

FLOOD RISK ASSESSMENT

**PROPOSED RESIDENTIAL DEVELOPMENT
CALLIARDS MILL
SMITHY BRIDGE ROAD
LITTLEBOROUGH
ROCHDALE
OL15 8HP**

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Doc Ref: rep-tjba-hallmark-oakenrod-CMRA-260224.docx

Revision	Date	Reason
0	Jul 2025	Original to support planning application.

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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 land to the rear of Calliards Mill.

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 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'.

1.3 Plans.

1.3.1 Location plan.

See Location Plan in Appendix showing the area features.

The site is within the Smithy Bridge area of Littleborough, close to the River Roch, off Smithy Bridge Road. It is part of external areas to what remains of Calliards Mill (off site to the south east).

The River Roch is approximately 10m south. It flows NE-SW, flowing over a weir in the vicinity and approximately located halfway along the south boundary.

1.3.2 Site plan.

The site is accessed off Stubley Mill Road from Smithy Bridge Road.

The historic extent of Calliards Mill was much larger than the present off-site building which remains to the present day. It comprised a larger mill building which encompassed the western half of the Application Site.

Historic mill ponds were formerly situated on the central and eastern parts of the site. The mill and ponds were removed c1980s, and the site remained as external areas to the off-site Calliards Mill which has been used as a residential dwelling.

The proposal is for the construction of 8No residential dwellings, associated gardens, driveways and site access. It is located to the rear of the former mill building, in an area of general vegetation. The red line boundary of the site retains a 10m buffer to the River Roch.

Refer to Proposed Plan in appendix.

1.4 Data & Surveys.

1.4.1 Existing and proposed topography.

A topographic survey has been undertaken recently c2025, noting features of the Site, levels, and contours.

The survey recorded the following levels in maOD:

Northwest corner adjacent Stubley Mill Road: 141.29.

Northeast corner adjacent Stubley Mill Road: 137.08.

West corner adjacent the extant offsite Calliards Mill: 137.25.

Southeast corner of red line boundary: 134.60

South corner of red line boundary: 135.90.

The River Roch bank is between approximately 135m aOD.

The weir central to the south boundary has a cill level of 134.39m aOD, and a toe of 133.00m aOD.

Upstream bed level is nominally 133.50m aOD.

Downstream bed level is nominally 132.30m aOD.

2 Flood Risk Assessment.

2.1 Existing fluvial & surface water system.

Land elevation falls to the south towards the River Roch locally. As much of the local area to the north of the site is developed, man-made drainage systems capture surface water from higher elevation.

From a fluvial perspective, the Roch flows northeast to southwest past the Site. The weir central to the site boundary artificially raises the water level upstream of the weir which affects the site in flood events.

When the river is in flood, the site banks are only marginally exceeded, and flood waters encroach onto the eastern corner which is in flood zones 2 & 3.

2.2 Proposed fluvial & surface water system.

The site proposal shows the red line boundary approximately 10m away from the river banks, retaining a wildlife and greenspace corridor, and ensuring development buildings are generally kept away from the flood risk areas to the north side of the site.

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.

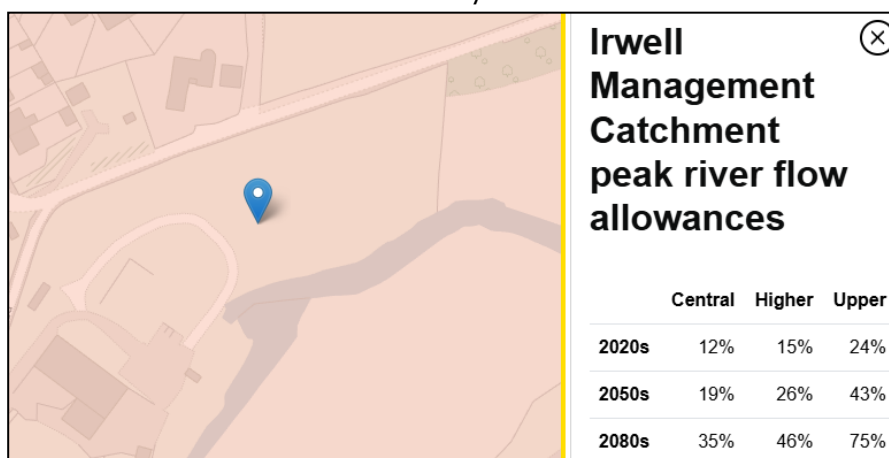
Residential developments are considered to have the longest potential development lifetimes. Commercial developments have shorter lifetimes owing to higher turnover of changes in use types etc, and therefore a higher frequency of associated redesign & updated flood risk assessment.

The proposed development 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.

2.4 Fluvial morphological impacts.

There will be a 10m buffer between the site and the river banks, and thus the site will not impact or change fluvial morphology.

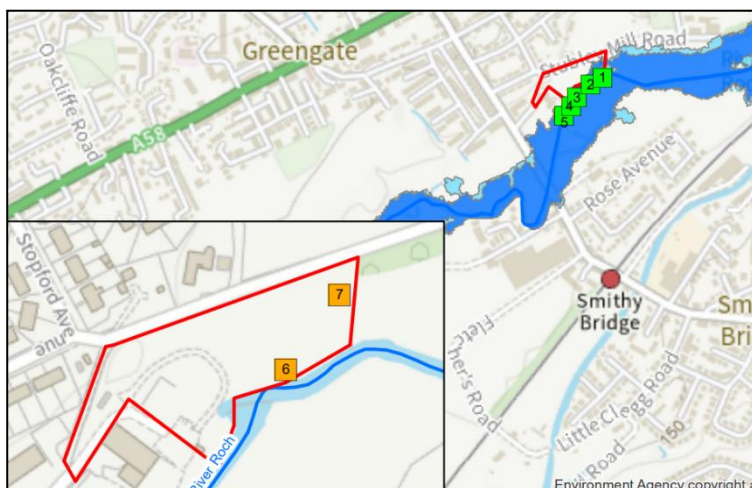
2.5 Potential sources of flooding.

a. Fluvial flooding from main rivers.

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

The data includes modelled flood nodes along the river and within the site, excerpt & description below:

- Nodes 1 & 2 – representative of the flood level upstream of the weir.
- Nodes 3 & 4 – representative of the flood level downstream of the weir.
- Node 5 – downstream of the site & not used.
- Node 6 – 2d spot model level representative of the central southern site boundary.
- Node 7 – 2d spot model level representative of the west side boundary.
- Node 7 – 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.



As the site does not have traditional flood defences, the undefended model has been used:

RIVER ROCH FLOOD MODEL		
Node Location	Undefended	
	100yr	100yr +35%
Node 1	135.44	135.51
Node 2	135.31	135.41
Node 3	135.16	135.33
Node 4	135.16	135.33
Node 6	n/a	135.44
Node 7	n/a	135.51

The worst-case flood level in the vicinity of the site is considered to be 135.51m aOD, which caters for storm events up to and including the 100yr+35%. This level shall be used as the basis for design.

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 3 risk descriptors which correspond to specific return periods as follows:

- High chance >30yr flood event.
- Medium chance between 30-100yr flood event.
- Low chance between 100-1000yr flood event.

- Any areas outside of these are considered to be of very low risk of flooding above a 1000yr flood event.

Depths are also considered ranging from up to 20cm, to approximately 90cm and above.

The surface water flood risk maps show a low chance of flooding to the very east extent/site boundary, with a small area of up to 20cm depth expected.

Considering the above, surface water is a low risk.

Refer to EA surface water flood map in the Appendix.

c. Artificial Watercourse/Canals.

The Rochdale Canal does flow through the local area but does not impact the site.

d. Loss of Floodplain & Flow Routes.

There will be no loss of floodplain due to the development. All proposed dwellings are out of the floodplain at higher level, and a 10m buffer is to be kept between the development and the river.

e. Springs and high groundwater levels.

None noted.

f. Surcharging of local drainage & sewerage systems.

There were issues with storm water overflows regarding the local sewerage network but these are to the southwest of the site. United Utilities have recently put new measure and storage tanks in place.

There is a low impact to the Application Site.

g. Reservoirs.

Reservoir flood maps show the Application Site would be impacted by reservoir flooding should embankment collapse occur, however, this is highly unlikely.

Reservoir flood map in Appendix.

2.6 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.

Considering the 100yr+35% flood level of 135.51m aOD noted in the vicinity of the site, the minimum finished floor level should be 135.81. As the majority of the Application Site is above 136.00m aOD, finished floor levels are expected to be well above this.

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. The flood risk assessment has shown that there is flood risk in the area local to the site and surroundings, and although the site buildings and general infrastructure will be above the flood risk, an EP will show effective escape routes if required.

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 which is 135.51m aOD.

2.7.4 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 route to the site is above the flood zone, but some of Smithy Bridge Road is affected locally.

2.7.5 Section 5. Flood Warnings and Associated Actions

The Site is not within a flood warning area.

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

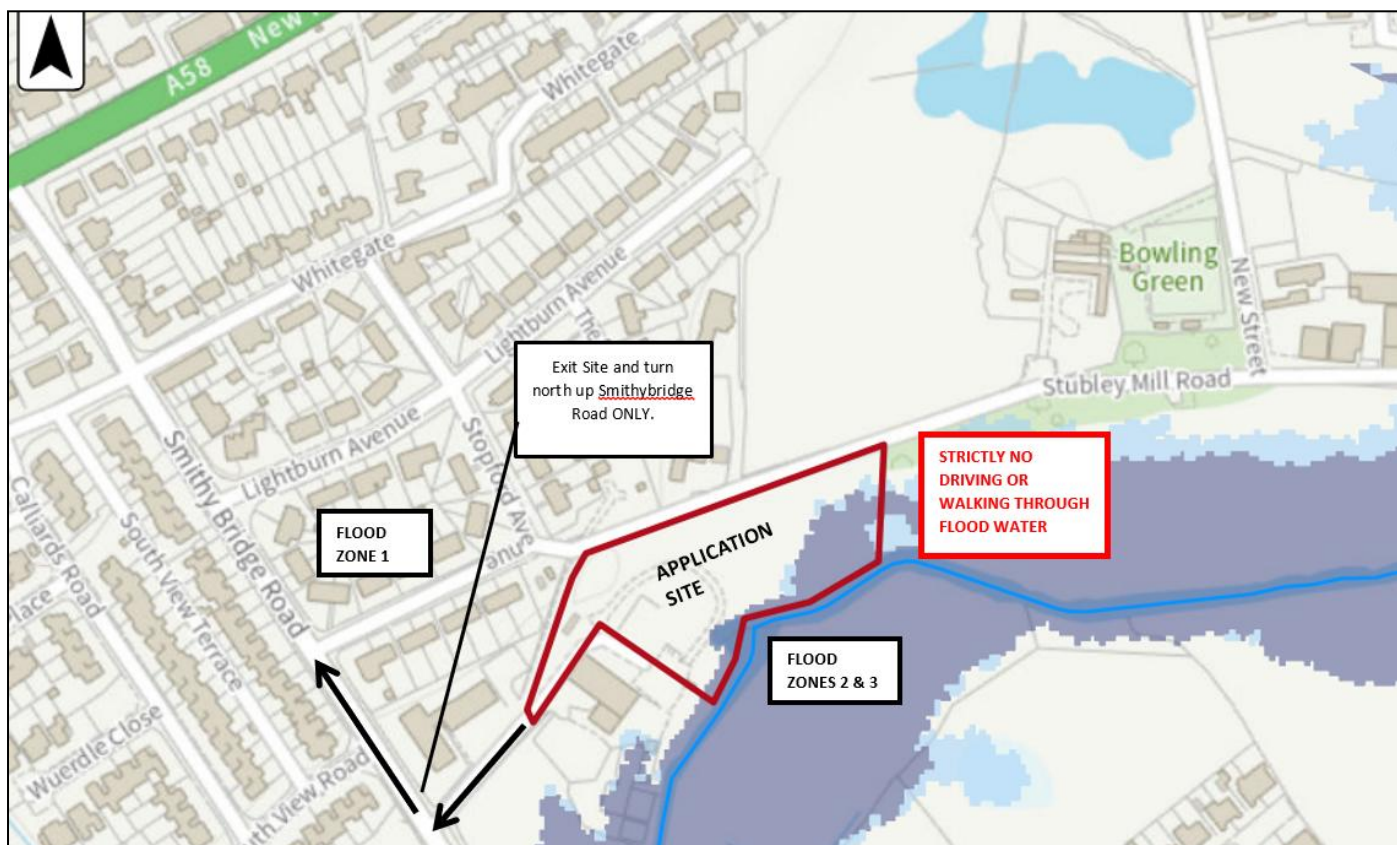
In flood risk areas, safe access and egress from new developments should be in accordance with the Adept EP guidance, and that of the referenced background documentation Defra/EA R&D Technical Report FD2320/TR2; and should be in the following order of preference:

- 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 proposed developed part of the site is in flood zone 1 with some of the immediate area surrounding the river bank, and to the east of the site being in flood zone 2 & 3.

Because the proposal will remain safe from flooding, evacuation from the Site is proposed as a dry route for pedestrians and vehicles. If flooding does occur, it is important to note the low point of Smithy Bridge Road could be within flood zone 3 and may become submerged.

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.

2.7.7 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.

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 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.

2.7.10 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.

2.8 FRA Conclusion & Residual risks.

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

Minimum finished floor levels have been proposed but much of the site is above the flood level.

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

Fluvial flow paths and floodplain volume are not affected due to development proposals.

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.

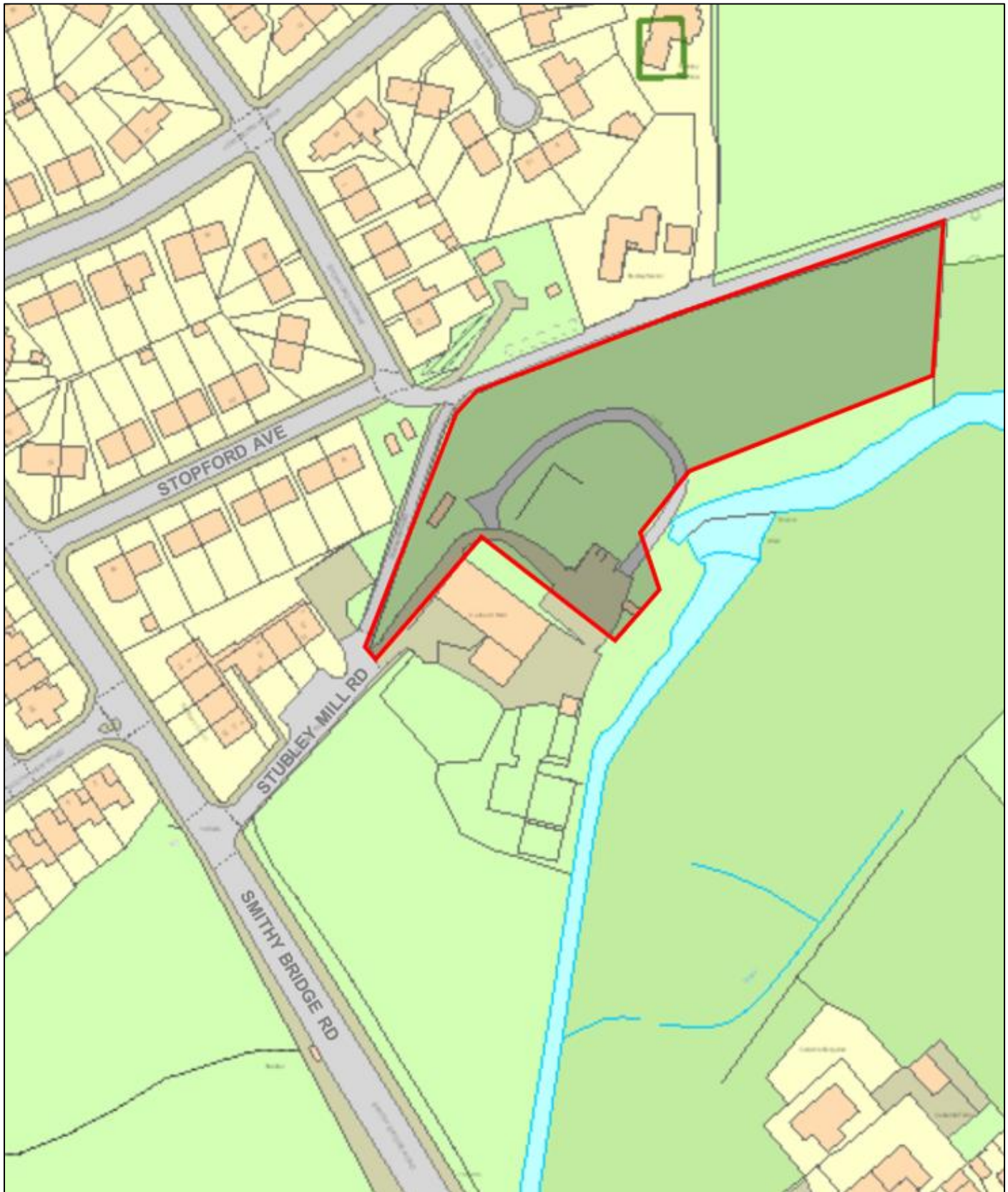
Authorised...  .

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

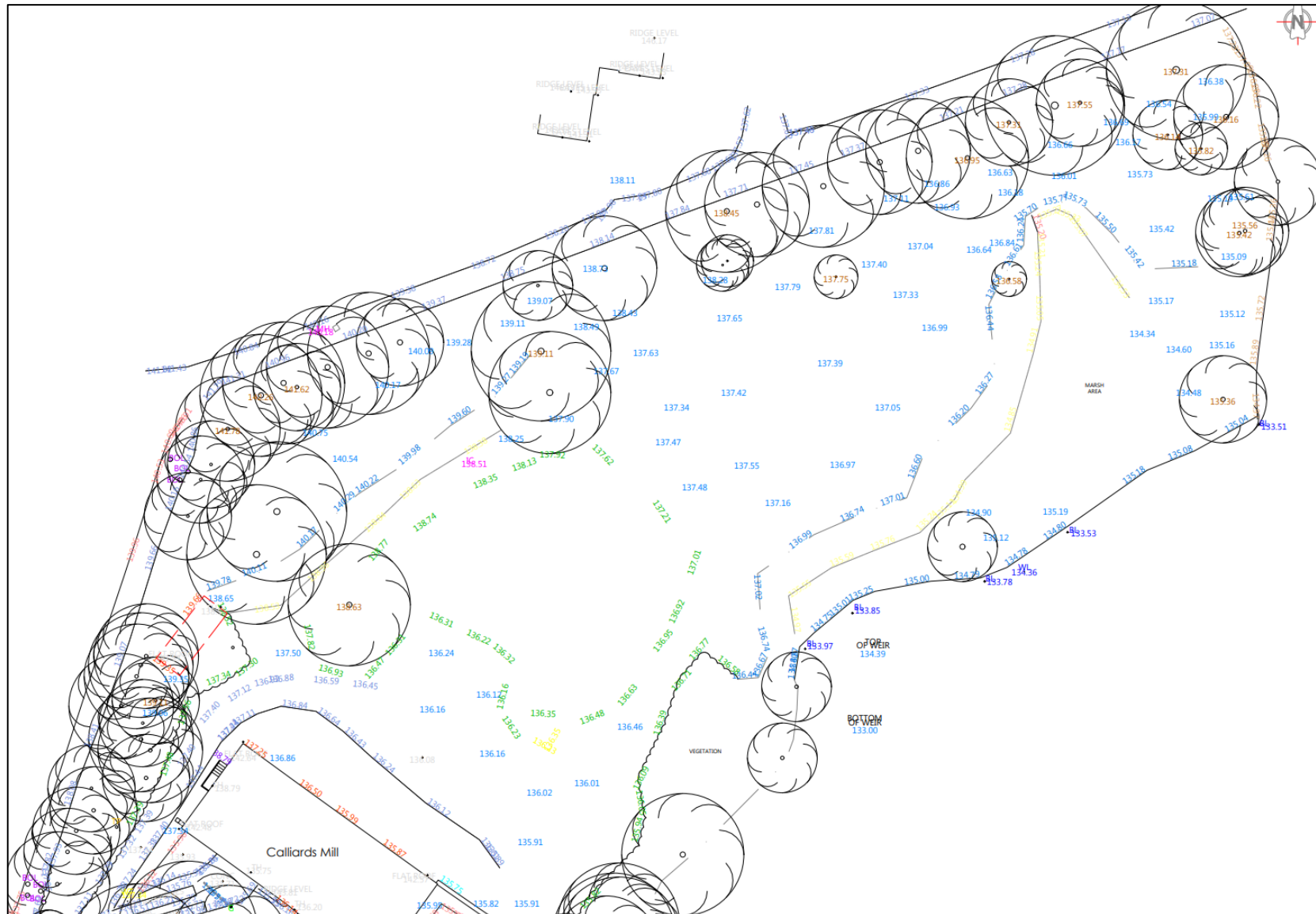
T J Booth Associates.

3 Appendix.

3.1 Location Plan.



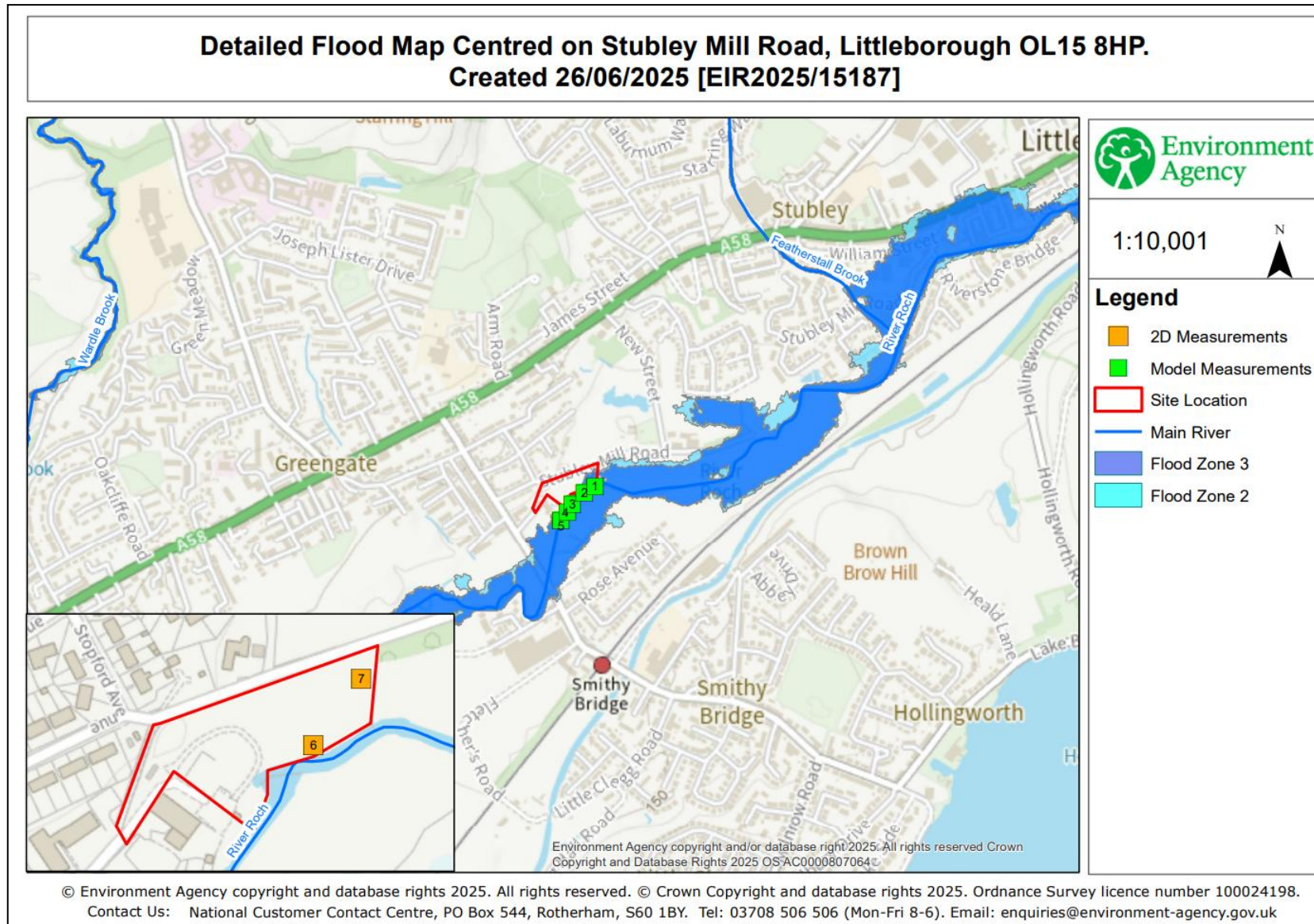
3.2 Existing Plan.



3.3 Proposed Plan.



3.4 Environment Agency Flood Risk Data Jun 2025.



26/06/25

					Undefended						
Map Reference	Model Node Reference	Easting	Northing	Data	5 % AEP (1 in 20 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)
1	ea013_0180_ROCH05_7780	392579	415598	Modelled Water Level (m aodN)	135.37	135.43	135.44	135.51	135.61	135.46	135.53
				Modelled Flow (cumecs)	18.87	21.82	22.36	27.21	31.25	23.80	28.22
2	ea013_0180_ROCH05_7755	392555	415585	Modelled Water Level (m aodN)	135.25	135.30	135.31	135.41	135.50	135.34	135.43
				Modelled Flow (cumecs)	18.93	21.39	21.72	24.94	28.48	22.66	25.70
3	ea013_0180_ROCH05_7705	392529	415560	Modelled Water Level (m aodN)	134.93	135.14	135.16	135.33	135.44	135.22	135.36
				Modelled Flow (cumecs)	18.92	20.21	20.32	20.63	23.11	20.36	21.06
4	ea013_0180_ROCH05_7680	392518	415541	Modelled Water Level (m aodN)	134.94	135.14	135.16	135.33	135.43	135.22	135.36
				Modelled Flow (cumecs)	18.41	20.28	20.49	21.39	23.94	20.76	21.87
5	ea013_0180_ROCH05_7655	392503	415523	Modelled Water Level (m aodN)	134.90	135.11	135.14	135.29	135.40	135.19	135.32
				Modelled Flow (cumecs)	17.92	18.13	18.16	18.27	20.35	18.22	18.54

					Undefended		Defended	
Map Reference	Model Node Reference	Easting	Northing	Data	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow
6	2D Levels	392551	415596	Height Grid (mAOD)	135.44	135.53	135.46	135.60
				Depths Grid (Meters)	0.18	0.27	0.20	0.33
7		392577	415633	Height Grid (mAOD)	135.51	135.62	135.57	135.69
				Depths Grid (Meters)	0.15	0.25	0.21	0.33

Model data taken from Rochdale and Littleborough 2013

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes: *Climate Change Scenario - 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

2p = 2.5 hours storm duration

5p = 5 hours storm duration

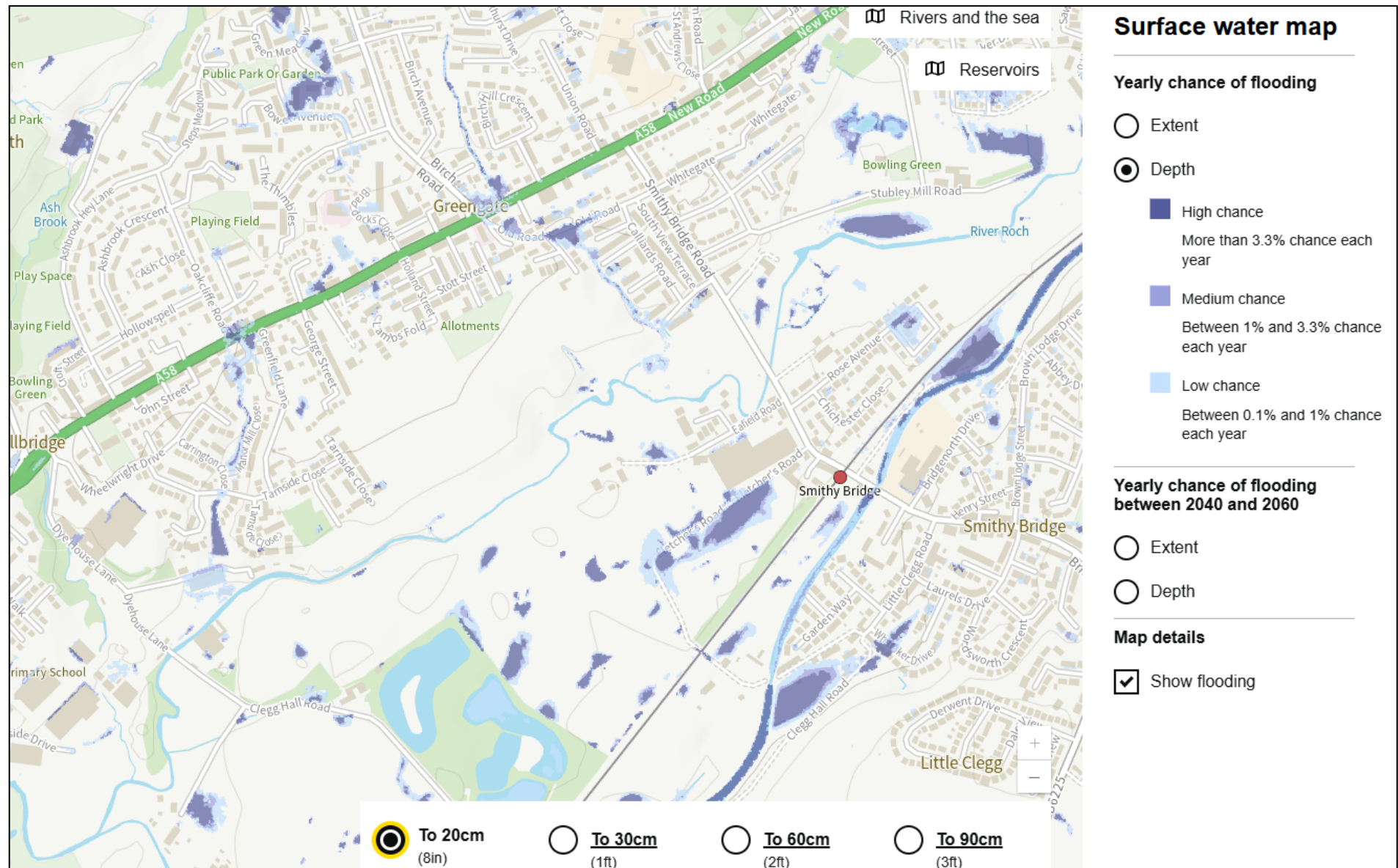
13p = 13.5 hours storm duration

2.5 hours - to represent the critical flood levels for the small catchments such as those storm durations estimated for the tributary watercourses, e.g. those near to Littleborough.

5 hours - to represent the larger Roch catchment and the critical flood levels for the centre of Rochdale.

13 hours - to represent the length of observed rainfall for the 2008 flood event.

3.5 Environment Agency Surface Water Flood Map.



3.6 Environment Agency Reservoir Flood Map.



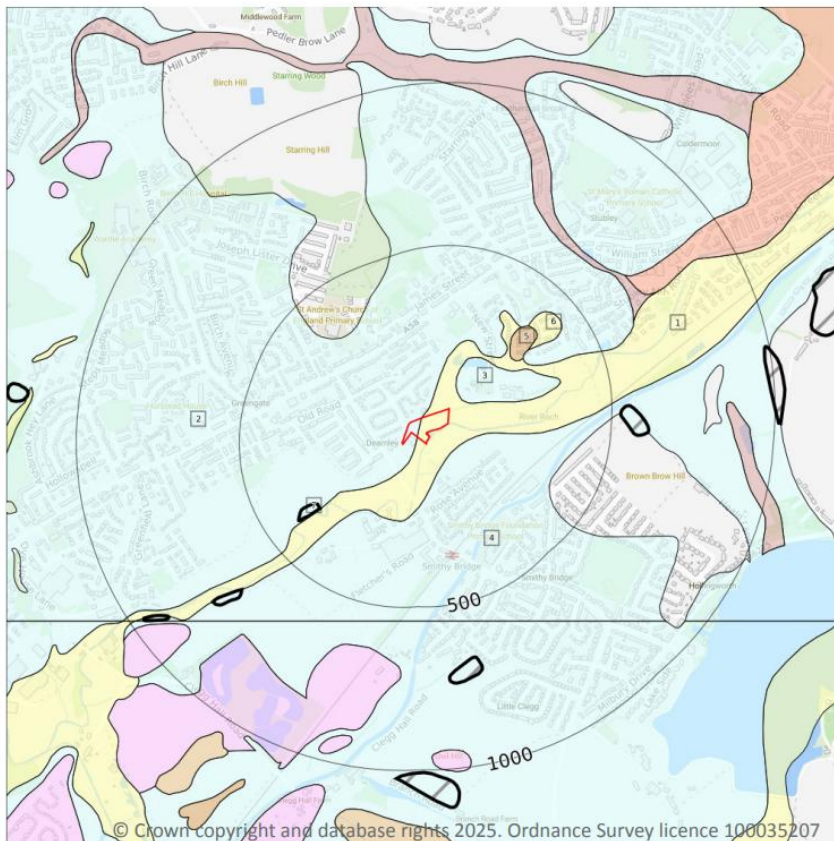
3.7 BGS Superficial Geology Map.



CALLIARDS MILL, SMITHY BRIDGE
ROAD, LITTLEBOROUGH, ROCHDALE,
OL15 8HP

Ref: GS-YA1-URU-NLC-19G
Your ref: groundsure env & CA reps-hallmark-
calliards-070725
Grid ref: 392519 415599

Geology 1:10,000 scale - Superficial



— Site Outline
Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

6

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 101 >](#)

ID	Location	LEX Code	Description	Rock description
1	On site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
2	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	48m NE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton