2018 and serves existing apartments not included in the Application Site boundary.

2.7 Emergency Evacuation 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.

2.7.1 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 there is no risk of flooding to the proposed apartments, externally there is 1.82m of flood water predicted for the 100yr+35% flood event, and users will need to know safe escape routes.

2.7.2 Section 2. Location & Proposal

Discussed in earlier sections of the report.

2.7.3 Section 3. Risk Summary

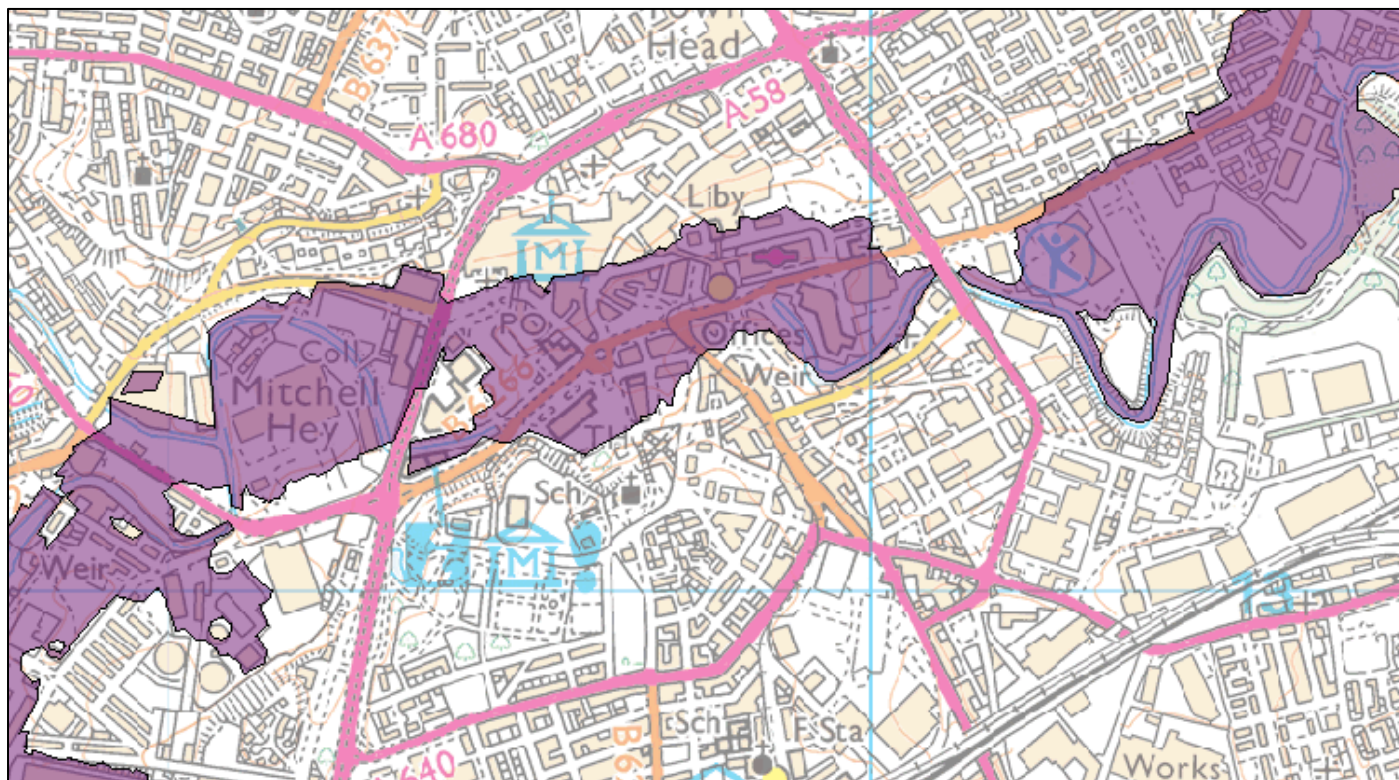
The maximum design flood level noted in the assessment is for the 100yr+35% fluvial event (121.64m aOD) at the apartment block entrance.

2.7.4 Section 4. Mitigation Measures

Not required.

2.7.5 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.

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

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 above for additional general details what is required for each warning stage.

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.

2.7.6 Section 6. Safe Access and Escape

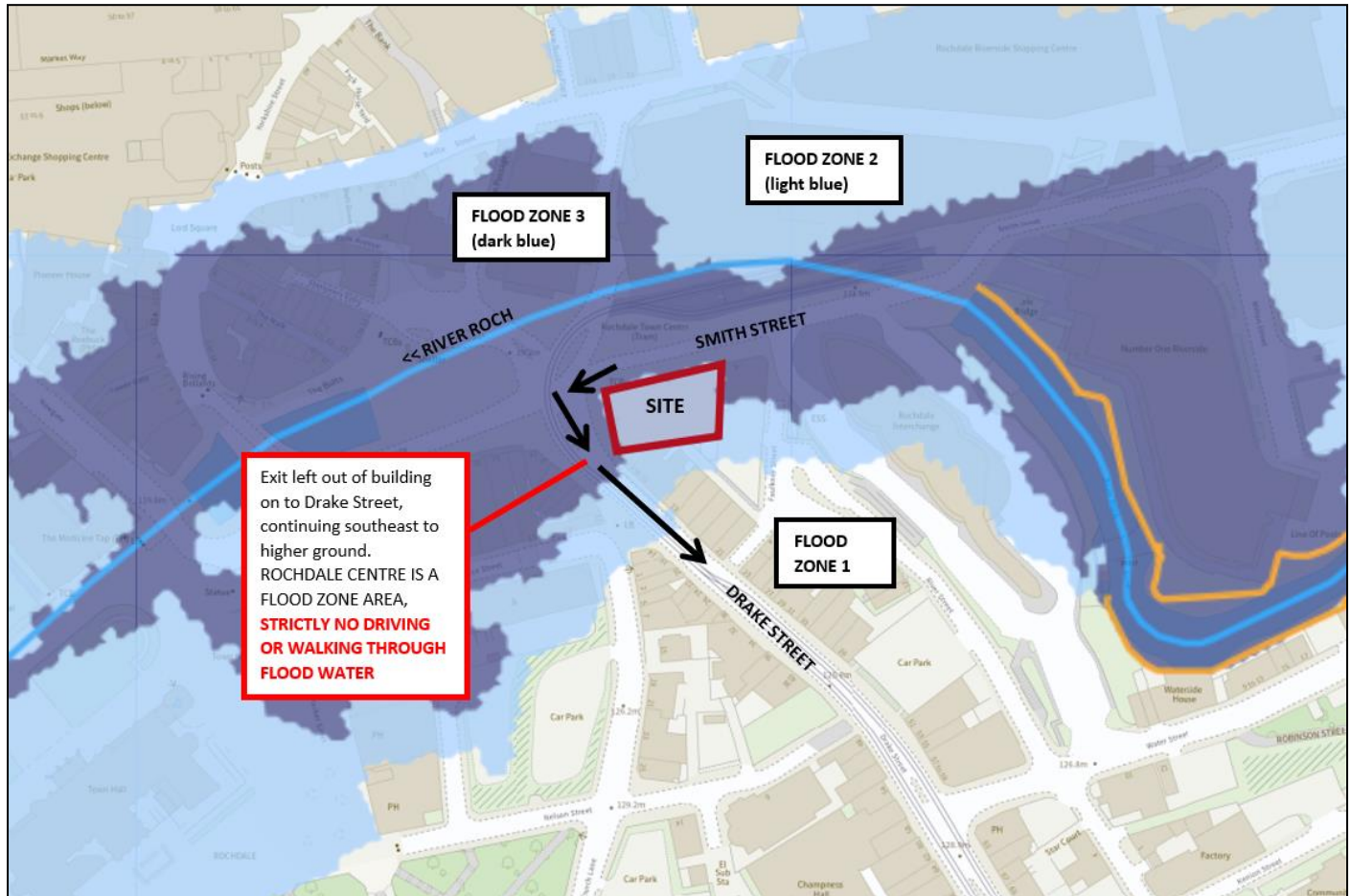
In flood risk areas, safe access and egress from new developments should be in accordance with the Adept EP guidance, and that of the referenced background documentation Defra/EA R&D Technical Report FD2320/TR2; and should be in the following order of preference:

- 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.

The front access is within flood zone 3, and flood waters can get high locally >2m.

The Emergency Evacuation Plan below shows access away from the building if required prior to a flood occurring.



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 THROUGH FLOOD WATERS.

2.7.7 Section 7. Temporary Refuge

If required, residents should be ready to act and evacuate prior to flooding. However, if required, residents will be safe and well above the flood level until rescue or flood waters recede.

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.

2.7.8 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.

2.7.9 Section 9. List of Roles

It is the owner's responsibility to enact this guidance and pass onto future tenants when required.

It is tenant's responsibility to follow this EP and keep up to date with current flood warning advice thereafter while in a tenancy.

2.7.10 Section 10. Plan Upkeep and Awareness

The building owner should ensure they are familiar with the Evacuation Plan and procedures, and keep up to date with latest Environment Agency Guidance & flood warnings & any change in this guidance.

2.8 FRA Conclusion & Residual risks.

The Application is for change of use of the upper floors of an historic building.

The proposed residential apartments will be safe in flood events up to and including the design 100yr+35% flood event.

The main issue affecting the proposed tenants is access/egress in flood events, and signing up to the flood warning scheme.

As long as the guidance in this flood risk assessment and in particular the Emergency Evacuation Plan are followed, no other residual risks remain.

Signed.....



D.S. Slattery BSc (Hons).

T J Booth Associates.

Authorised...



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

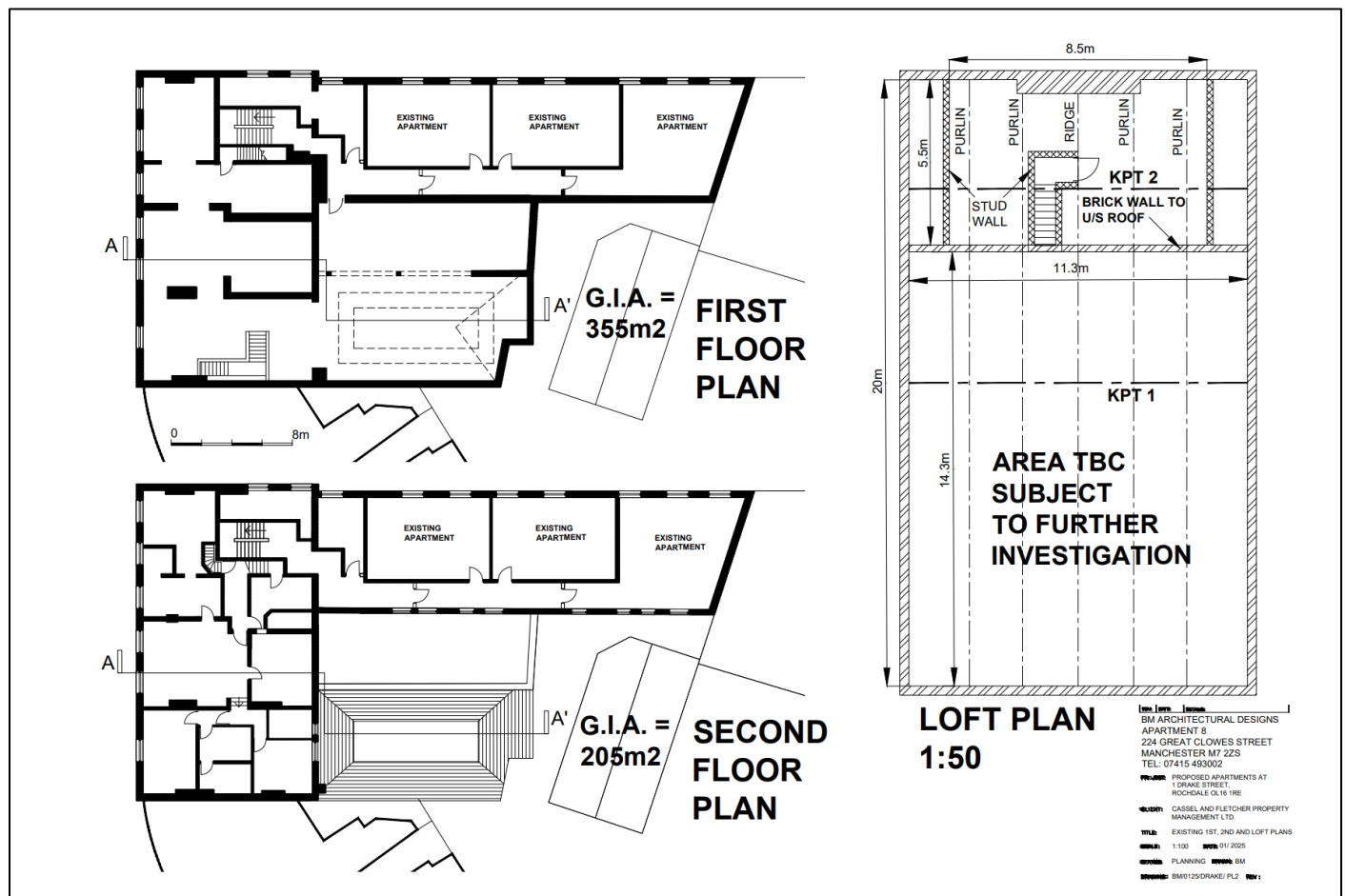
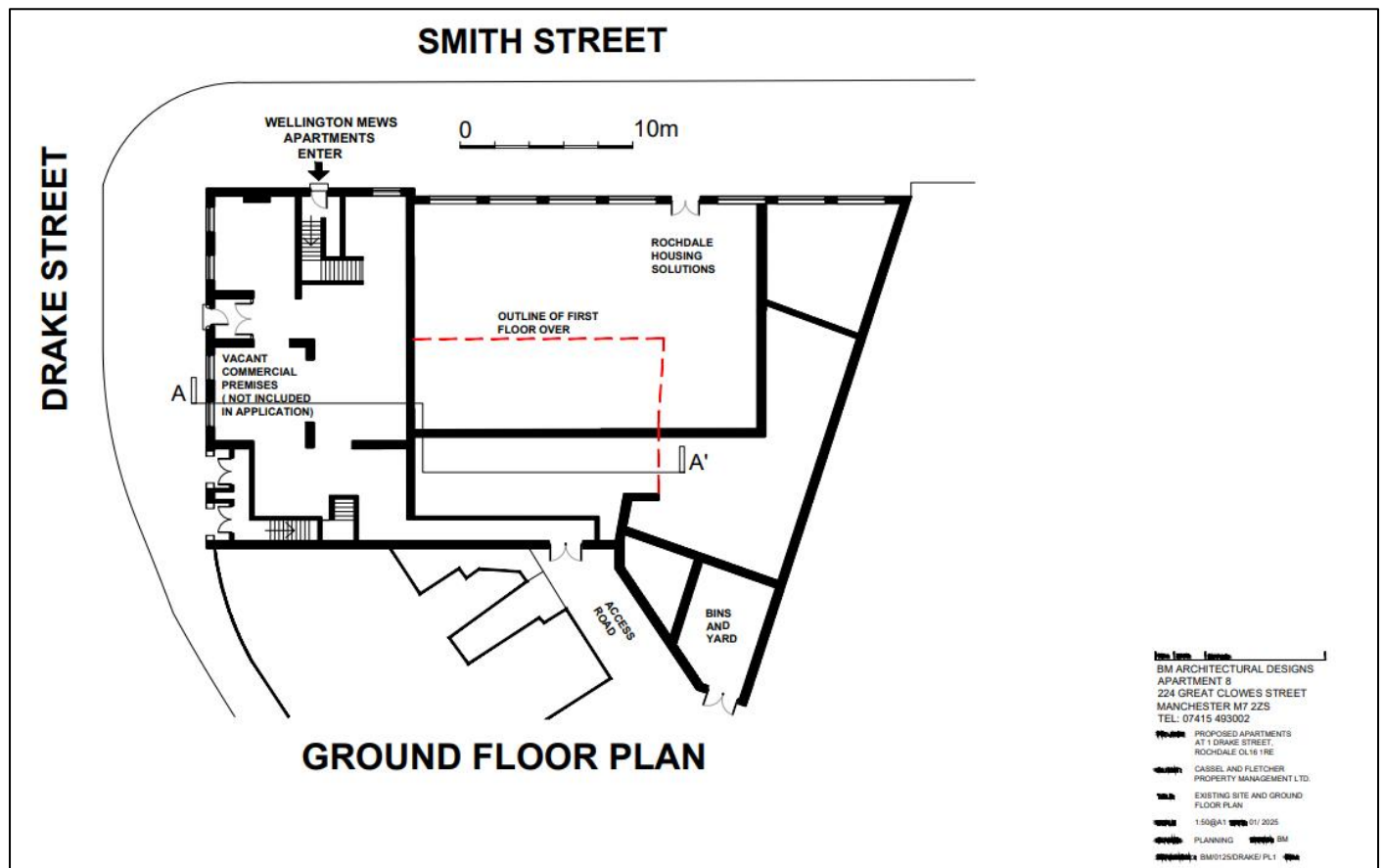
T J Booth Associates.

3 Appendix.

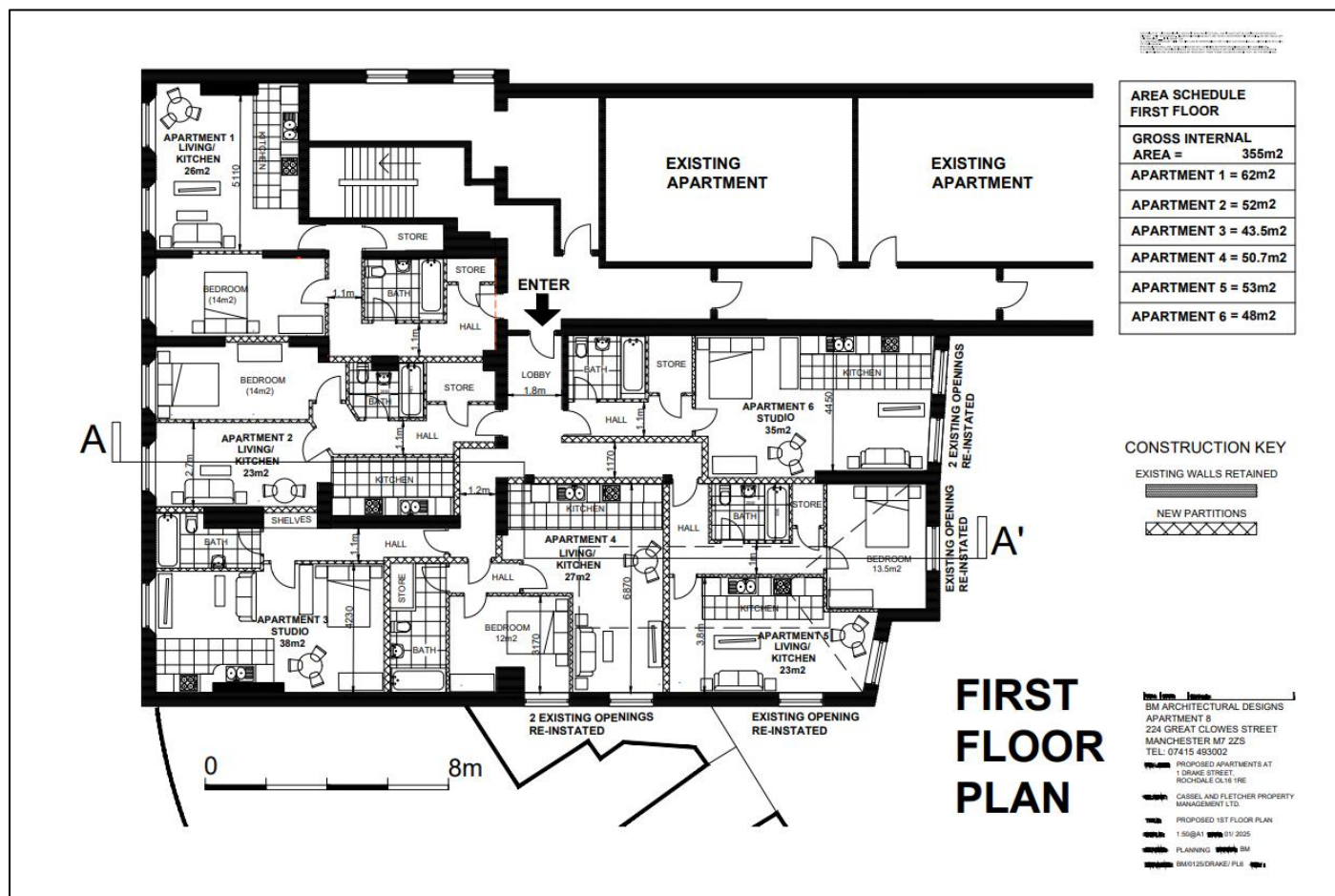
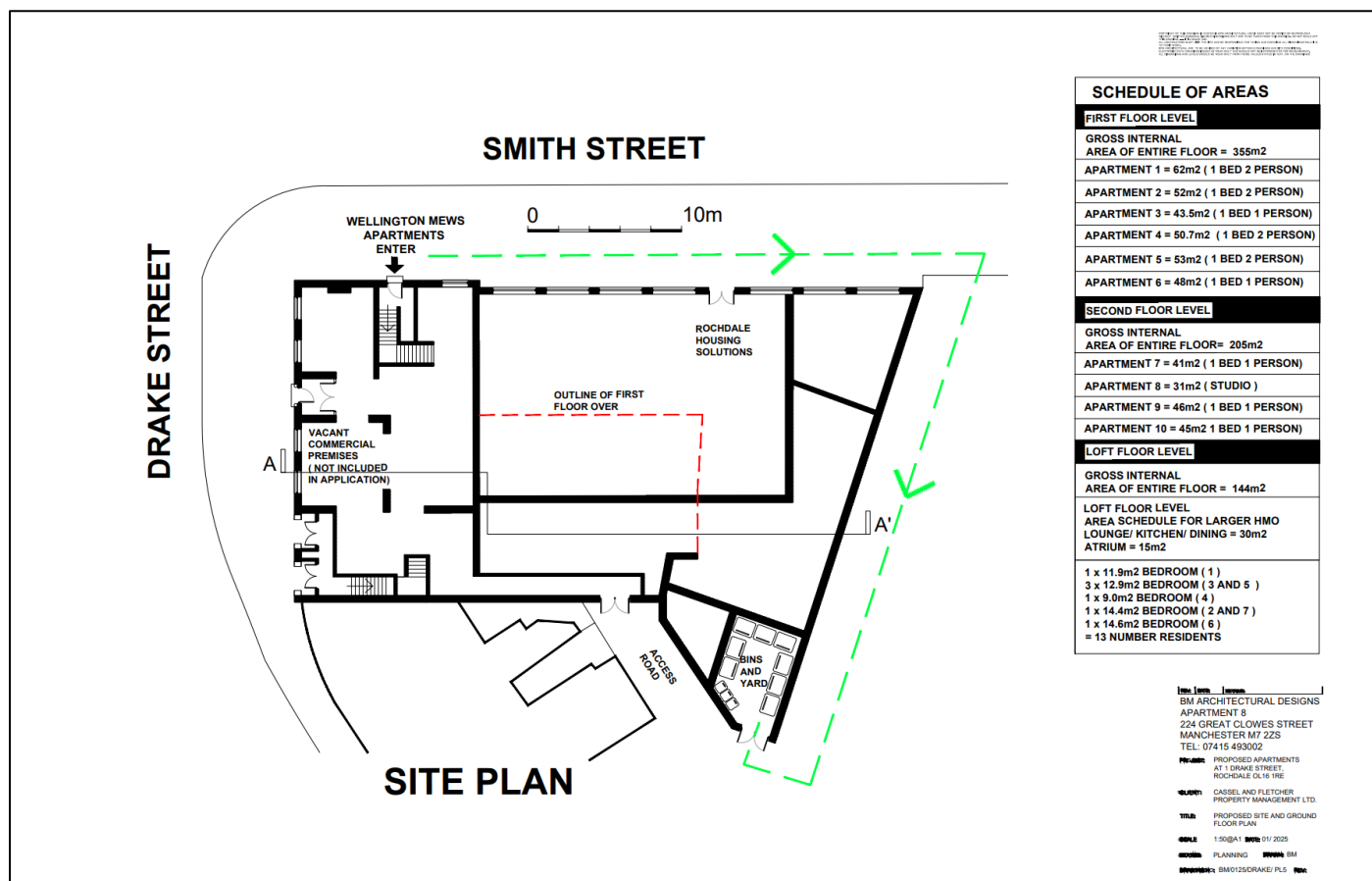
3.1 Location Plan.

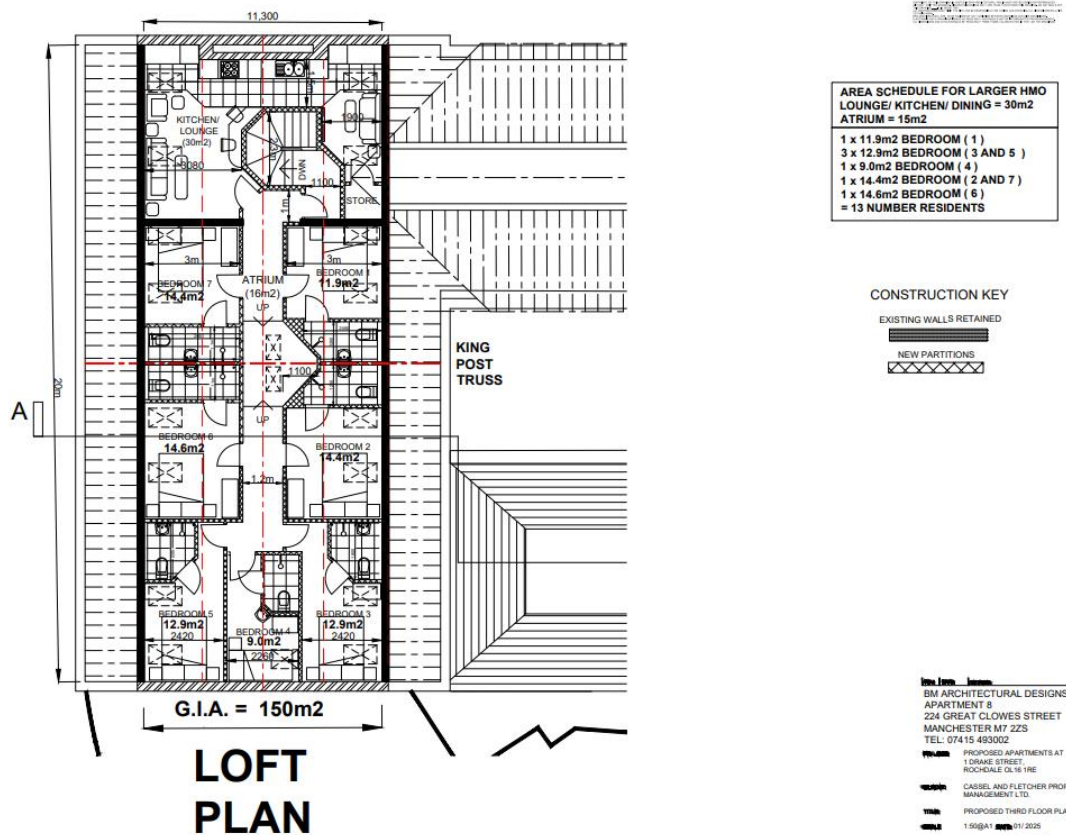
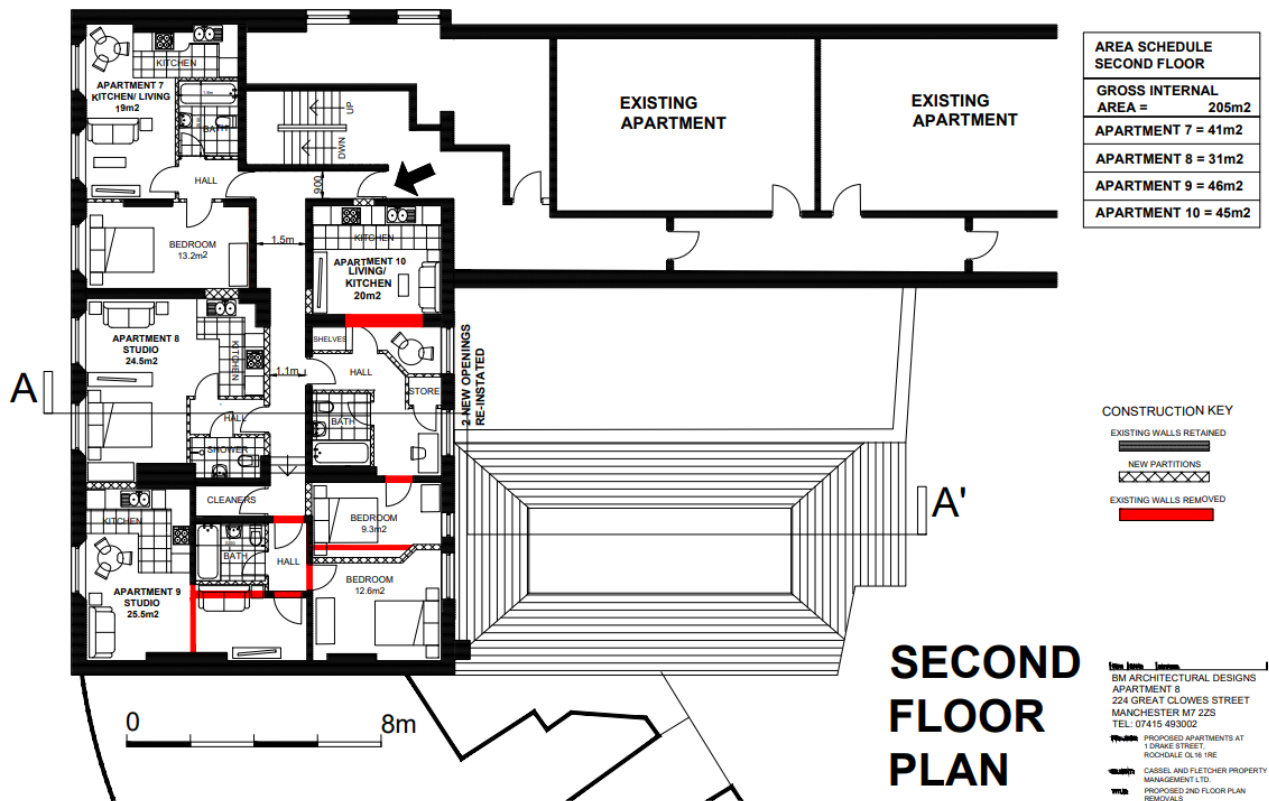


3.2 Existing Plans.

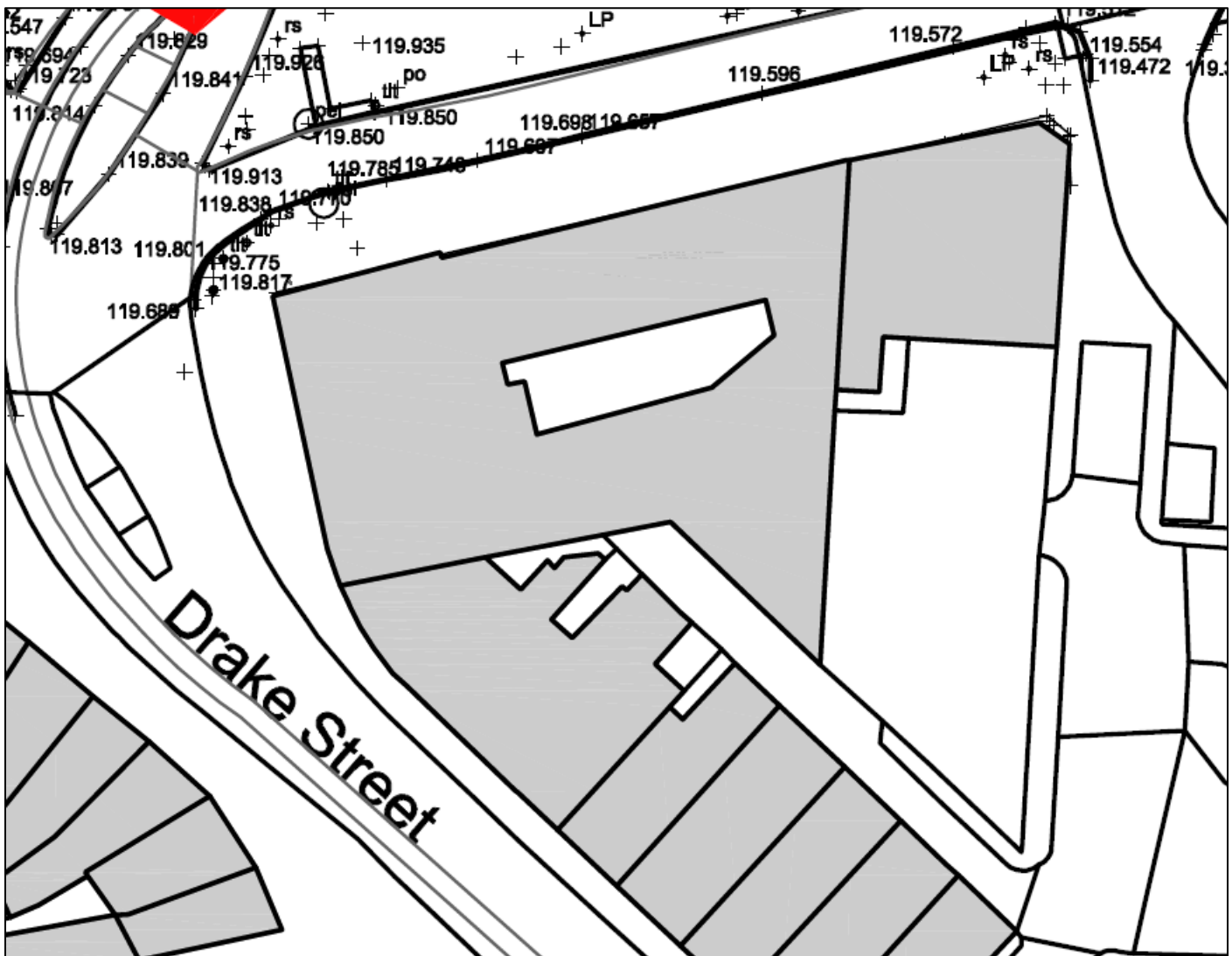


3.3 Proposed Plans.

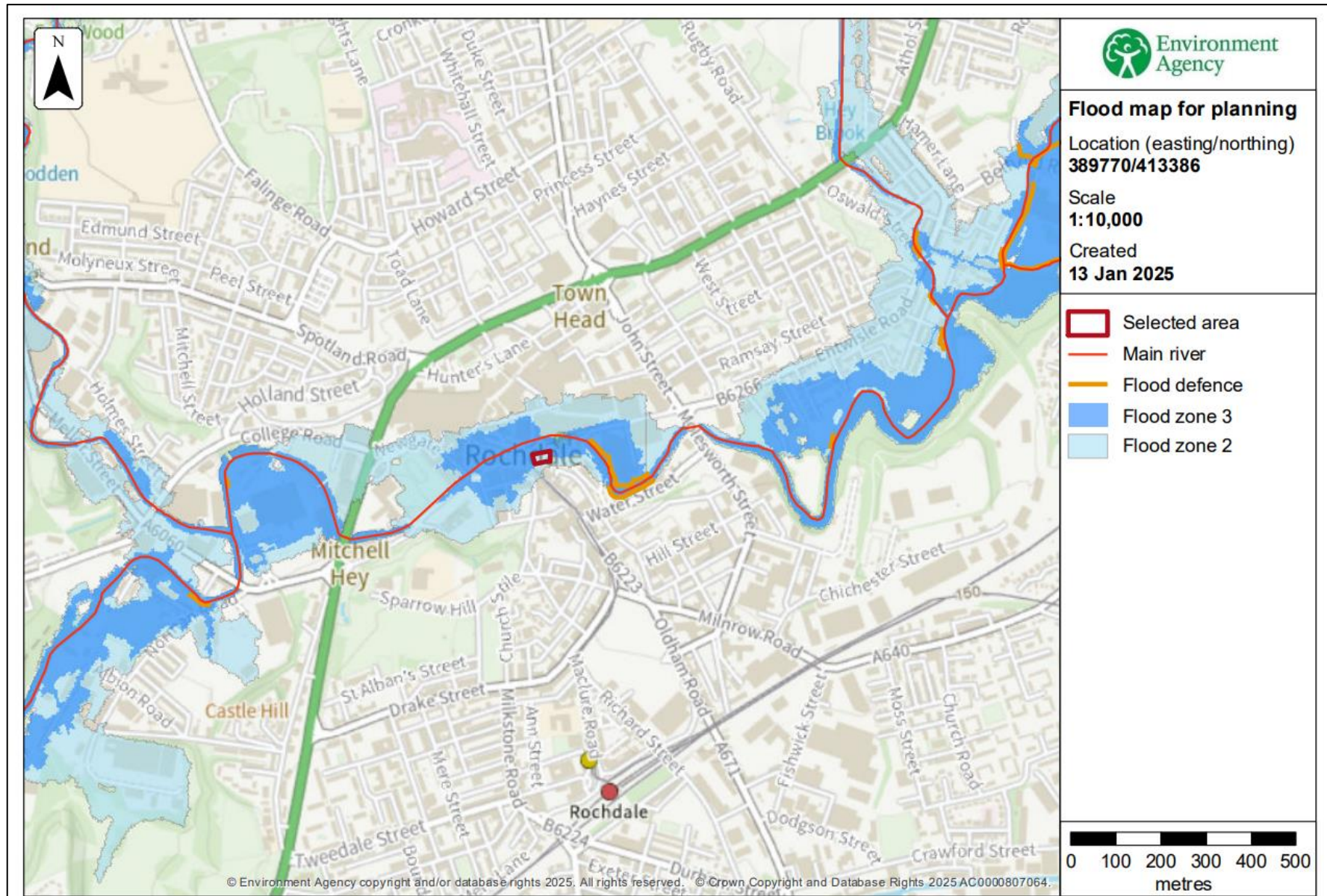




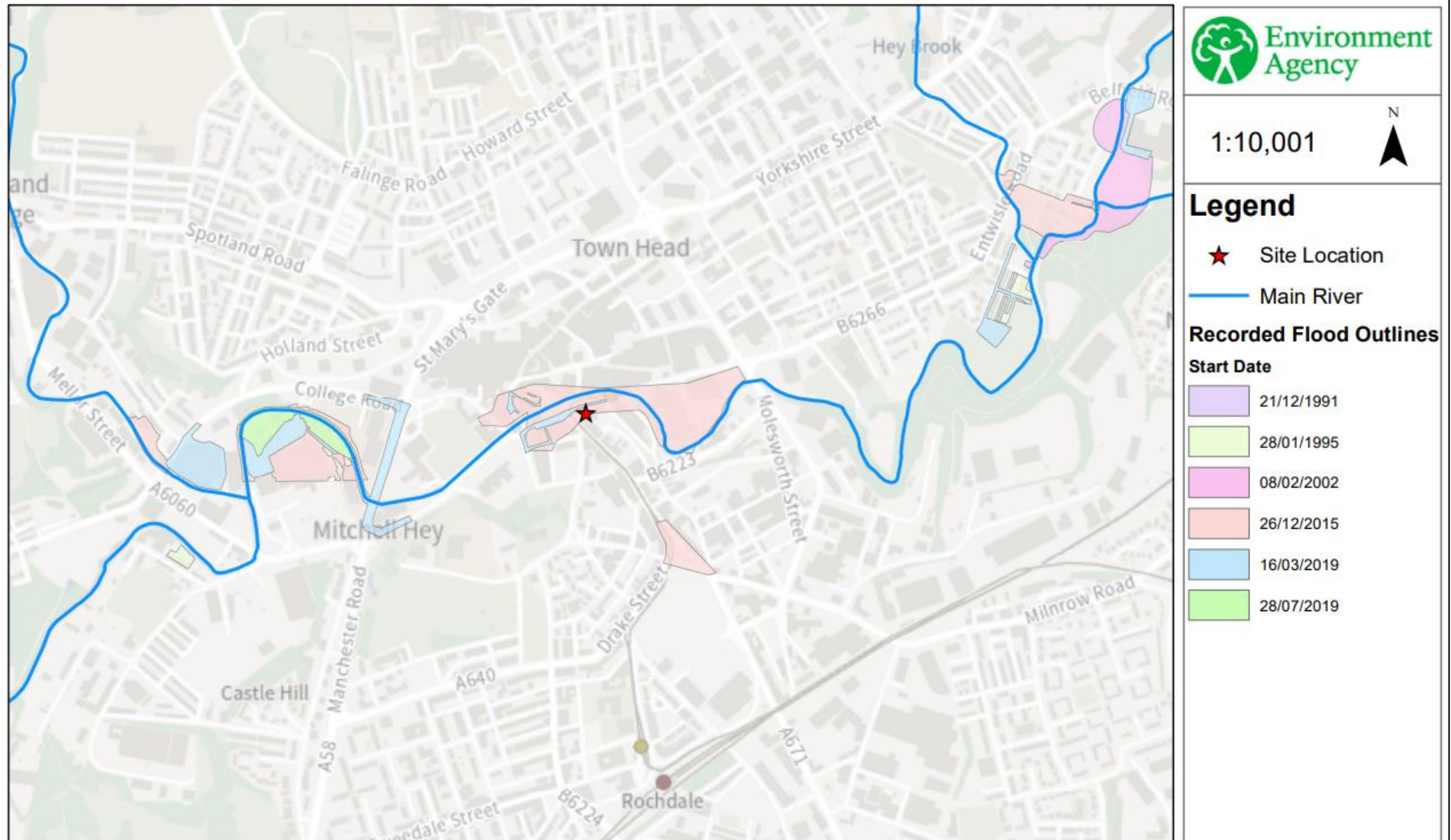
3.4 Topographic Data.

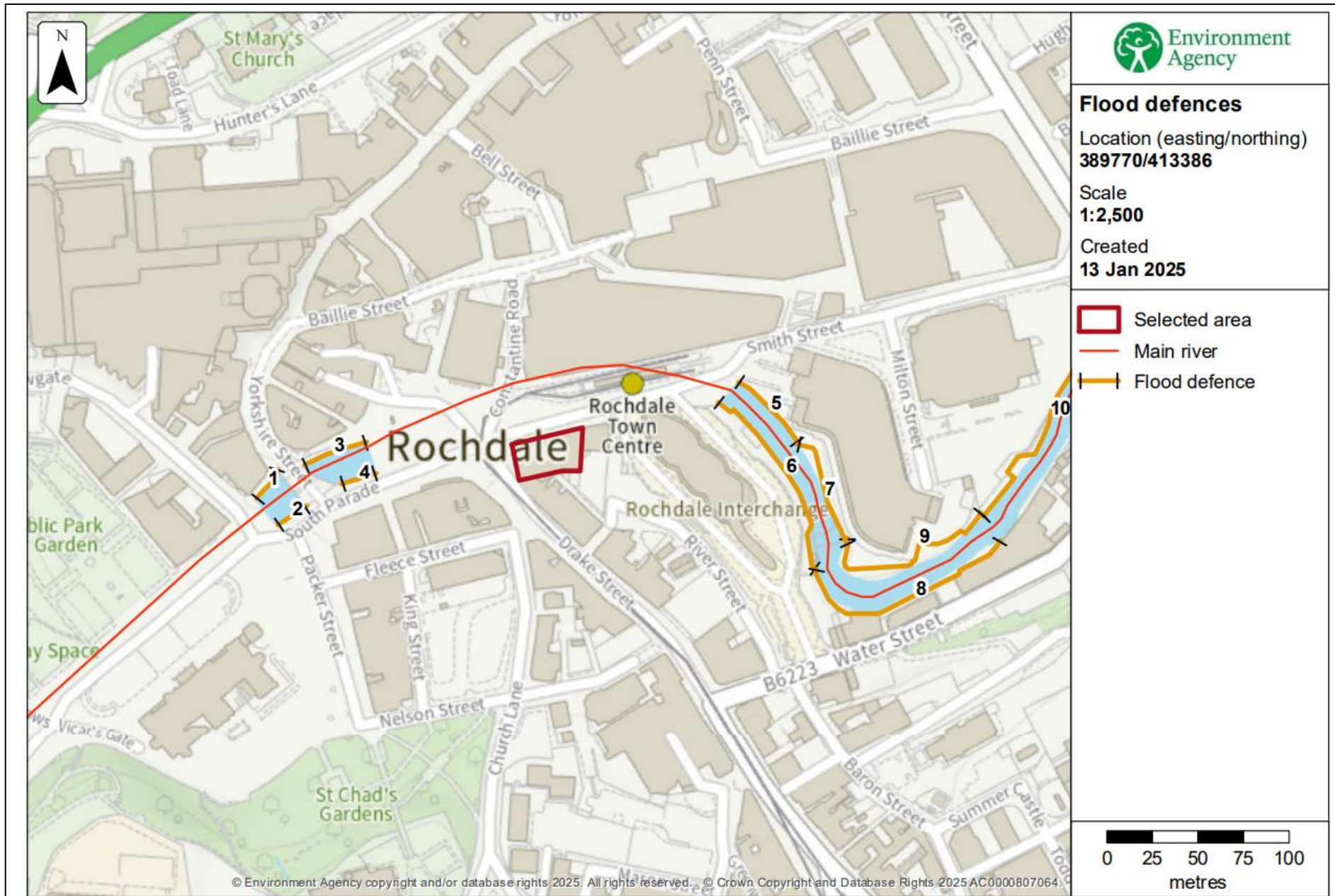


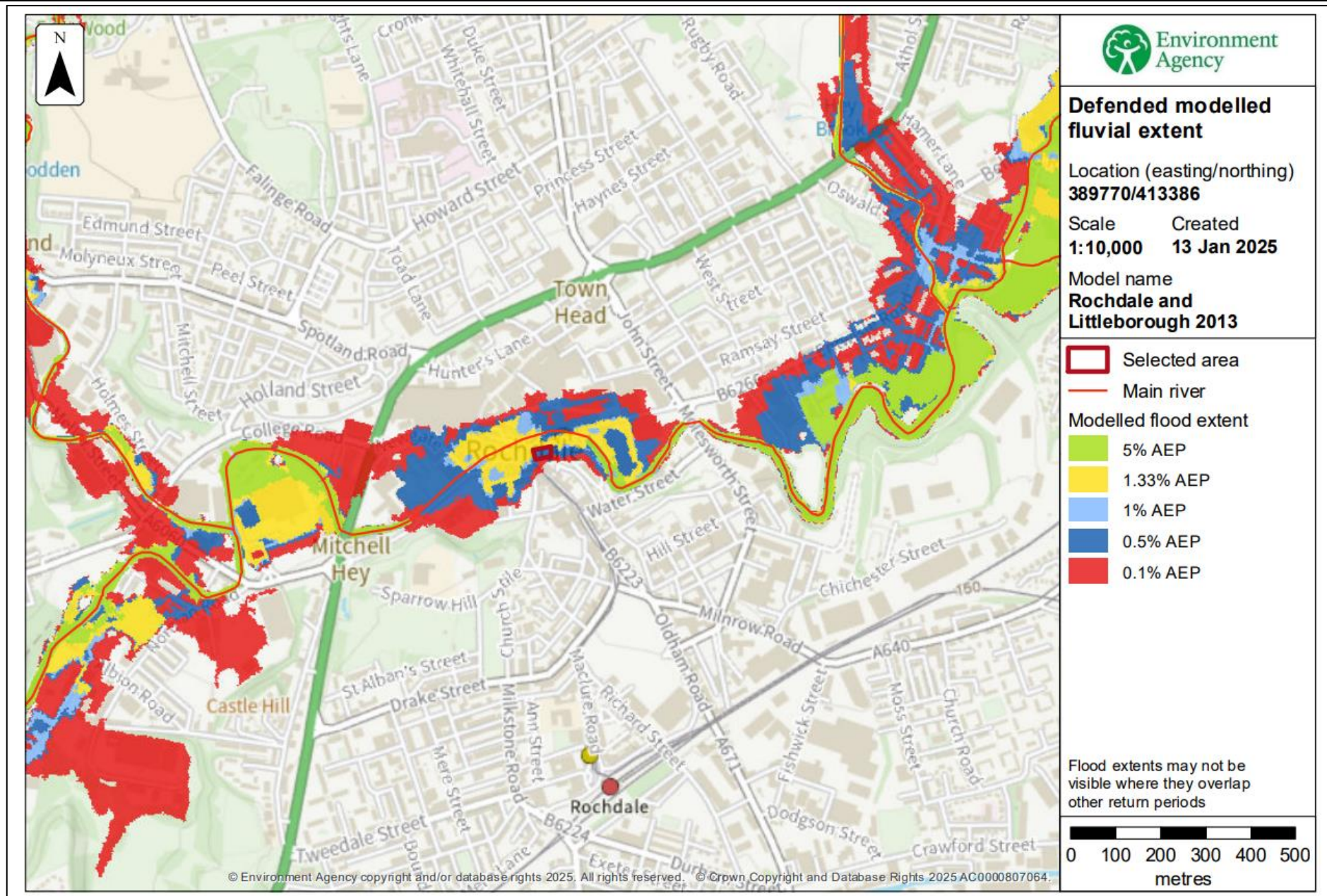
3.5 Environment Agency Flood Risk Data Jan 2025.

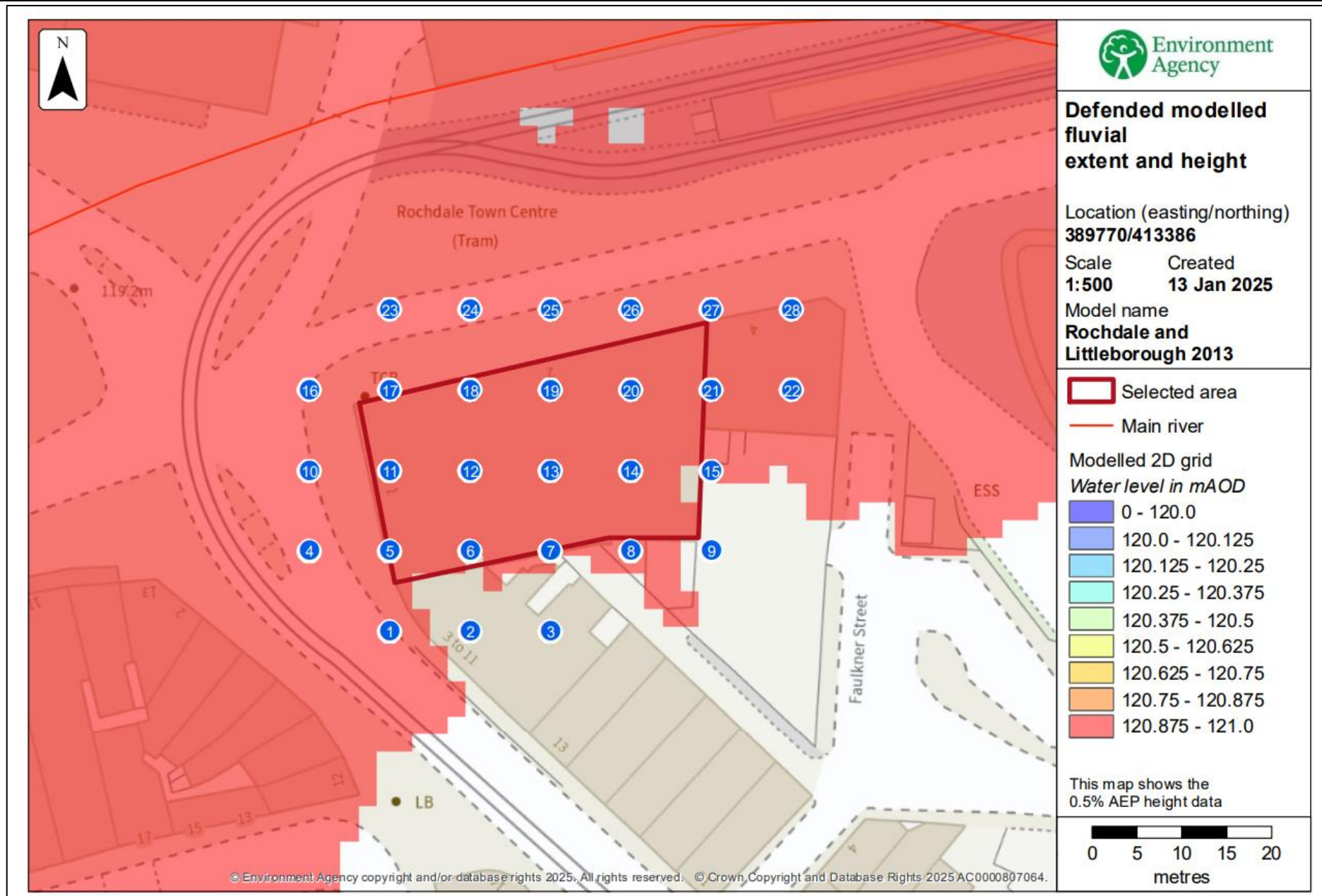


**Recorded Flood Outline Map Centred on Smith Street, Rochdale, OL16 1TU.
Created 16/01/2025 [GMMC392737LB]**









Label	Easting	Northing	5% AEP	3.33% AEP	1.33% AEP	0.5% AEP	5% AEP	3.33% AEP	1.33% AEP	0.5% AEP
			Depth	Depth	Depth	Depth	Height	Height	Height	Height
17	389753	413393	NoData	NoData	0.09	0.84	NoData	NoData	119.99	120.98
18	389762	413393	NoData	NoData	NoData	0.71	NoData	NoData	NoData	120.98
19	389771	413393	NoData	NoData	NoData	0.28	NoData	NoData	NoData	120.98
20	389780	413393	NoData	NoData	NoData	0.30	NoData	NoData	NoData	120.98
21	389789	413393	NoData	NoData	NoData	0.57	NoData	NoData	NoData	120.98
22	389798	413393	NoData	NoData	NoData	0.68	NoData	NoData	NoData	120.98
23	389753	413402	NoData	NoData	0.17	1.14	NoData	NoData	120.00	120.98
24	389762	413402	NoData	NoData	0.17	1.14	NoData	NoData	120.01	120.98
25	389771	413402	NoData	NoData	0.31	1.26	NoData	NoData	120.02	120.98
26	389780	413402	NoData	NoData	0.35	1.30	NoData	NoData	120.03	120.98
27	389789	413402	NoData	NoData	0.36	1.18	NoData	NoData	120.03	120.98
28	389798	413402	NoData	NoData	NoData	1.08	NoData	NoData	NoData	120.98
Max value in selected area:			Could not determine	Could not determine	0.09	1.02	Could not determine	Could not determine	120.03	120.98

Data in this table comes from the Rochdale and Littleborough 2013 model.

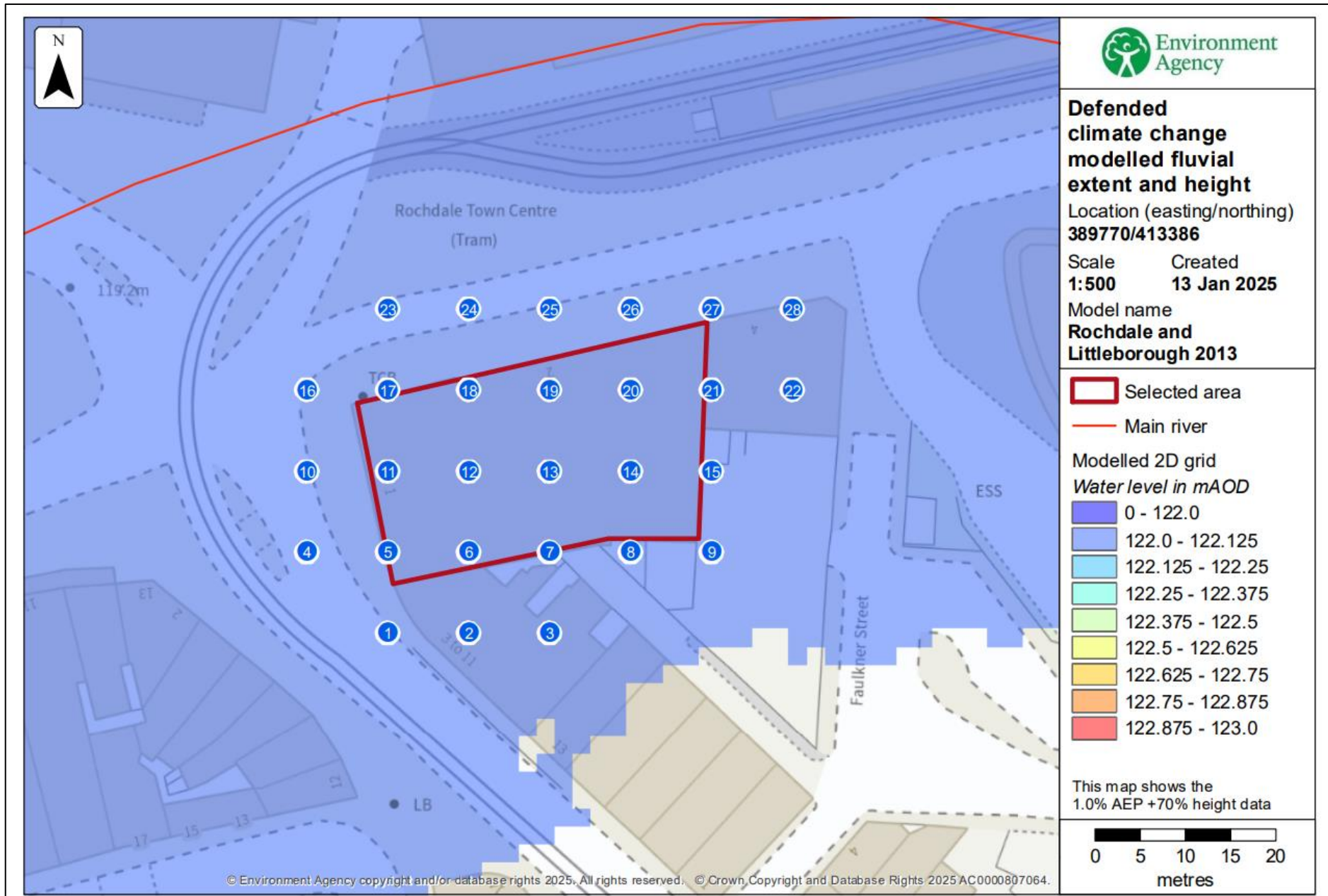
Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.

If no height or depth data is available for a scenario, no table will be shown.

'Max value in selected area' is the deepest depth or highest height at any location within your drawn boundary.

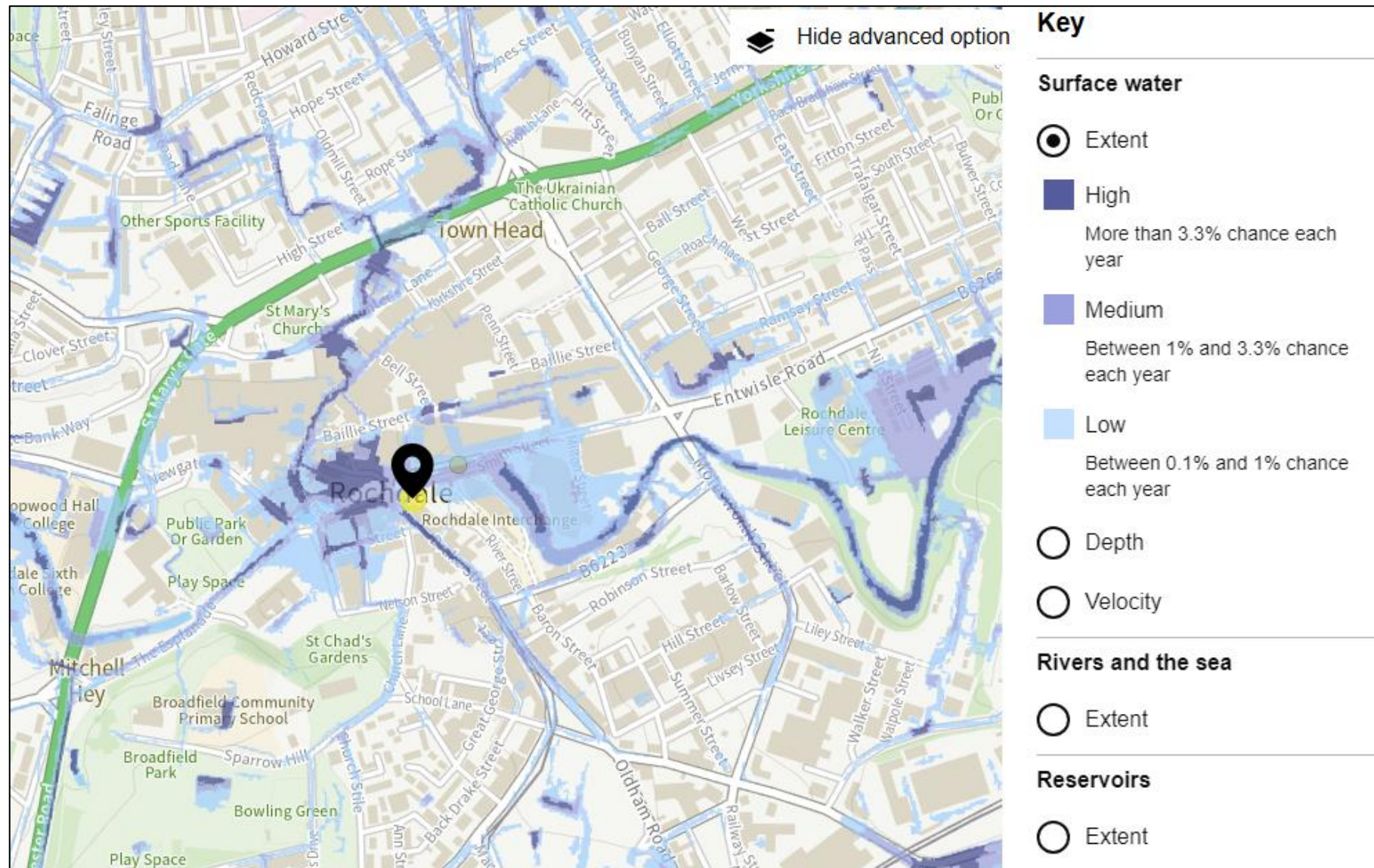


Sample point data

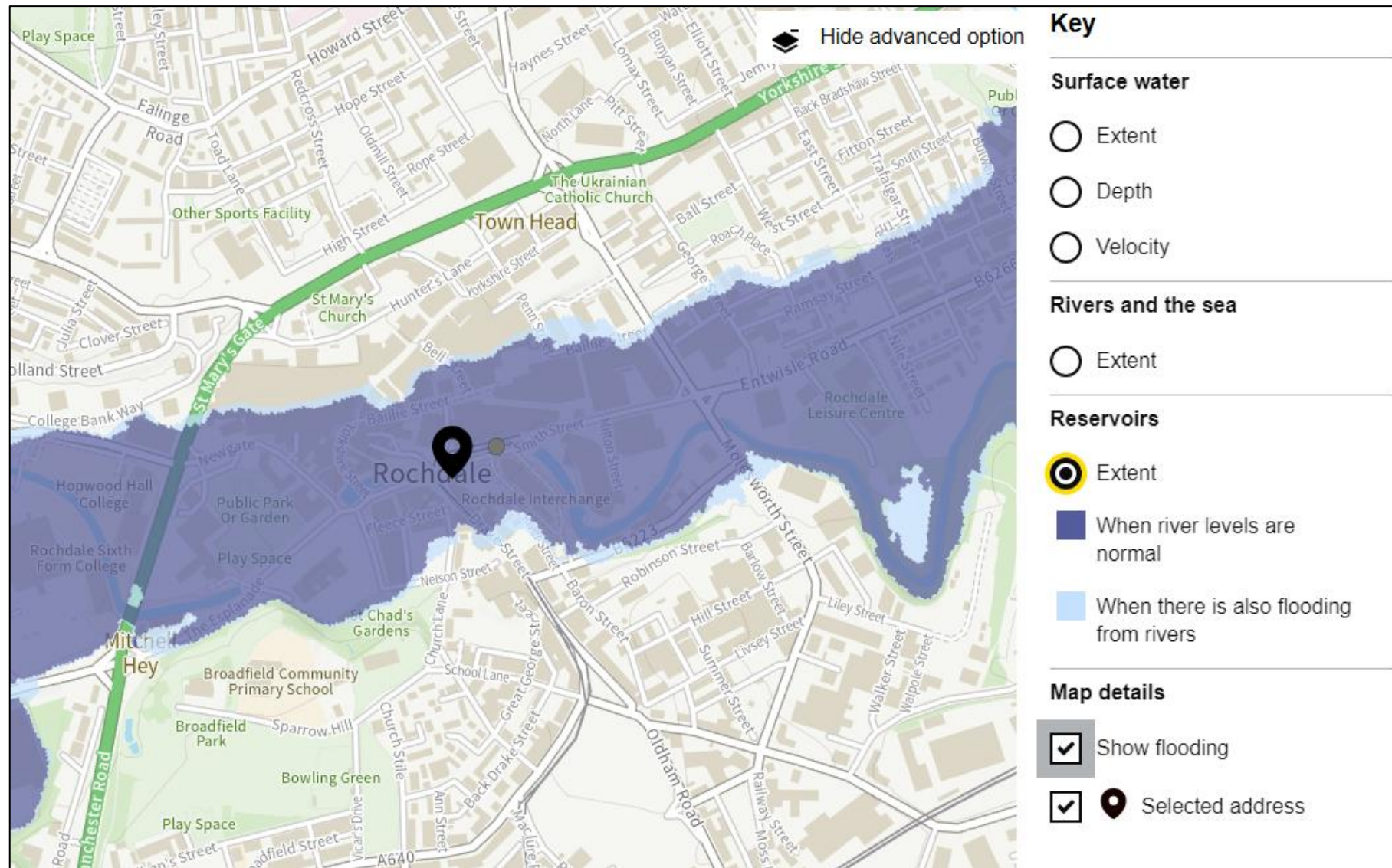
Defended climate change

Label	Easting	Northing	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)
			Depth	Depth	Depth	Height	Height	Height
1	389753	413366	0.97	1.27	1.64	121.33	121.64	122.01
2	389762	413366	0.10	0.41	0.78	121.33	121.64	122.01
3	389771	413366	0.14	0.46	0.83	121.33	121.64	122.02
4	389744	413375	1.41	1.72	2.08	121.33	121.64	122.01
5	389753	413375	0.84	1.15	1.52	121.33	121.64	122.01
6	389762	413375	0.63	0.94	1.31	121.33	121.64	122.01
7	389771	413375	0.48	0.79	1.17	121.33	121.64	122.02
8	389780	413375	0.63	0.94	1.33	121.33	121.64	122.03
9	389789	413375	NoData	0.17	0.56	NoData	121.64	122.04
10	389744	413384	1.49	1.80	2.17	121.33	121.64	122.01
11	389753	413384	0.68	0.99	1.36	121.33	121.64	122.01
12	389762	413384	0.63	0.94	1.31	121.33	121.64	122.02
13	389771	413384	0.76	1.07	1.45	121.33	121.64	122.02
14	389780	413384	0.69	1.00	1.38	121.33	121.64	122.02
15	389789	413384	0.70	1.02	1.41	121.33	121.64	122.03
16	389744	413393	1.45	1.75	2.12	121.33	121.64	122.01

3.6 Environment Agency Surface Water Flood Maps.



3.7 Environment Agency Reservoir Flood Maps.



3.8 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)

3.9 NPPF Planning Practice Guidance Annex 3.

Annex 3: Flood risk vulnerability classification

Information on flood risk vulnerability classification.

Essential infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood.
- Wind turbines.
- Solar farms.

Highly vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)

More vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

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.

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.