

FLOOD RISK ASSESSMENT

PROPOSED RESIDENTIAL DEVELOPMENT FORMER OAKENROD SCHOOL & MILL SITES BURY ROAD ROCHDALE OL11 5EU

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1	Oct 2022	Update with new layout & to inform a planning application.
2	Nov 2024	Updated flood data, revised layout, FFLs, sequential & exception test.
3	Nov 2024	Updated Site Plan & Flood Contour, Compensation & Flow Route Mitigation Plan.

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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 residential development on the former adjacent Oakenrod School & Oakenrod Mill Sites.

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.*

Flood maps show the Application Site has areas within flood zone, 1, 2 & 3.

Environment Agency (EA) mapping data identifies the Application Site as having areas within areas within flood zone, 1, 2 & 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'. The flood risk 'vulnerability' and flood zone 'compatibility' matrix (Table 3) indicates that 'more vulnerable' development is acceptable in flood zones 1.

1.3 Drainage Reference.

Refer to separate Drainage Strategy Report & associated Drainage Plan.

1.4 Plans.

1.4.1 Location plan.

See Location Plan in Appendix showing the area features.

The Site is made up of two former separate properties - Oakenrod School adjacent to Bury Road, and the former Oakenrod Mill adjacent the River Roch to the south.

Access to the Site is off Bury Road to the northeast corner. The access track is between the two nominally central to the Site.

The River Roch flows NE-SW past the Site, flowing over a weir nominally halfway along the south boundary.

1.4.2 Site plan.

The north part of the Site formerly comprised the Oakenrod School Site, and the south part of the Site adjacent the River Roch was formerly the Oakenrod Mill Site.

Oakenrod Mill was historically a cotton mill, and was situated on a weir over the River Roch which remains. The mill historically abstracted water from the upper reach of the River Roch via sluices and storage reservoirs, driving 2No. water wheels initially (later replaced with a single turbine generator), with an outlet to the lower reach of the weir central to the south boundary.

The mill proper was demolished in the late 1960s/early 1970s, with some smaller units remaining until the early 2000s. Most of the sluices and channels were infilled at the time of demolition.

The school was demolished c2013 in readiness for planning applications for development.

The Application Site now encompasses both Sites.

The proposal is for a residential housing development, accessed via a new road approximately in place of the former access through the centre of the Site. The dwellings are to be laid out around the central access and comprise a mix

of detached, semi-detached, and terrace town houses. Generally, the dwellings have driveways to the front and gardens to the rear.

Refer to Proposed Plan in appendix.

1.5 Data & Surveys.

1.5.1 Existing and proposed topography.

A topographic survey has been undertaken recently c2024, noting features of the Site, levels, and contours.

With particular significance to the flood risk assessment is the northwest bank of the Roch which forms the boundary of the Application Site. Due to the presence of a weir central to this Site boundary, there are both upper and lower reaches of the weir & Site.

The weir has a sill level of 113.74m aOD. Projecting back into the Site from the weir is a former sluice wall which remains in place, and has a level of around 116.10m aOD. The sluices are currently buried by silt.

The upper reach of the Site has a bank level of around 116.00-117.00m aOD. There are some small mounds of earth in this area up to c119.00m aOD.

The lower reach of the Site has levels closer to Bury Road around 118.00-119.00m aOD, however, closer to the Roch on the downstream side of the sluice wall, the Site has a level of around 114.00-114.50m aOD.

There are some significant mounds of earth in this area up to 117.80m aOD which currently act as a flow path & floodplain restriction to flood waters.

Bury Road to the North boundary is between 124.00m aOD to c120.00m aOD at the Site entrance.

2 Sequential & Exception Tests.

2.1 Sequential Test.

2.1.1 Sequential Test Requirements.

The Sequential Test is part of a planning tool that aims to lower development flood risk by way of promoting the development of lower flood risk sites on a comparison basis.

The Sequential Test procedure is detailed in the National Planning Policy Framework (NPPF), specifically designating its use and function within the planning regime as noted below:

162. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

163. If it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied.

The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.

164. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that: a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

165. Both elements of the exception test should be satisfied for development to be allocated or permitted.

2.1.2 Sequential Test Approach

The Sequential Test approach is undertaken by identifying other potential development sites that may be considered as a suitable alternative for the development proposed at Oakenrod.

For an alternative site to be considered suitable, it has to be considered 'reasonably available' for development. A 'reasonably available' site is one which is both 'deliverable' and 'developable'.

The definition of 'deliverable' as it relates to the assessment, is a site which is available now and has a realistic prospect that housing will be delivered within 5 years. Sites with planning permission can be considered as deliverable until the permission expires or it is clear from certain actions that the current owner plans to develop the site – discussed further below.

The definition of 'developable' as it relates to the assessment, is a site in a suitable location which is reasonably available for development.

A reasonably available site is considered to comprise the following characteristics:

- Have the same capacity of units of the current Application Site, ie 52 units, allowing for a margin say of 10% which results in a band of 47-57 units;
- Should be available now with a realistic prospect that housing will be delivered within 5 years;
- It has planning permission which is not likely to be implemented, ie an owner has planning permission in order to sell to a developer;
- It should also be of comparable housing type, ie semi-detached dwellings cannot be compared with one/two bedroom apartments.

A site is not reasonably available if any of the following apply:

- It is under construction already;
- It has planning permission in which conditions have been discharged or moving from outline to full or phased developments, ie the owner is actively moving towards construction or completion;
- It is not in a suitable location, doesn't accord with the type of development in the Local Development Plan etc.

The Rochdale Borough Council stance on sequential testing is that it must be assessed across the whole borough.

In particular, the Rochdale Borough Council Strategic Housing Land Availability Assessment (SHLAA) will be used to sequentially test the Application Site. The latest SHLAA was issued in March 2024.

The SHLAA identifies three groups of potential development sites:

- Sites under construction;
- Sites with planning permission;
- Other identified sites for housing.

As the sites under construction are already being developed, they are not considered reasonably available and will therefore not form part of the assessment.

If any sites are found that are considered to be reasonably available; the flood risk of each will be compared from both the Environment Agency flood mapping data service, and the Local Strategic Flood Risk Assessment.

2.1.3 Sequential Test of Potential Sites

2.1.3.1 SITES WITH PERMISSION.

- SH 1933. LAND OFF BONSCALE CRESCENT AND ROTHAY DRIVE, MIDDLETON.

Capacity: 55 units.

Delivery time: 0-5 years.

The Site is currently under construction and therefore is not considered reasonably available.

- SH 2520. THE SOCCER VILLAGE (FORMERLY BIRCHENLEY MANOR EQUESTRIAN CENTRE), WILDHOUSE LANE, MILNROW, OL16 3TW.

Capacity: 47 units.

Delivery time: 0-5 years.

2.1.3.2 OTHER SITES IDENTIFIED FOR HOUSING.

There were no comparable employment sites identified in the SHLAA, and thus all sites within this category are considered not reasonably available.

2.1.3.3 EMPLOYMENT SITES WHICH MAY HAVE FUTURE POTENTIAL FOR HOUSING.

There were no comparable employment sites identified in the SHLAA, and thus all sites within this category are considered not reasonably available.

2.1.4 Sequential Test Result.

Rochdale Borough Council have previously indicated that the latest SHLAA is to be used as the basis of the Sequential Test to assess suitability of alternative sites.

Sites with the same capacity for development have been identified and assessed on the basis of whether they are considered reasonably available as per the definitions set out in the National Planning Policy Framework.

The alternative sites identified are either not comparable in terms of capacity and type of development; due to construction having started or evidence that the site is not available; or due to the fact that the alternative sites are not deliverable within the 5-year timeframe of the Sequential Test parameters.

Due to the above, it is considered that the Application Site has passed the Sequential Test.

2.2 Exception Test.

The National Planning Policy Framework indicate that once the Sequential Test is passed, the Exception Test may need to be applied to the Application Site.

However, it also notes that: *'The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification.'*

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.

The Flood Risk 'Vulnerability' and Flood Zone 'Compatibility' for the Application Site as noted in Section 6 / Application Site Analysis, indicates that the type of development is suitable for the flood risk area subject to the Exception Test being passed.

The Exception Test as specified by the Environment Agency/NPPF is as follows:

164. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) development that has to be in a flood risk area will provide wider sustainability benefits to the community that outweigh flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

165. Both elements of the exception test should be satisfied for development to be allocated or permitted.

Both elements of the Exception Test are considered to have been passed in accordance with the above NPPF statement for the following reasons:

- a) The development provides wider sustainability benefits to the local community as it would provide brownfield development land for housing which is in accordance with the LPA framework & core strategy targets. The LPA is committed to the reuse of brownfield land specifically for housing, and is currently under its target of 80% for brownfield reuse. Reuse of this particular site would help the LPA to achieve its core strategy targets.

The development proposals include a significant amount of greenspace corridor adjacent to the River Roch, which will be accessible by the public. In its current state, the Site is derelict & has been partly left with former structures & hardstandings forming the Site surface with a low value of biodiversity.

Removal of these, and development as per the Site proposals, would ensure a return of soft landscaping and a buffer as designated by the Environment Agency, to ensure wildlife corridors in accordance with the statutory North West River Basin Management Plan.

The inclusion of significant greenspace in the development aims to deliver on the LPA framework & core strategy targets to promote a greener environment, as well as increasing biodiversity as part of the government's Biodiversity Net Gain targets for development.

- b) The development has been designed in accordance with a site-specific FRA which follows in the next sections.

The proposed development has been assessed against the associated flood levels, including an allowance for climate change expected over the development lifetime, and found to be safe considering the more vulnerable classification of its users.

The assessment proposals result in a positive gain on floodplain as part of removal of historic artificial banks in the floodplain, and will thus have the impact of decreasing flood risk locally as well as downstream of the Site.

Because of the current ground characteristics (including some of the previous hardstanding remaining in place), incorporating SUDS techniques into the development will result in a reduced runoff from the Site. Reduced runoff & volume will result in slightly lower river levels and therefore lower overall flood risk.

2.3 Sequential & Exception Test Conclusions.

Rochdale Borough Council recent practice is that the latest SHLAA is to be used as the basis of the Sequential Test to assess suitability of alternative sites to the Application Site which should be undertaken borough wide.

Sites with the same/similar capacity for development have been identified and assessed based on whether they are considered reasonably available as per the definitions set out in the National Planning Policy Framework.

The alternative sites identified are either not comparable in terms of size/capacity and/or type of development, due to construction having started or evidence that the site is not available; or because the alternative sites are not deliverable within the 5-year timeframe of the Sequential Test parameters.

Due to the above, it is considered that the Application Site at the Oakenrod has passed the Sequential Test.

Subsequently, through the use of the Exception Test, it has been shown that the Site can be developed and have a positive effect on the local community both in terms of sustainability & flood risk.

3 Flood Risk Assessment.

3.1 Existing fluvial & surface water system.

Land elevation falls to the south towards the River Roch locally. As the local area is developed, man-made drainage systems capture surface water from higher elevation, especially to the north side, where Bury Road intercepts surface water.

From a fluvial perspective, the Roch flows northeast to southwest past the Site. The northeast part of the Site is at a slightly higher elevation due to the weir which exists nominally halfway down the Site boundary. The lower part of the Site to the southwest is adjacent to the lower reach of the weir.

When the river is in flood, its banks are only marginally exceeded to parts of the the upper reach of the Site, but some of the lower part of the Site is inundated, due to overland flow in and over the weir structure which becomes increasingly drowned depending on flood event.

3.2 Proposed fluvial & surface water system.

Due to the lower level of the south portion of the Site adjacent the River, this area is proposed to be a wildlife and greenspace corridor.

The development buildings are generally kept away from the flood risk areas to the north side of the Site leaving a minimum an 8m buffer to the watercourse.

3.3 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.

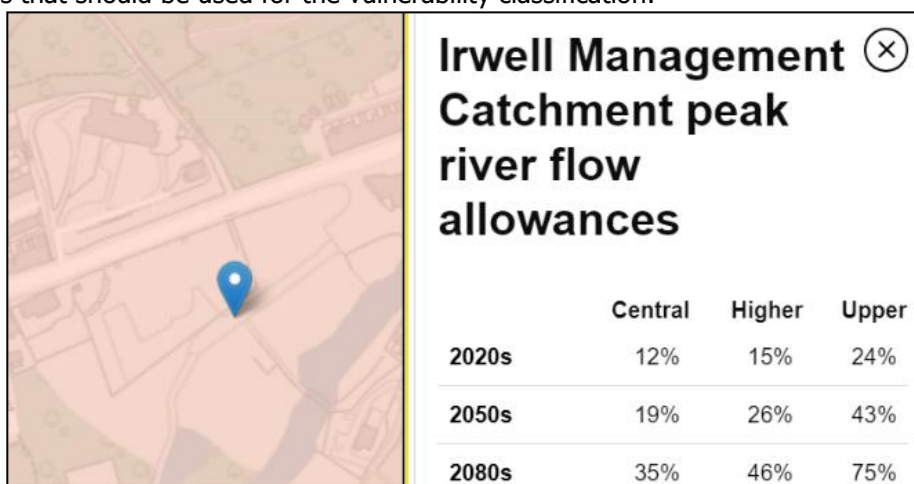
Residential developments are considered to have the longest potential development lifetimes. Commercial developments have shorter lifetimes owing to higher turnover of changes in use types etc, and therefore a higher frequency of associated redesign & updated flood risk assessment.

The proposed development is residential, 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 2 & 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:

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 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, maximum development lifetimes apply, and the '2080s' timeline is appropriate.

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

3.4 Fluvial morphological impacts.

The Site contours are to be retained with above ground rubble mounds removed, and small hollows such as former tanks below bank level infilled etc. The proposed development will not impact or change fluvial morphology.

3.5 Potential sources of flooding.

a. Fluvial flooding from main rivers.

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

Due to the weir central to the southeast Site boundary, the upper and lower reaches have two different flood levels.

Flood data obtained from the Environment Agency indicated the following:

- Node 6 – representative of the flood level at Oakenrod Bridge. The flood level will be slightly higher local to the bridge due to the constriction of the bridge abutments.
- Node 5 – central to the upper reach of the weir and worst-case for upper reach flood levels.
- Node 4 – representative of the water level on the upper reach in the immediate vicinity of the weir/weir sill.
- Node 3 – representative of the water level on the lower reach in the immediate vicinity of the weir & also worst-case scenario for lower reach flood levels.
- Node 2 – central to the lower reach.
- Node 1 – extreme southwest site corner flood level.

As the Site does not have traditional flood defences, the undefended model has been used. The flood levels for the Site are tabulated below (worst-case levels for the upper/lower reaches are highlighted in red):

RIVER ROCH FLOOD MODEL		
Node Location	Undefended	
	100yr	100yr +35%
Node 6 Oakenrod Bridge	116.21	116.36
Node 5 Level in upper reach	116.26	116.44
Node 4 Upper weir sill	116.04	116.24
Node 3 Lower weir sill	114.40	115.01
Node 2 Level in downstream reach	114.32	114.94
Node 1 level at the southwest boundary	113.95	114.50

The flood levels have been compared with the topographic survey and used to create a flood contour map for the Site, refer to Appendix.

The upstream reach of the development is generally protected up to a 100yr fluvial flood event. However, the 100yr+35% CC event encroaches to the rear gardens of some of the proposed units, and covers the area taken up by the building plots 38-39.

The worst-case flood level in the upper reach has been identified as 116.44m aOD for the 100yr+35% CC event, although this falls toward the weir due to river gradient.

The break between the upstream side of the Site and the downstream side is controlled by the weir and the adjacent former mill sluice structure, which has a level of c116.10maOD. The 100yr flood is generally kept within the river by the sluice structure in the 100yr event, but will start to overtop and reach 340mm above it in the 100yr+35% CC flood event.

Due to the fall in level downstream of this weir & sluice structure to around 114.00-114.50m aOD, the floodwater routes over the sluice wall and is diverted around the earth mound in this area towards the Site before flowing back towards the river. This flood flow routing approximately corroborates the flood zone outline noted on the Environment Agency Flood Maps.

The downstream reach affected by the 100yr/100yr+35% flood contours, is mostly proposed as open amenity area. However, there is some encroachment onto the rear gardens, and more specifically covers the area taken up by the building plots 40-41.

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 a low risk of surface water moving from the northwest corner adjacent the higher point of Bury Road adjacent to the Site, and flowing nominally south/southeast through the Site (perhaps through existing stairwells to Bury Road from the formerly lower level school), and to the proposed amenity area in the lower reach where there is some pooling in lower depression in that area.

Considering the topographic data for the Site, it is highly unlikely that surface water would take this route. The entrance to the stairwell is around 123.50m aOD, with the falls across the pavement to Bury Road at around 123.30m aOD. Bury road has a relatively steep longitudinal gradient towards the Junction with Mellor Street at this point, and any surface water would take this route which is not indicated on the surface water flood map.

Considering the above, surface water is a low risk.

c. Artificial Watercourse/Canals.

None noted in the local area.

d. Loss of Floodplain & Flow Routes.

There will be a net gain of floodplain volume & flow route associated with proposed development.

The flood levels for the river were plotted on a contour map of the Site, and used to create a contour of the 100yr & 100yr+35% climate change flood events, refer to Flood Contours, FFLs_& Floodplain Compensation Plan in the Appendix.

From the plan, it was noted that there were instances where the proposed development (buildings & gardens), would take up part of the floodplain in both the upper and lower reaches. Cross section & plan analysis of the existing and proposed contours indicate there will be adequate compensation, which are also included on the Flood Contours, FFLs_& Floodplain Compensation Plan in the Appendix.

Each reach is discussed independently below which corresponds to the compensation areas shown on the plan & sections:

Upper Reach.

- There will be a loss of floodplain around plots 38 & 39, as well behind plot 34. Floodplain loss is 29cum + 16cum = 45cum.
- There will be a gain in floodplain due to removal of an earth mound behind plot 35, and minor modification of the existing bank to the east side of plot 31. Floodplain gain is 1.4cum + 75cum = 76.4cum.
- Overall floodplain gain in the upper reach is 76.4cum – 45cum = 31.4cum.

Lower reach.

- There will be a loss of floodplain around plots 40 & 41, as well behind plots 45-48. Floodplain loss is 353cum.
- There will be a gain in floodplain due to removal of a large earth mound central to the existing floodplain. This will be removed back down to general levels c114.00m aOD. Floodplain gain is >559cum.

- Overall floodplain gain in the lower reach is $559\text{cum} - 353\text{cum} = 206\text{cum}$.

e. Springs and high groundwater levels.

None noted.

f. Surcharging of local drainage & sewerage systems.

No evidence of sewer surcharging in the local area.

g. Reservoirs.

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

3.6 Design.

Flood levels have been modelled in the local area and there is a high confidence of accuracy surrounding the projections.

As per EA/government guidance, finished floor levels should have a freeboard of 300mm above the 100yr flood level + an allowance for climate change.

Upper reach:

- The worst-case flood level for the 100yr+35% level in the upper reach area is projected to be 116.44m aOD. A freeboard of 300mm gives a design floor level of not less than 116.74m aOD. This will affect plots 31-39 but should be taken as a minimum for all buildings to the upper reach area (although these are likely to be higher due to Site gradient).

Lower reach:

- The worst-case flood level for the 100yr+35% level in the lower reach area is projected to be 115.01m aOD. A freeboard of 300mm gives a design floor level of not less than 115.31m aOD. This will affect plots 40-52. Again, this level should be taken as the minimum for all plots in the lower reach of the Site, but others not specifically mentioned are likely to have much higher levels.

The sluice wall outside of the development footprint should be retained with the existing level to remain, and the former sluices excavated and sealed before being backfilled.

3.7 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.

3.7.1 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. The flood risk assessment has shown that there is flood risk in the local area, and although finished floor levels can be situated above the flood levels, an EP will show effective escape routes if required.

3.7.2 Section 2. Location & Proposal

Discussed in earlier sections of the report.

3.7.3 Section 3. Risk Summary

The maximum design flood level noted in the assessment is for the 100yr+35% fluvial event which is 116.44m aOD in the upper part of the Site, where the access/egress route is.

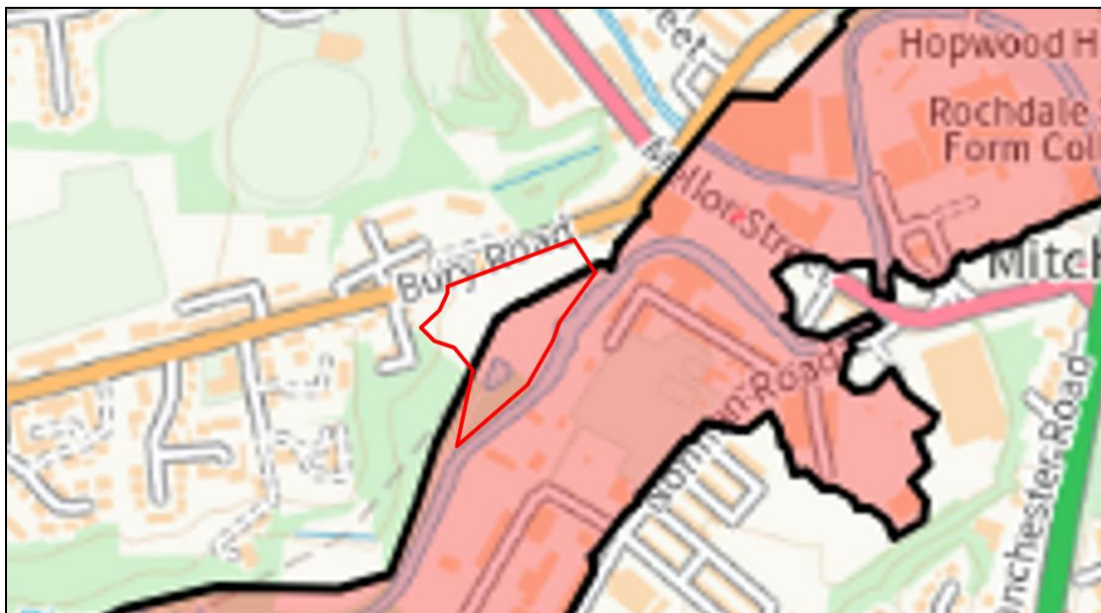
3.7.4 Section 4. Mitigation Measures

The Site buildings have been given a minimum finished floor level to mitigate flood risk throughout the lifetime of the development.

The access/egress to the Site is not within the flood zone, and is proposed to be situated at a level of >117.32m aOD.

3.7.5 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

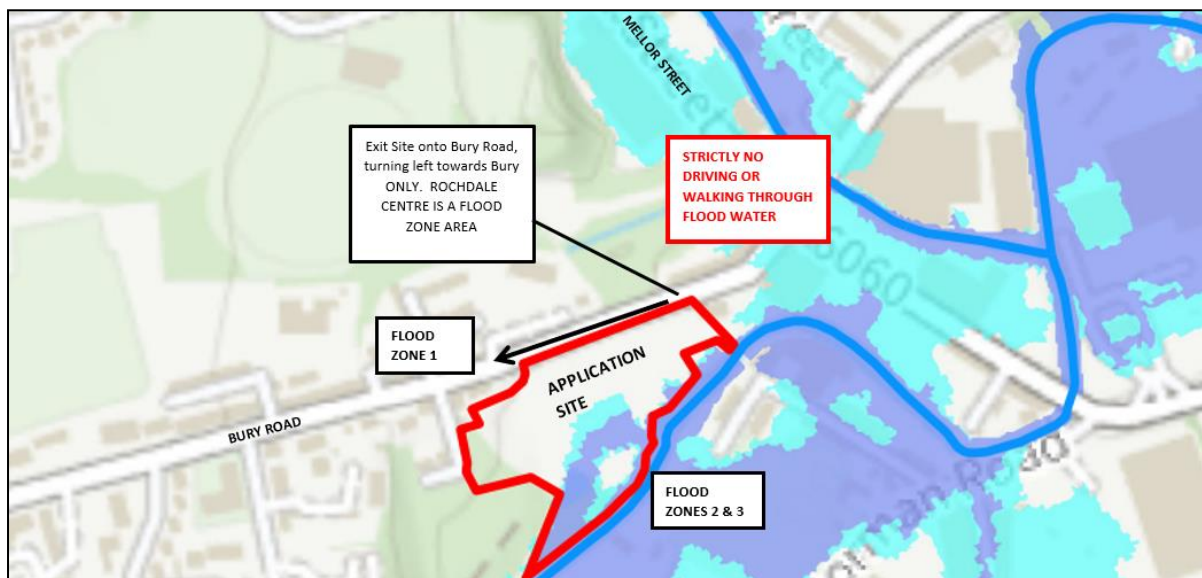
Media such as the Flood Information Service website details maps and current (up-to-date) area specific advice for all areas of England, including the type of flooding and flood alert/warning level in force for those areas. Other websites such as the Met Office have their own flood alert service. TV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

3.7.6 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.

Much of the proposed developed part of the Site is in flood zone 1 with some areas within flood zone 2. However, through the flood risk assessment and proposals, the development shall remain safe through its lifetime for up to and including a 100yr+35% CC fluvial event. Because the proposal will remain safe from flooding, evacuation from the Site is proposed 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 THROUGH FLOOD WATERS.

3.7.7 Section 7. Temporary Refuge

All finished floor levels are specified above the design flood level, 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.

3.7.8 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.

3.7.9 Section 9. List of Roles

It is the developer's responsibility to pass this guidance on to the homeowners.

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

3.7.10 Section 10. Plan Upkeep and Awareness

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

3.8 FRA Conclusion & Residual risks.

The Application Site & buildings are safe from fluvial flooding up to and including a 100+35% design flood event.

Minimum finished floor levels have been proposed for both the upper and lower reaches of the Site to ensure the proposed development is safe for its lifetime, refer to section 3.6.

Access & egress routes are available to proposed Site users as a dry route for pedestrians and vehicles.

Fluvial flow paths and floodplain volume see net gains due to the development. The effect of this will be a slight decrease in flood risk in the local area, ensuring there is no increase in flooding due to development.

As long as the guidance in this flood risk assessment is followed, no other residual risks remain.

Signed.....  .

D.S. Slattery BSc (Hons).

T J Booth Associates.

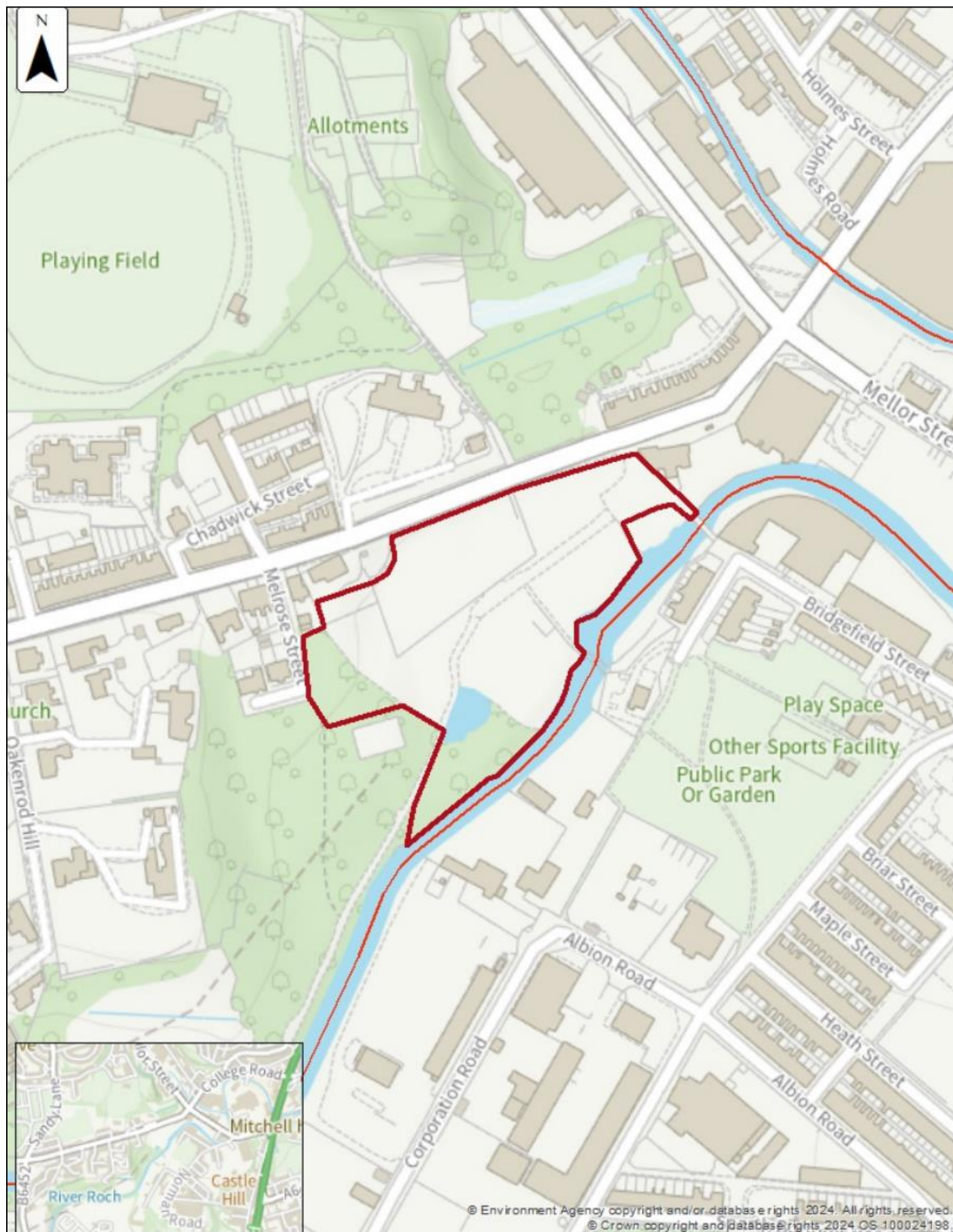
Authorised...  .

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

T J Booth Associates.

4 Appendix.

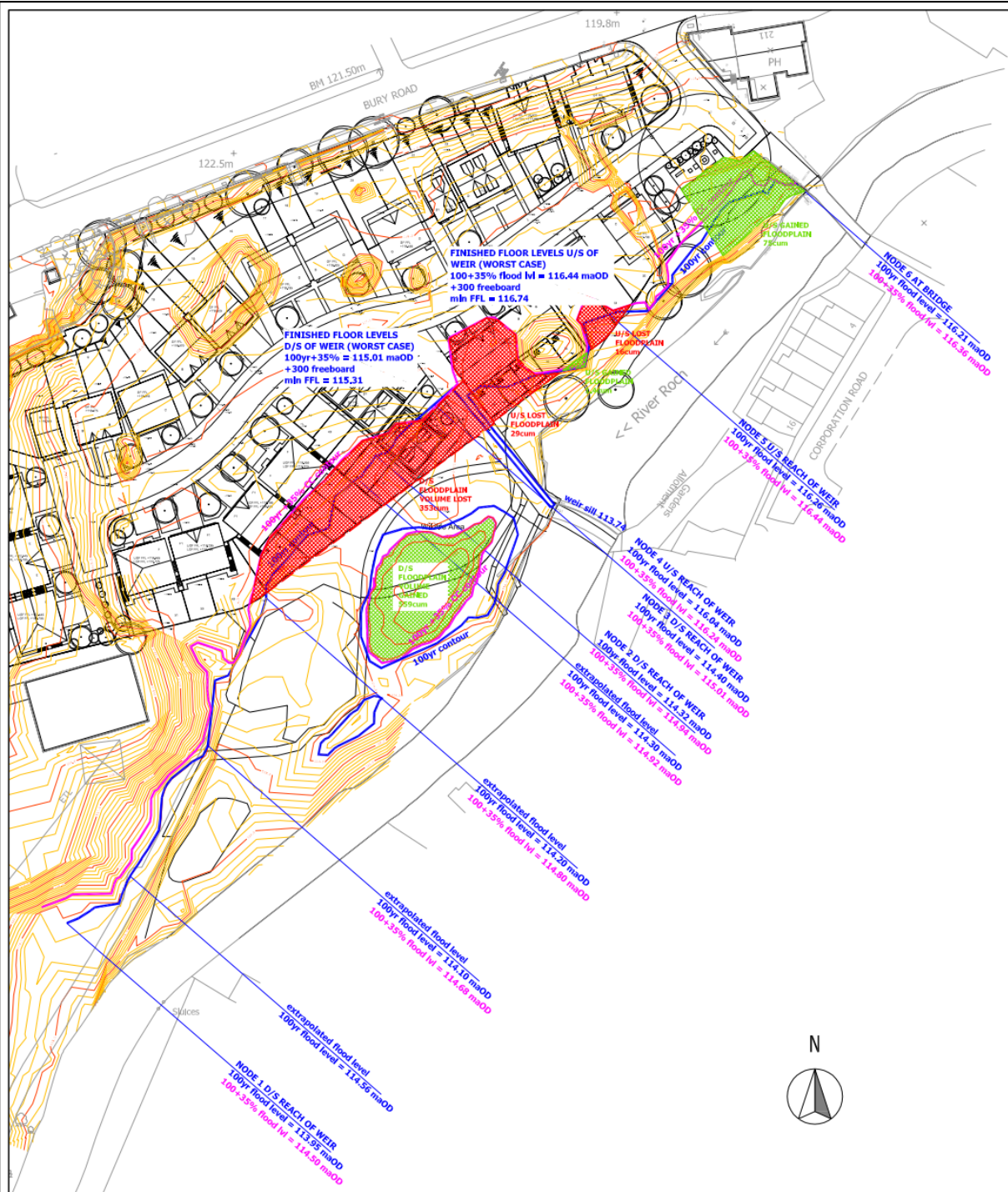
4.1 Location Plan.



4.2 Proposed Plan.



4.3 Flood Contour, Compensation & Flow Route Mitigation Plan.



T J BOOTH ASSOCIATES

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HALLMARK / OAKENROD

FLOOD CONTOURS, PROPOSED FFLs & COMPENSATION MITIGATION

FILE NAME: dwg-tjba-hallmark-oakenrod-240220

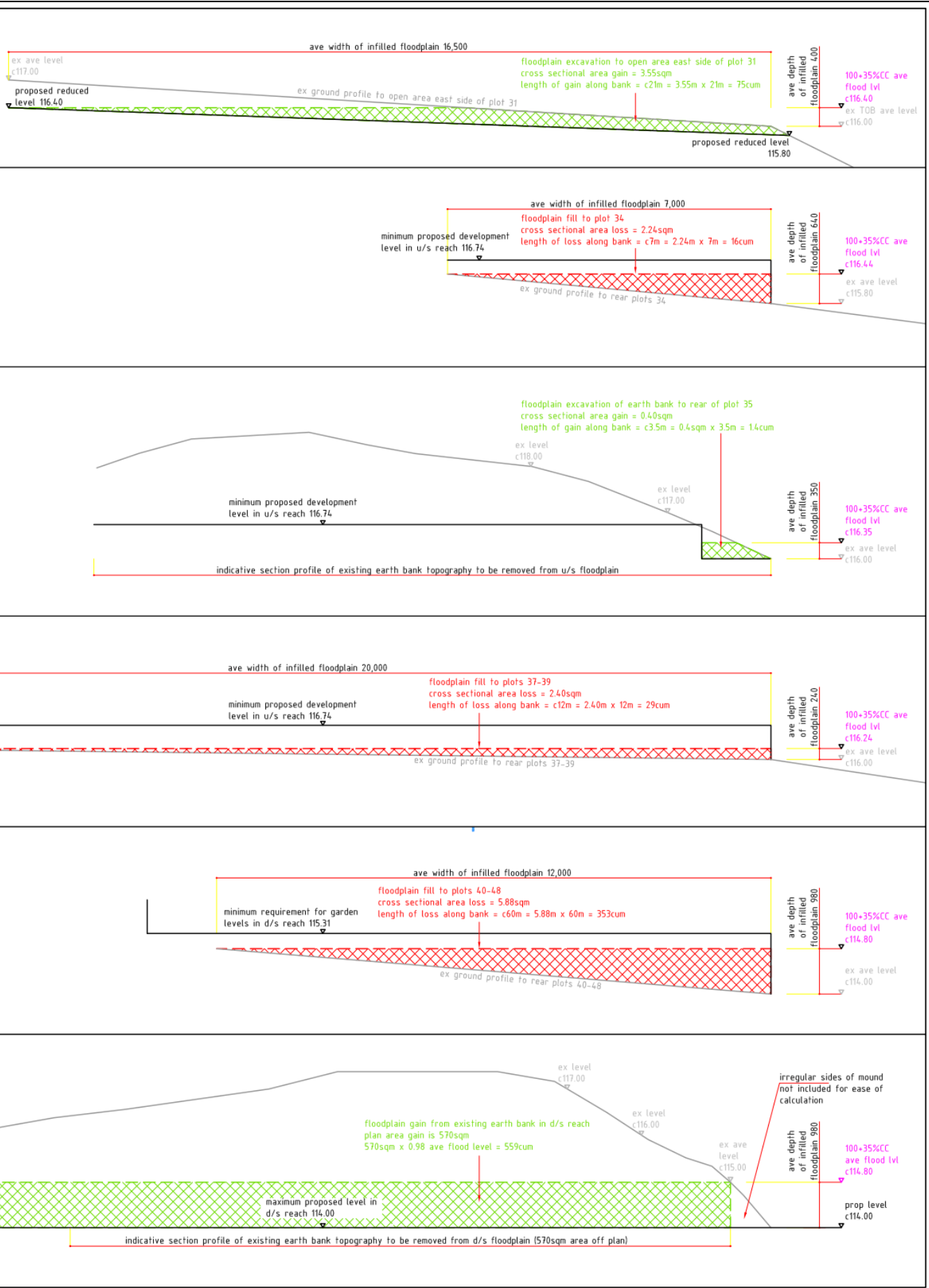
SCALE: 1 : 1250 & 1:100 @ A3

AMENDMENTS/ ISSUES			
REVISION	REASON/ CHANGE	DATE	BY
1	site finish levels updated	nov 2024	ds
0	original for FRA	nov 2024	ds

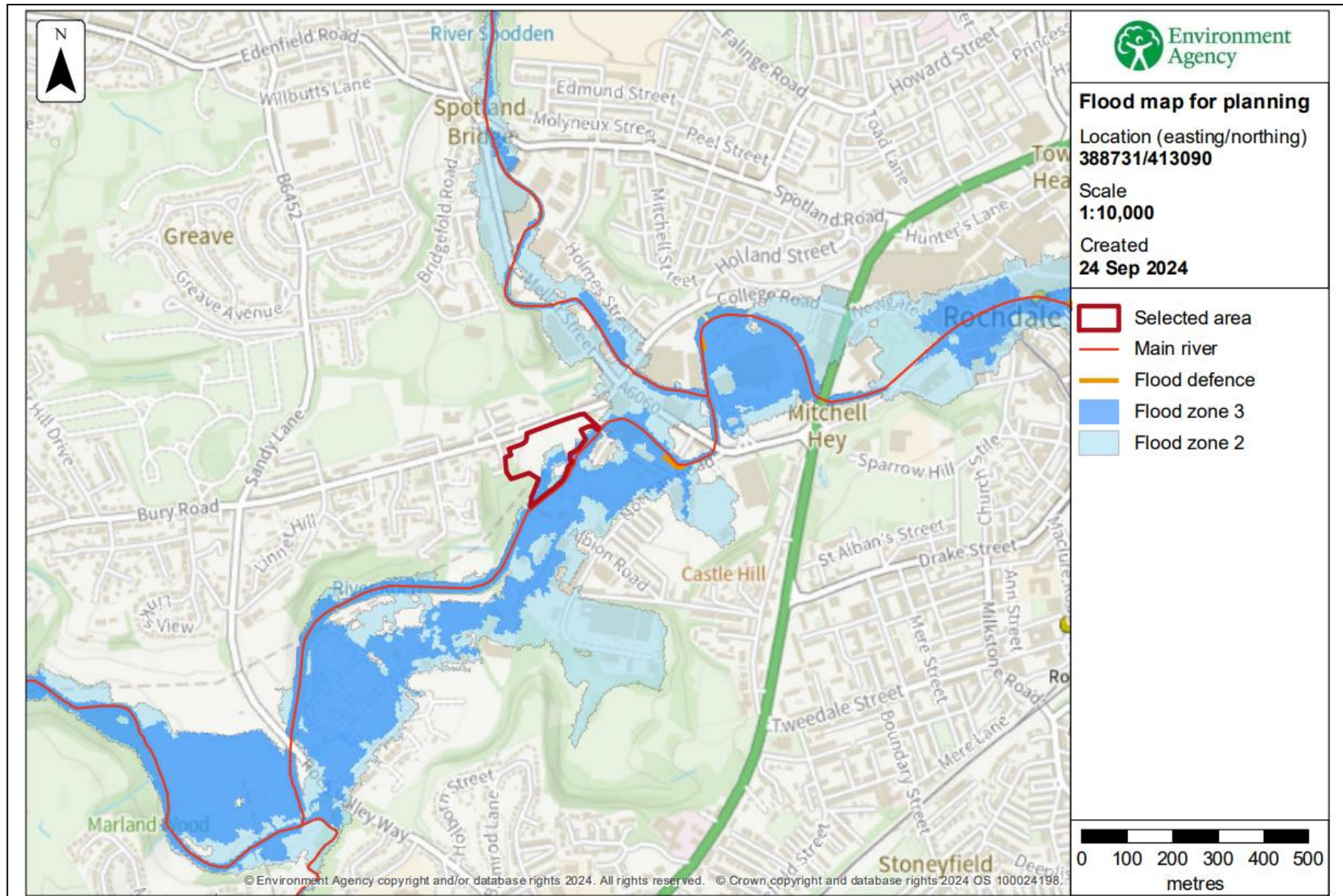
PLANNING ONLY

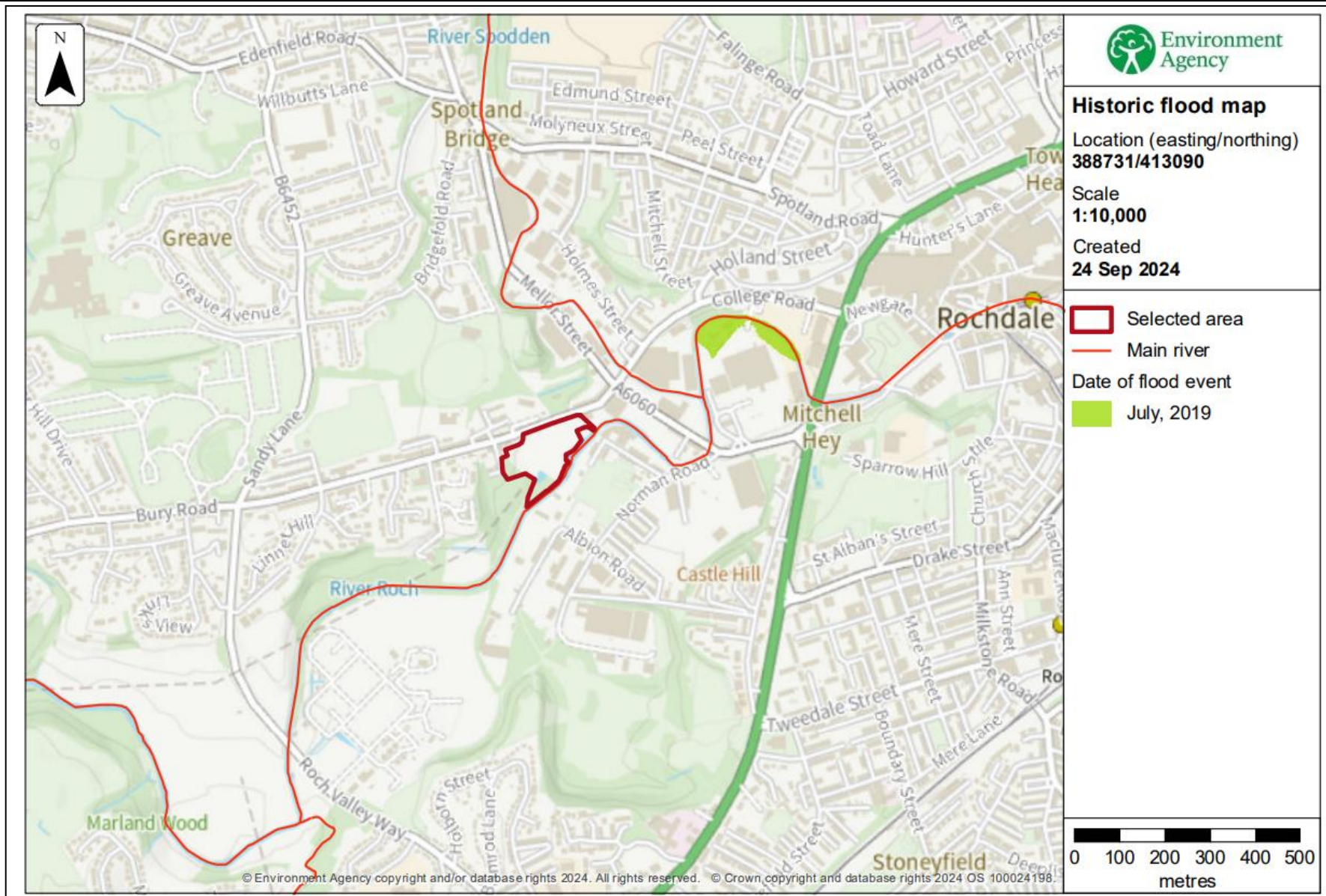
UPSTREAM FLOOD COMPENSATION
SECTIONS (net gain 31.4cum)

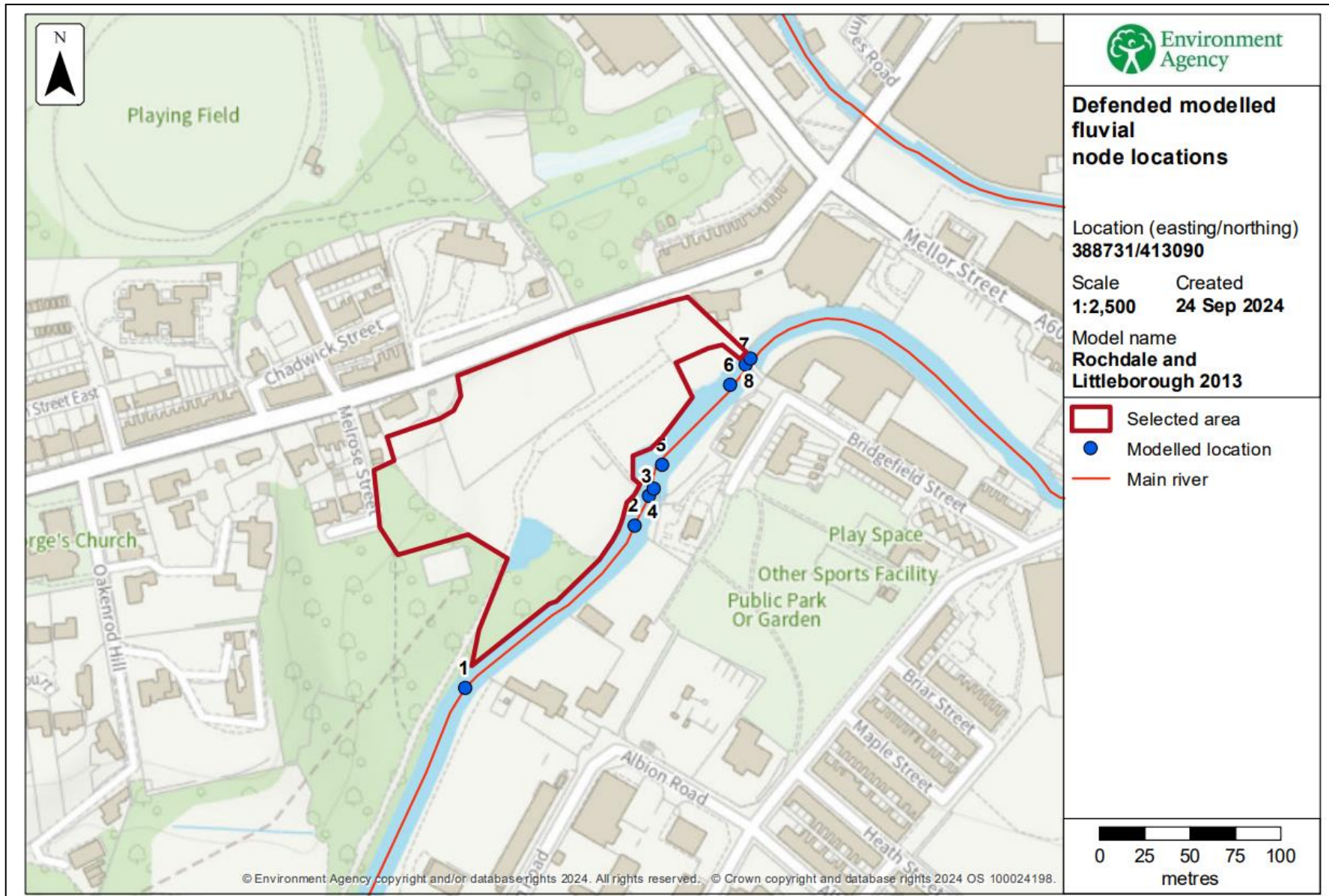
DOWNSTREAM FLOOD COMPENSATION
SECTIONS (net gain 206cum)



4.4 Environment Agency Flood Risk Data Sept 2024.







Defended

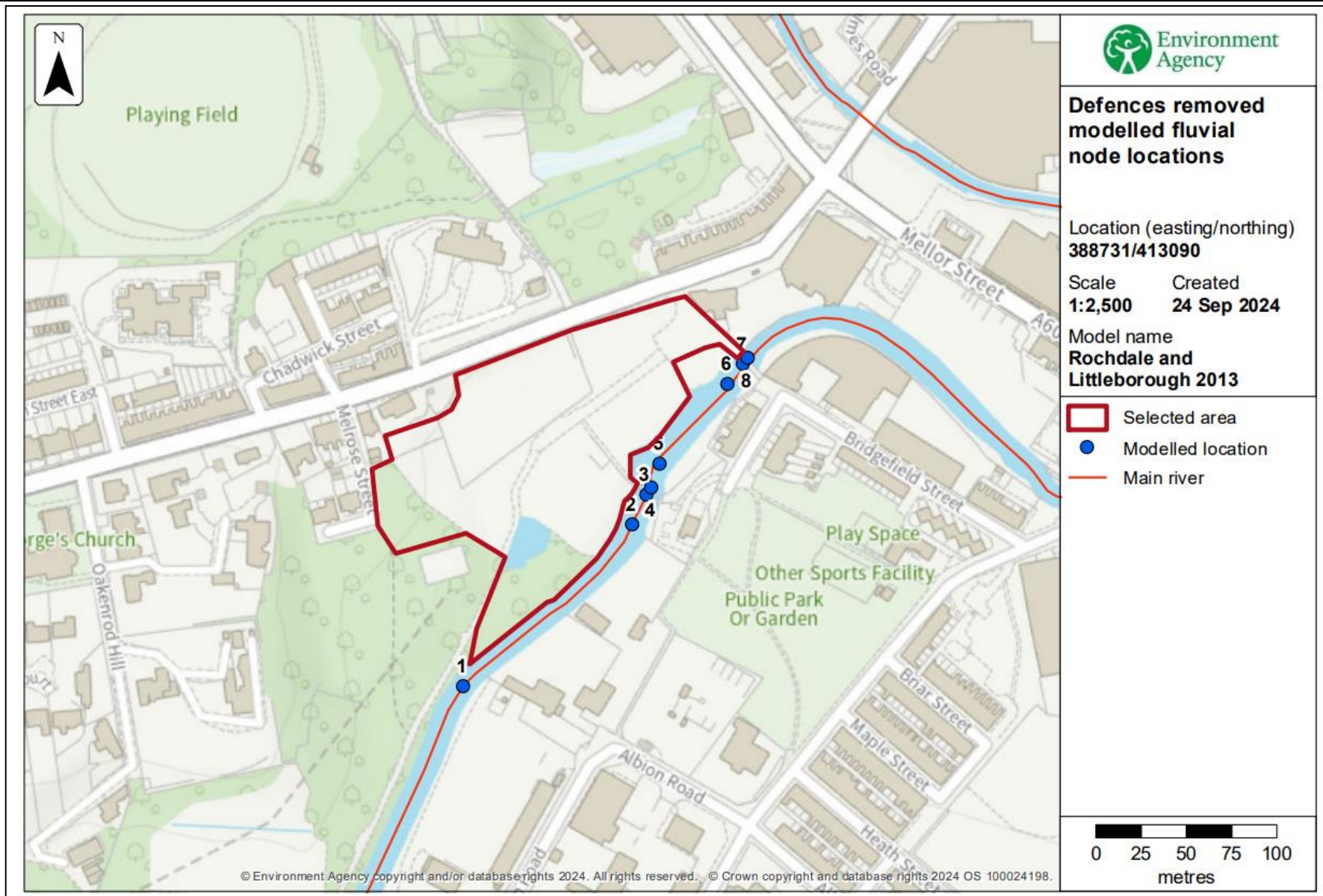
Label	Modelled location ID	Easting	Northing	5% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level
1	1547248	388687	412960	113.45	113.85	113.96	114.17	114.80
2	1548031	388781	413050	113.80	114.23	114.36	114.60	115.30
3	1547500	388789	413067	113.84	114.31	114.44	114.69	115.40
4	1547915	388791	413071	115.88	116.10	116.16	116.25	116.50
5	1547588	388796	413084	116.10	116.32	116.37	116.45	116.61
6	1547993	388834	413128	116.07	116.26	116.31	116.37	116.44
7	1547949	388843	413139	116.08	116.26	116.31	116.36	116.42
8	1547734	388846	413143	116.24	116.53	116.62	116.76	117.24

Data in this table comes from the Rochdale and Littleborough 2013 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.
If no level or flow data is available for a scenario, no table will be shown.

Defended climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+20%)	1.0% AEP (+35%)	1.0% AEP (+70%)	1.0% AEP (+20%)	1.0% AEP (+35%)	1.0% AEP (+70%)
				Level	Level	Level	Flow	Flow	Flow
1	1547248	388687	412960	114.30	114.52	114.81	128.64	140.88	159.31
2	1548031	388781	413050	114.74	114.96	115.31	120.14	131.78	141.47
3	1547500	388789	413067	114.83	115.05	115.38	105.48	115.99	123.24
4	1547915	388791	413071	116.31	116.33	116.43	105.48	115.99	123.24
5	1547588	388796	413084	116.49	116.55	116.60	131.61	146.07	166.56
6	1547993	388834	413128	116.40	116.42	116.44	132.02	147.04	168.35
7	1547949	388843	413139	116.39	116.41	116.42	131.59	146.51	167.68
8	1547734	388846	413143	116.85	117.0	117.22	131.59	146.51	167.68

Data in this table comes from the Rochdale and Littleborough 2013 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.
If no level or flow data is available for a scenario, no table will be shown.



Defences removed

Label	Modelled location ID	Easting	Northing	5% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level
1	1547248	388687	412960	113.44	113.85	113.95	114.21	114.81
2	1548031	388781	413050	113.77	114.21	114.32	114.63	115.31
3	1547500	388789	413067	113.81	114.28	114.40	114.71	115.38
4	1547915	388791	413071	115.84	116.01	116.04	116.13	116.38
5	1547588	388796	413084	116.05	116.23	116.26	116.35	116.55
6	1547993	388834	413128	116.02	116.18	116.21	116.28	116.43
7	1547949	388843	413139	116.04	116.19	116.22	116.29	116.42
8	1547734	388846	413143	116.18	116.40	116.44	116.58	116.98

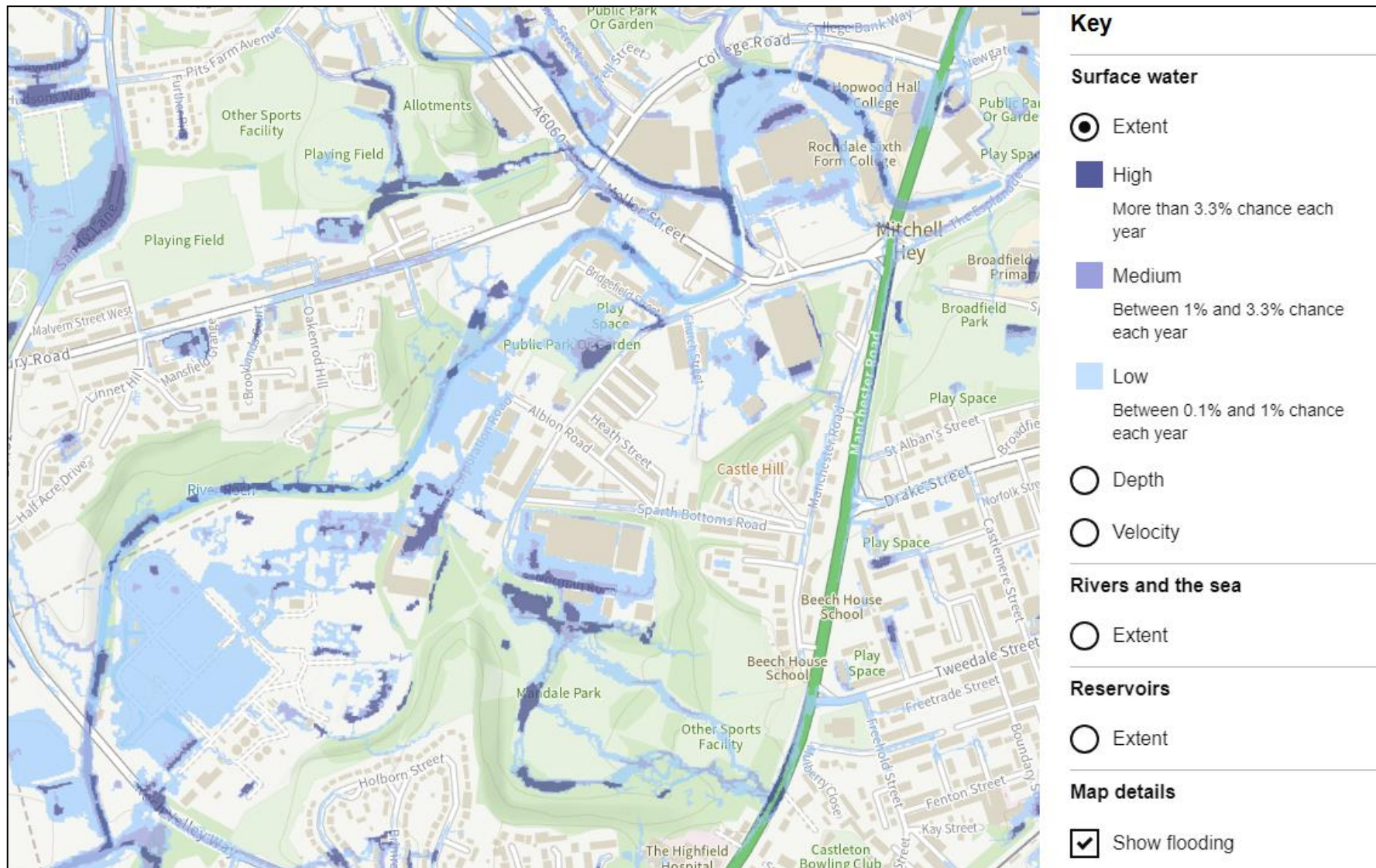
Data in this table comes from the Rochdale and Littleborough 2013 model.
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.
 Any blank cells show where a particular scenario has not been modelled for this location.
 If no level or flow data is available for a scenario, no table will be shown.

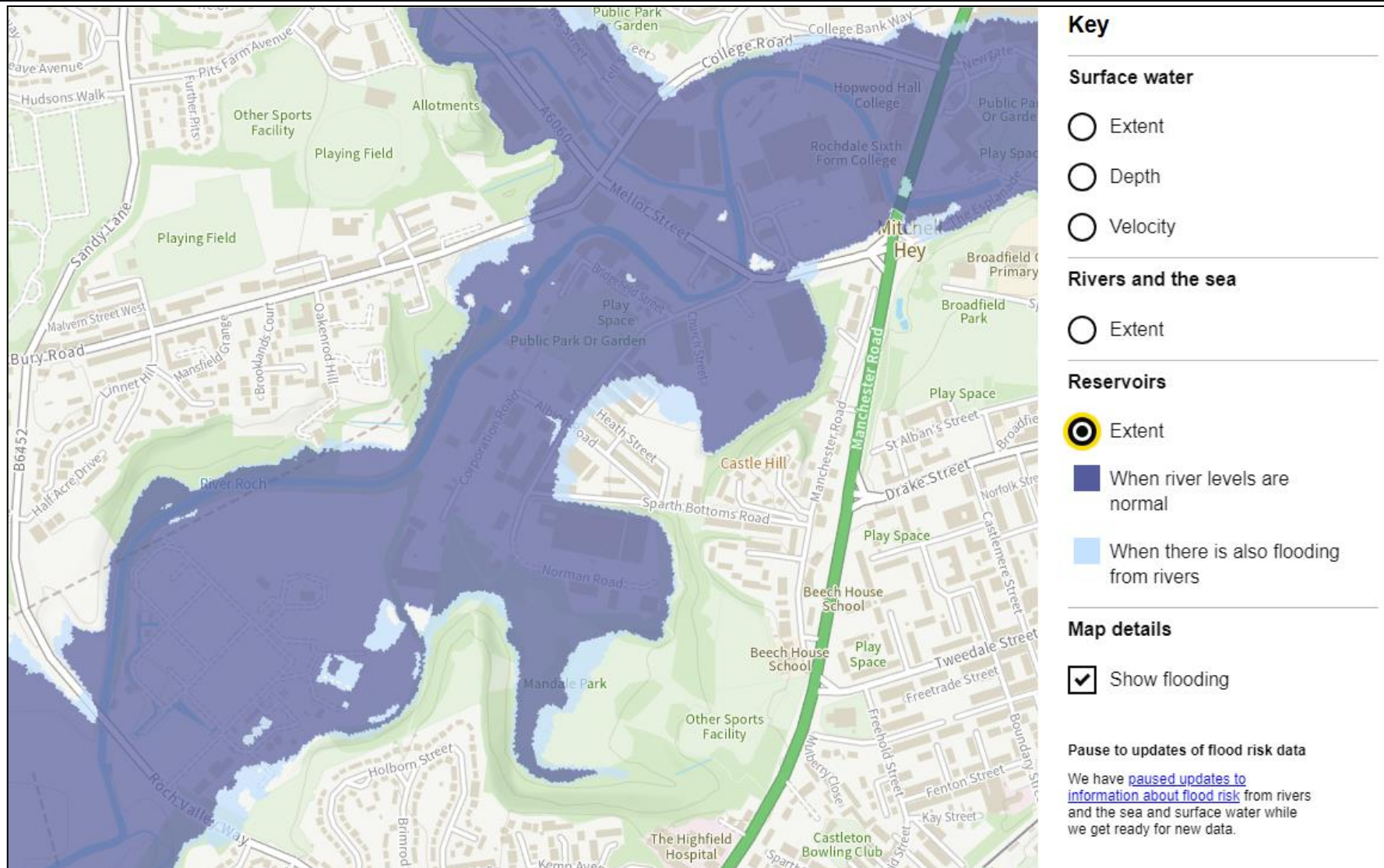
Defences removed climate change

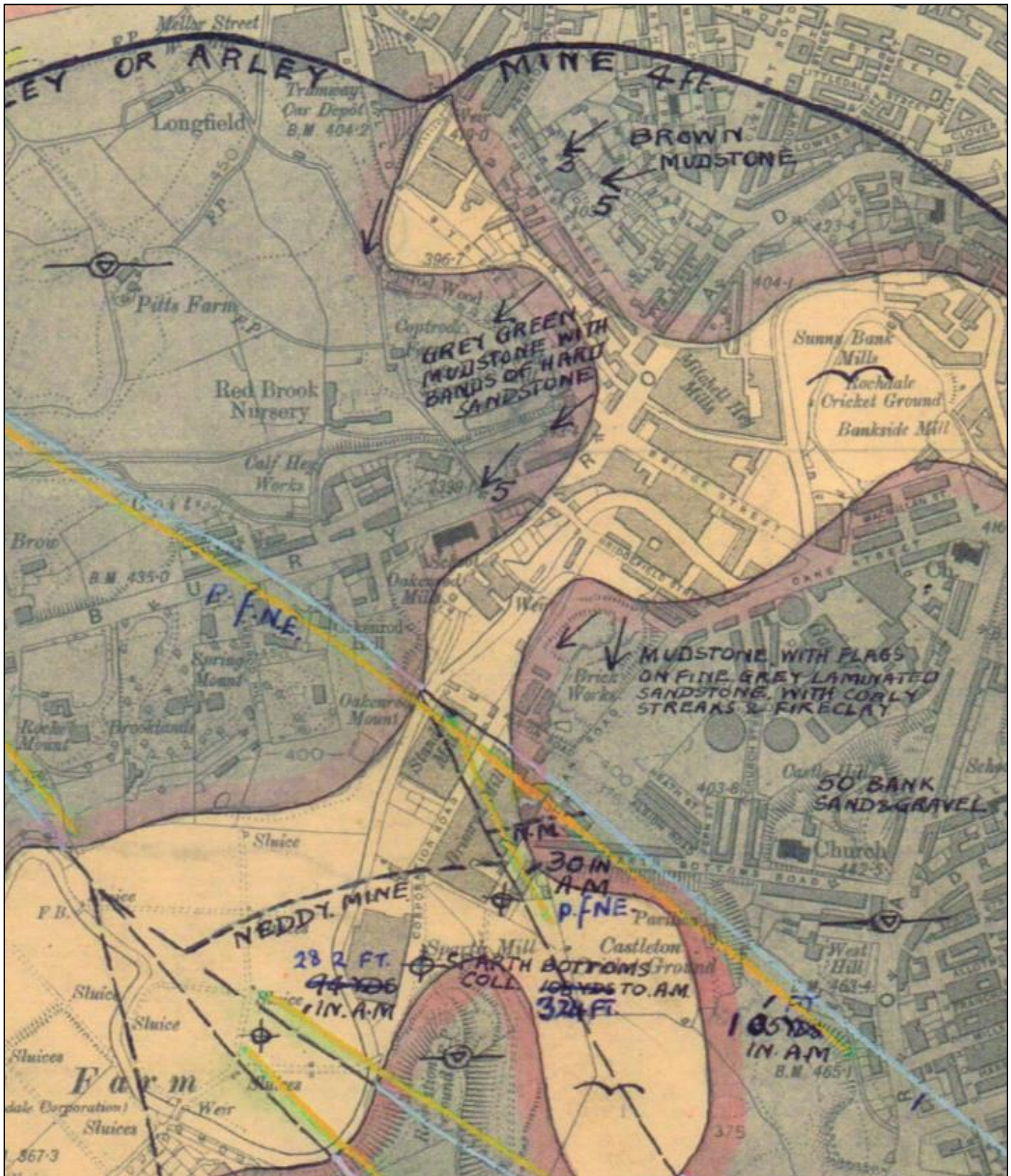
Label	Modelled location ID	Easting	Northing	1.0% AEP (+20%)	1.0% AEP (+35%)	1.0% AEP (+70%)	1.0% AEP (+20%)	1.0% AEP (+35%)	1.0% AEP (+70%)
				Level	Level	Level	Flow	Flow	Flow
1	1547248	388687	412960	114.36	114.50	114.71	127.86	133.66	146.35
2	1548031	388781	413050	114.80	114.94	115.17	112.13	115.90	122.50
3	1547500	388789	413067	114.87	115.01	115.24	97.54	100.73	106.72
4	1547915	388791	413071	116.19	116.24	116.33	97.54	100.73	106.72
5	1547588	388796	413084	116.40	116.44	116.50	113.38	120.28	135.19
6	1547993	388834	413128	116.32	116.36	116.40	113.58	120.55	135.71
7	1547949	388843	413139	116.33	116.36	116.40	113.38	120.31	135.30
8	1547734	388846	413143	116.66	116.73	116.88	113.38	120.31	135.30

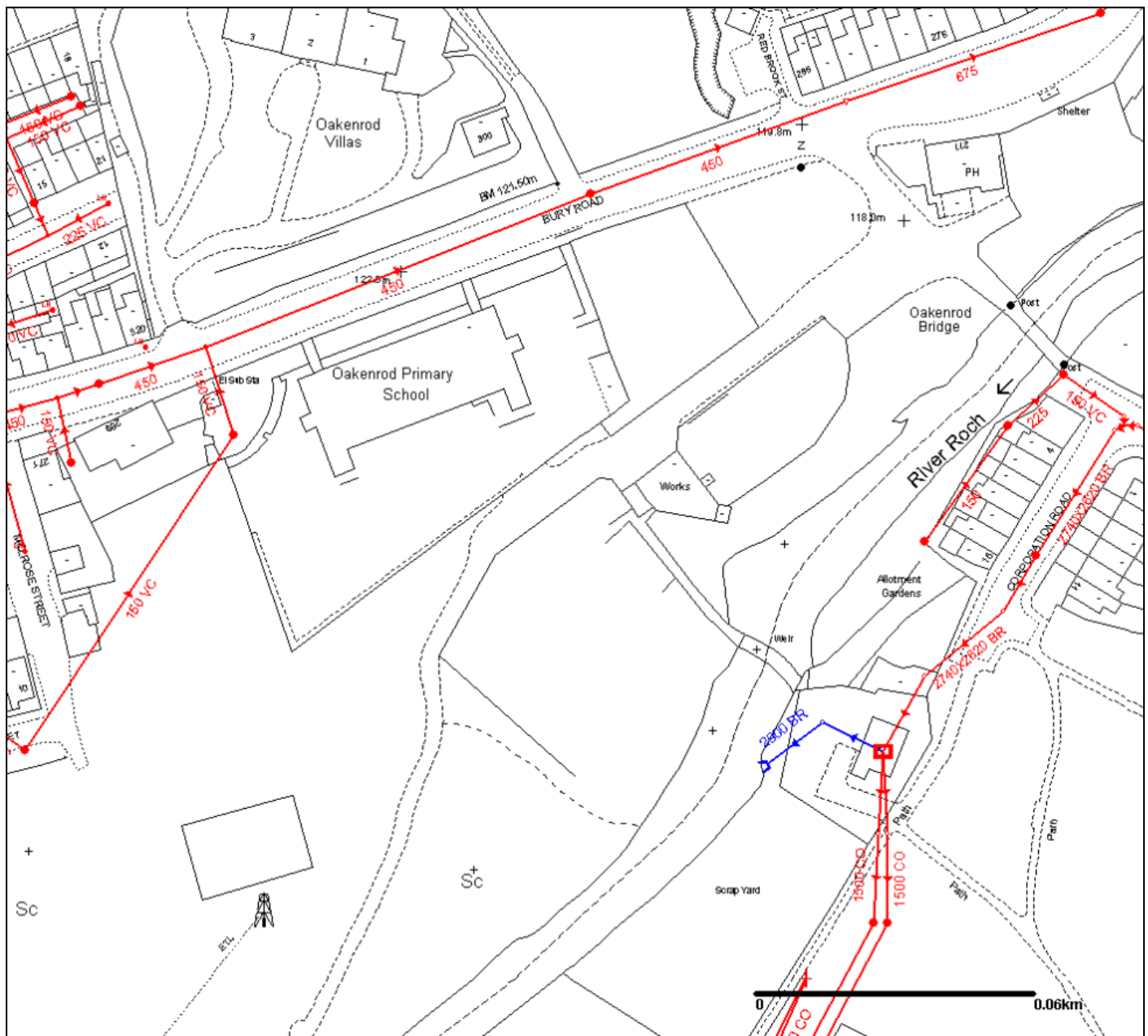
Data in this table comes from the Rochdale and Littleborough 2013 model.
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.
 Any blank cells show where a particular scenario has not been modelled for this location.
 If no level or flow data is available for a scenario, no table will be shown.

4.5 Environment Agency Surface Water Flood Maps.







4.7 United Utilities Sewer Plans.

4.8 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)

4.9 NPPF Planning Practice Guidance Table 2.**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.