

MFG LITTLEBOROUGH FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY



CLIENT:	Motor Fuel Group
ARCHITECT:	Jennings Design
SITE ADDRESS:	Little Borough Service Station, Church Street, Littleborough, OL15 8JA
REFERENCE (REV):	25309-DCE-XX-XX-T-C-001-P02 Flood Risk Assessment
DATE:	18/08/2025

AUTHOR:	Adam Wood	DATE:	18/08/2025
CHECKER:	Seb Reid	DATE:	18/08/2025



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REVISION	DATE	AUTHOR	CHECKER	COMMENTS
P01	18/08/2025	A Wood	S Reid	Preliminary Issue
P02	01/06/2026	S Reid	S Reid	Amended to suit EA Comments

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1 INTRODUCTION

- 1.1 Dudleys Consulting Engineers have prepared this site-specific Flood Risk Assessment for Motor Fuel Group for the MFG Littleborough site which is an existing petrol filling station site on Church Street, Littleborough.
- 1.2 The assessment investigates the potential flood risk impacts of the proposed development in accordance with the National Planning Policy Framework (NPPF) and supporting Planning Practice Guidance. This FRA is considered proportionate to the degree of flood risk and to the scale, nature, and location of the development.
- 1.3 This Flood Risk Assessment has been carried out generally in accordance with:
 - National Planning Policy Framework (December 2024)
 - Planning Practice Guidance: Flood Risk and Coastal Change (August 2022)
 - BS 8533:2017 “Assessing and managing flood risk in development, Code of Practice”
 - CIRIA Report C753” The SUDS Manual”
 - Environment Agency Report SC030219 Rainfall Runoff Management for Developments
 - Building Regulations Part H
 - Rochdale and Littleborough Flood Risk Management Scheme



2 CONSULTATION AND EVIDENCE

- 2.1 The site is located on Church Street, Littleborough . Rochdale Metropolitan Borough Council is the Planning Authority and Lead Local Flood Authority.
- 2.2 United Utilities is the Water Authority. They will be consulted during the planning process.
- 2.3 The Environment Agency data for site has been included within Appendix C for reference purposes.
- 2.4 SuDS design guidance requires sustainable drainage systems to be provided for the management of the surface water runoff for redeveloped areas.
- 2.5 Planning policy requires that the site be developed in accordance with NPPF requirements in terms of flood risk management, climate change allowances and reduced runoff from the development.



3 EXISTING SITE DESCRIPTION

- 3.1 The site is fully impermeable and is classified as brownfield land. It is located on Church Street, Littleborough, with access from Church Street and Charles Street. To the north of the site is the existing petrol filling station, which consists of 4 pumps with a fuel canopy. Adjoining to this, at the northwest of the site is the existing Londis store. To the south of the site is the PowerFoam jet wash building.
- 3.2 The site is bound by Church Street to the north, Charles Street to the west, and Box Street to the east.
- 3.3 The approximate grid reference of the site is E393449, N416236.
- 3.4 The levels across the site range from approximately 140.7mAOD to the east of the site to 140.3mAOD to the west of the site. This indicates that the site is relatively flat, with no significant variation in elevation between the western and eastern boundaries.
- 3.5 The nearest watercourse is the River Roch, approximately 80m to the south of the site. Beyond this lies the Rochdale Canal, approximately 248m away from the site. Hollingworth Lake is further south beyond this.
- 3.6 Existing surface and foul water drainage were located on site, as per the utility survey carried out and appended to this report. The foul drainage network runs from the rear of the petrol filling station and across the site before discharging into the public sewer on Box Street. Oil interceptors are located on site, and will be used to remove any spillages from the brown surface water system. This system also discharges to the sewer in Box Street. It is expected that the brown surface water system from the forecourt and tanker stand feed into these oil interceptors, but the location and extent of this is to be determined. Surface water drainage on site could not be located, but is also expected to drain into the combined sewer in Box Street.
- 3.7 The boundary of the site is as shown in Figure 1 below. A topographical survey of the existing site is in Appendix A.

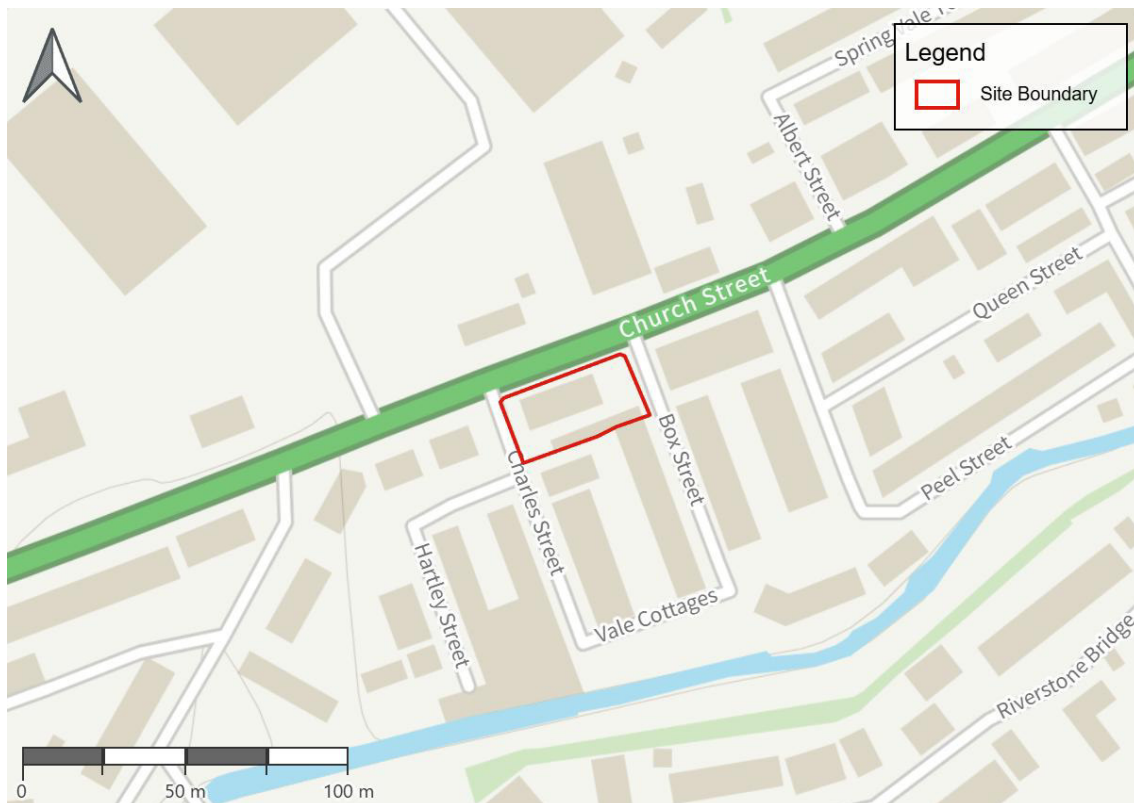


Figure 1 - Site Location Plan with Boundary



4 DEVELOPMENT PROPOSALS

- 4.1 The proposed layout for the scheme is shown in Figure 2 below and in Appendix B.
- 4.2 The proposed changes are intended to reconfigure the site layout while maintaining key existing structures and access points. The proposed development involves the retention of the northern section of the site, which includes the existing Londis store and petrol filling station. The current jetwash building is to be demolished, with a bakery pod proposed in its place to the south of the site. Staff parking bays are planned for the south-east area adjacent to the Charles Street access, while customer parking, including a designated disabled bay, will be located to the south-west. Although the existing building is to be removed, the boundary wall will be retained.
- 4.3 There is not expected to be any change in impermeable area on the proposed site, as the existing building will now be replaced by the bakery and proposed parking areas. There continues to be no permeable areas within the site. Similarly, there are to be no changes to the existing levels on site. The flood route or risk to any neighbouring properties also will not change.
- 4.4 Discharge rate on the proposed site is proposed to remain the same as the pre-development site. Existing surface water connections are to be utilised, and the impermeable areas are to remain the same. Therefore the discharge rate on site shall be the same as existing.

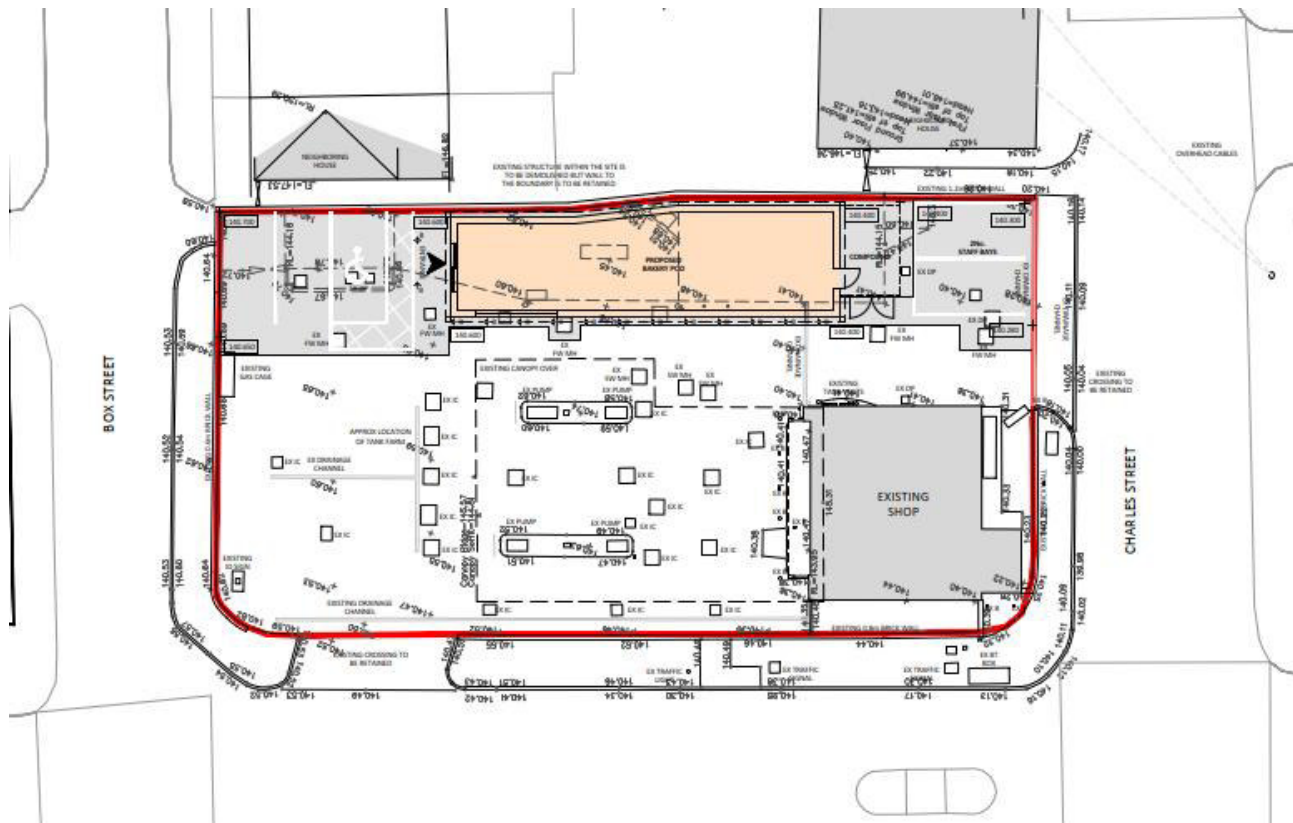


Figure 2 – Proposed Site Plan with Boundary



5 FLOOD ZONE COMPATIBILITY

- 5.1 The Flood Risk Vulnerability Classification has been determined in accordance with Planning Practice Guidance, Flood Risk and Coastal Change. The Flood Risk Vulnerability Classification is “Less Vulnerable”. This classification is in accordance with National Planning Policy Framework, Annex 3.
- 5.2 The site is located within Flood Zone 3a as indicated on the Environment Agency Flood Zone map in Appendix C and in Figure 3 below.

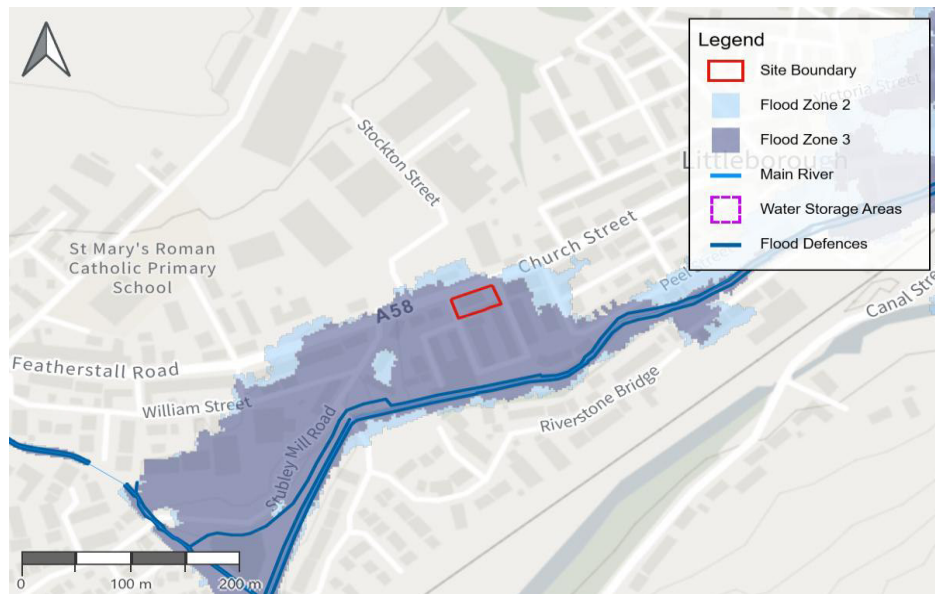


Figure 3 - Flood Map for Planning (EA)

- 5.3 The Flood Zone Compatibility has been reviewed in accordance with Planning Practice Guidance, Flood Risk and Coastal Change, paragraph 078 Table 2. This compatibility is summarised in Table 3 below.

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 †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Table 1 - Flood Risk Vulnerability Classification (NPPF)

- 5.4 In Table 3 above, ✓ is permitted and X is not permitted.
- 5.5 As the proposed site lies within Flood Zone 3a, and is classed as “Less Vulnerable”, it is considered suitable for the proposed developments. The Sequential and Exception tests are not required for this development.



6 FLUVIAL FLOODING (FLOODING FROM RIVERS AND THE SEA)

- 6.1 Fluvial flooding occurs when high flows exceed the capacity of the river channel and spill out onto the floodplain, usually after a period of prolonged or heavy rainfall.
- 6.2 The Environment Agency Flood Map (rivers and sea) below shows that the site is in Flood Zone 3a, and hence has a low risk of fluvial flooding.
- 6.3 Figure 4 below shows an output from the Environment Agency Fluvial Flood Risk mapping.

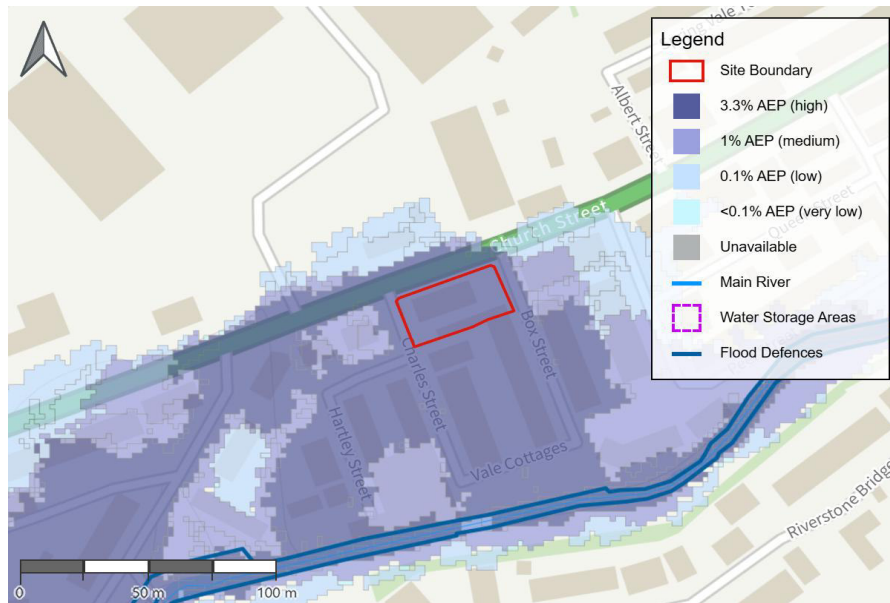


Figure 4 - Fluvial Flooding (EA)

- 6.4 Historical flood mapping received from the Environment Agency shows that although the development site lies within Flood Zone 3a, there are no records of any flooding on or around the site since before October 1980 (the extent of the mapping).

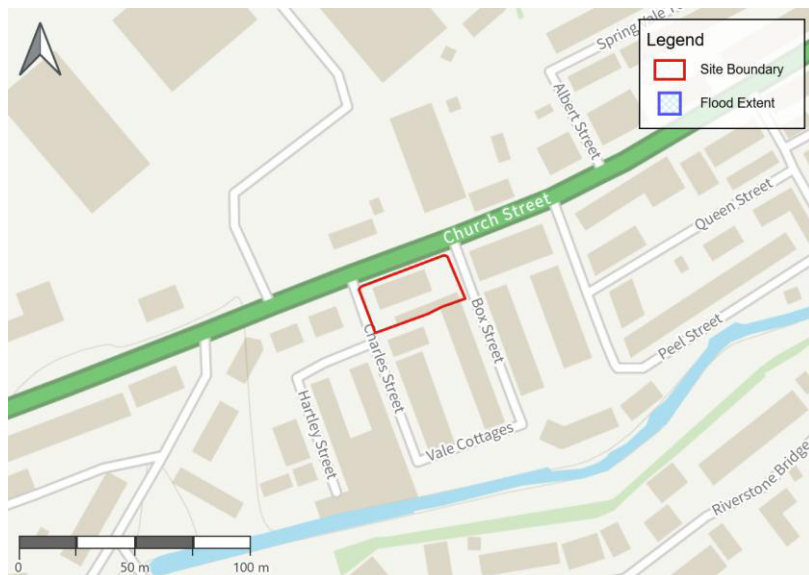


Figure 5 - Historical Flooding (EA)



- 6.5 The topographical information shown on the site layout show that the existing levels on the existing site vary from 140.7mAOD to the east of the site by the brick retaining wall to 140.3mAOD at the western accesses. As the proposed works within the site are for the replacement of an existing building, the proposed levels are to tie into the existing levels and there is no change in levels on the site. The existing retaining boundary walls are being retained and flow paths across the site are unchanged.
- 6.6 Information has been provided by the EA for the river modelling within the vicinity of the site. The closest node to the site is node 1674445 from the Rochdale and Littleborough 2013 model. The modelled flood heights from the model are shown in the below table. The proposed finished floor level is 140.6mAOD, to match the existing building level and the design flood height is the 1% AEP Event, 141.56mAOD Defended, 141.23mAOD Undefended. The flood level is almost 1m above the floor level. The proposed new building is at risk of flooding from fluvial sources as often as the 1:20 storm event.
- 6.7 On this basis, the risk of flooding from rivers and the sea is very high and the site needs to be designed in a resilient way to be compatible with potential flooding.

Flood Event	Climate Change	Flood Height (mAOD) - Defended	Flood Height (mAOD) – Defences Removed
5% AEP	0%	141.11	141.07
3.33% AEP	0%	141.15	141.11
1.33% AEP	0%	141.53	141.21
1% AEP	0%	141.56	141.23
1% AEP +CC	20%	141.63	141.31
1% AEP +CC	35%	141.71	141.41
1% AEP +CC	70%	141.76	141.59
0.5% AEP	0%	141.62	141.29
0.1% AEP	0%	141.72	141.42
Depth Height Modelling			
1% AEP +CC	35%	141.01	141.03
1% AEP +CC	70%	141.21	141.15

Table 2 - Flooding Heights (EA)

- 6.8 The NPPF states that the scheme should be designed for a 1:100 Design Flood and building floor levels should be raised above this flood level where possible. In sites where there is flood risk, a sequential approach should be undertaken to mitigate and reduce flood risk where possible. As the development is a “minor development”, under 250m² of building footprint, a specific sequential and exception test has not been undertaken, but a consideration for reducing flood risk has been made where possible.
- 6.9 The existing site has an existing jet wash unit which covers the full length of the southern boundary of the site. This is an open masonry-clad steel framed structure for the majority of its length but has several fully enclosed walled areas to the west which house plant. It has a masonry retaining wall along the southern boundary which retains the site by approximately 400mm and is 1.2m to 1.8m tall.
- 6.10 The proposal is to remove this building, except for the boundary wall, and to replace the enclosed buildings with car parking spaces at a level lower than existing due to the removal of kerbs and floor slabs. The car wash building is to be replaced with a clad steel-frame “bakery pod” with a finished floor level of 140.6mAOD. It will have a step at the rear to the storage compound. Levels are at the same level as the existing car wash structure.



The building is lightweight and it is expected that in the event of flooding, water would freely enter and exit the building. The building will be designed to manage flooding without the risk of collapse.

- 6.11 With the existing levels being retained, the existing boundary wall being retained, it is not expected that there will be any appreciable difference in levels from existing. The main difference is the form of the existing buildings however the porosity by flood water is likely to be increased as the total area of buildings is reduced from existing.
- 6.12 On this basis, it is not expected that a flood compensation analysis will be required as there is not a change from the existing flood volume or flood routing.



7 PLUVIAL FLOODING (FLOODING FROM SURFACE WATER)

- 7.1 The Environment Agency Flood Map showing Risk of Flooding from Surface Water is shown below. This type of flooding can be difficult to predict, much more so than river or sea flooding as it is hard to forecast exactly where or how much rain will fall in any storm.
- 7.2 Figure 5 below shows that the site is at a Low risk of surface water flooding.
- 7.3 A small amount of medium-high risk of flooding is shown on the outskirts of the site, down Charles Street. However, flooding would be contained within the highway should a flood event occur, as Charles Street sits lower than the development site, and joins with Hartley Street as a flood exceedance route from neighbouring developments to the River Roch.
- 7.4 Surface water overland flows are currently managed within the existing site, with water falling away from existing buildings and off to Church Street and Charles Street. The change of the jetwash building to the bakery will not change any flow paths or existing levels, so any surface water flooding will follow the same routes on site, meaning that the development will not change the location, direction or rate of any flooding that may occur.
- 7.5 On this basis, the risk of flooding from surface water is considered Low.

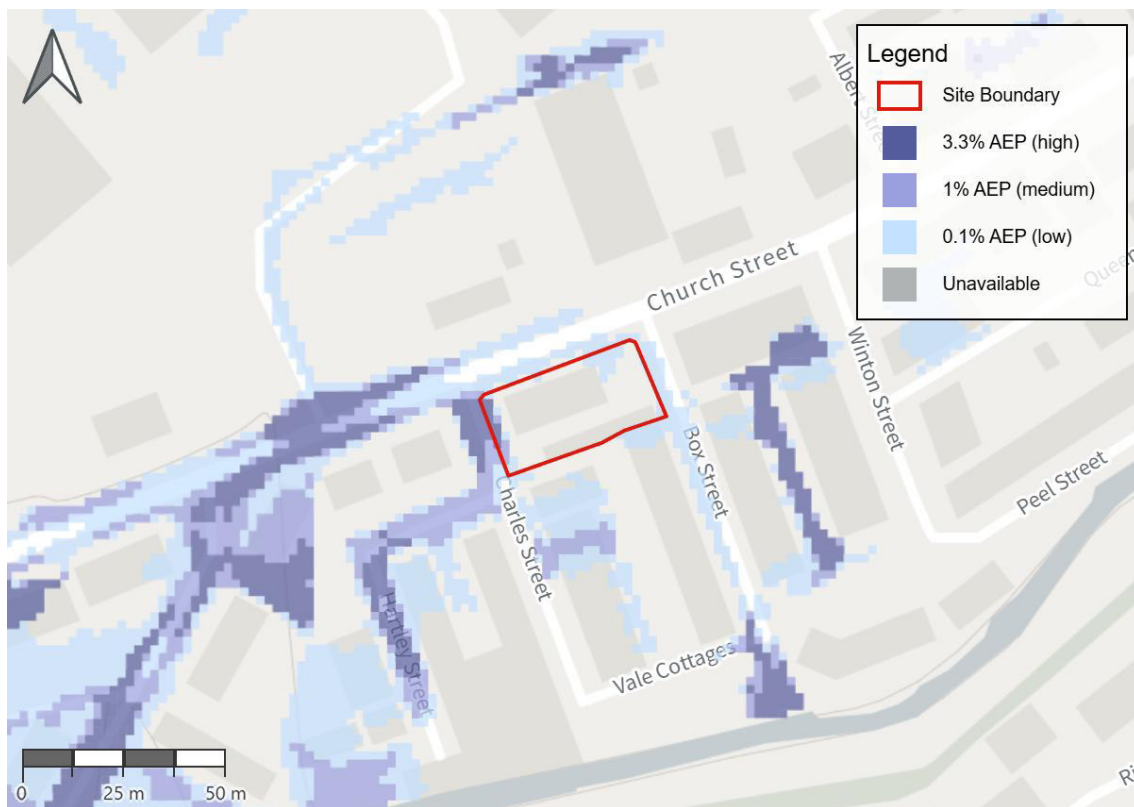


Figure 6 – Pluvial Flooding (EA)



8 GROUNDWATER FLOODING

- 8.1 Groundwater flooding occurs when water levels in the ground rise above surface levels this is more likely to occur in low lying areas.
- 8.2 The geology maps available from the British Geological Survey show that the solid bedrock geology underlying the site is of the Pennine Lower Coal Measures Formation (mudstone, siltstone and sandstone). The superficial deposits are Alluvial Fan Deposits (sand and gravel).
- 8.3 Cranfield University Soilsmap map shows that the site consists of slowly permeable seasonally wet acid, loamy and clayey soils, with impeded drainage.
- 8.4 Whilst borehole or trial pits will be required to confidently state the water level of any groundwater that may be present on the site, the proposed developments do not require any changes to the site besides the new pop-up building, so the risk of groundwater flooding will not change from that of the existing site.
- 8.5 On this basis it is assumed that the groundwater flooding risk is likely to be low.

9 EXISTING INFRASTRUCTURE FLOODING

- 9.1 Flooding caused by the existing infrastructure network occurs when the network is over capacity or there is a blockage or failure in the existing system.
- 9.2 The foul drainage network on the existing site runs from the rear of the petrol filling station and across the site before discharging into the public sewer on Box Street. Surface water drainage could not be located during the utility survey provided, but is expected to connect into the public sewer as with the foul water run. Should a water pipe block and flood, water would follow the natural topography of the site, and flow away from the development site and all neighbouring properties.
- 9.3 On this basis it is assumed that the existing infrastructure flooding risk is likely to be low.



10 RESERVOIR AND OTHER ARTIFICIAL SOURCES OF FLOODING

- 10.1 Reservoir flooding is unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925 and even with recent events, measures are in place to monitor and protect reservoirs in event of an unlikely catastrophic event. All large reservoirs must be inspected and supervised by reservoir panel engineers.
- 10.2 As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency ensure that reservoirs are inspected regularly, and essential safety work is carried out. These laws are being currently reviewed and it is expected that the requirements for monitoring and maintenance will become more stringent.
- 10.3 However, in the unlikely event that a reservoir dam failed, a large volume of water would escape at once and flooding could happen with little or no warning.
- 10.4 The Environment Agency Map showing Risk of Flooding from Reservoirs is shown below.
- 10.5 The site and surrounding area has a high chance of flooding due to reservoir and artificial sources of flooding on both dry and wet days.
- 10.6 On this basis, the risk of flooding from reservoirs and other artificial sources is high.

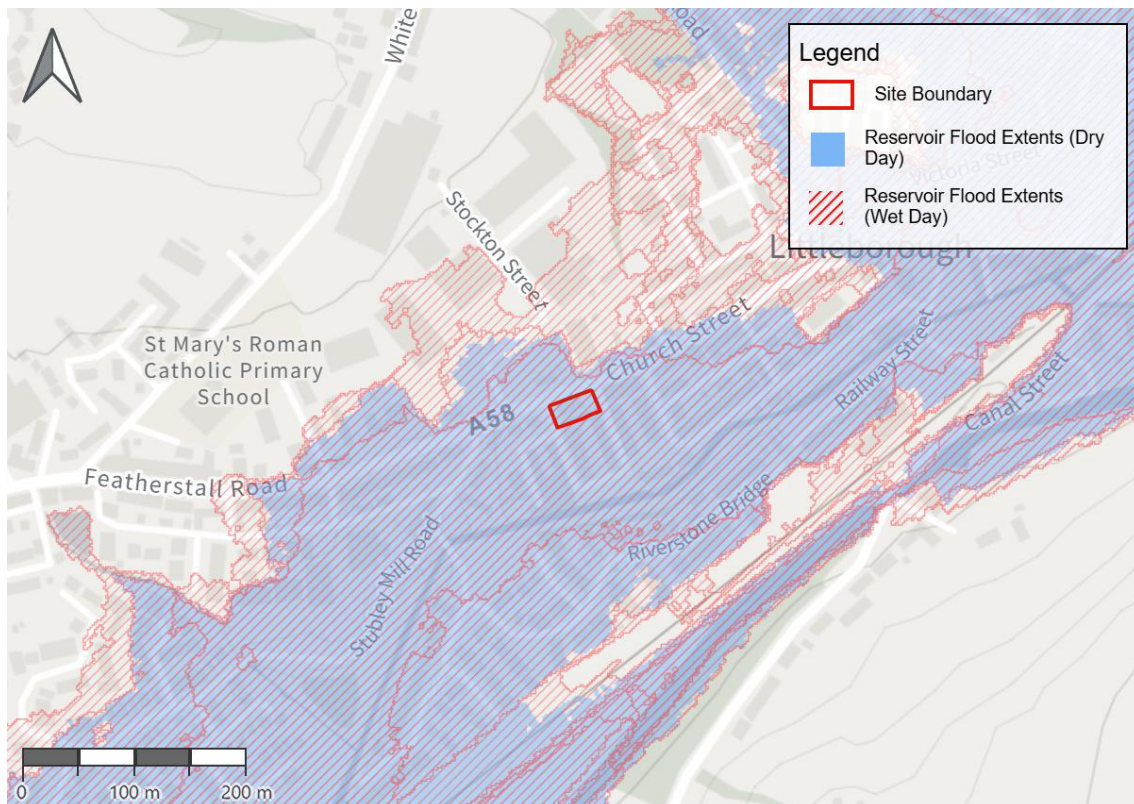


Figure 7 – Reservoir Flooding (EA)



11 DRAINAGE ASSESSMENT

FOUL WATER DRAINAGE STRATEGY

- 11.1 Existing foul water drainage on the site runs from the rear of the petrol filling station and across the site before discharging into the public sewer on Box Street.
- 11.2 As the existing jetwash building will have foul connections of its own, it is proposed that these existing connections serve the new bakery building, provided they are proven to be working and in fine condition.
- 11.3 Therefore, no additional drainage works will be required on site, and the foul water network will remain as existing, connecting into the public sewer in Box Street.

SURFACE WATER DRAINAGE STRATEGY

- 11.4 Existing surface water drainage on the site is assumed to discharge into the public sewer in Box Street.
- 11.5 During the utility survey undertaken on site and appended to this report, oil interceptors were located and confirmed to be discharging into the public sewer in Box Street. This is assumed to be the discharge point of the surface water system, although the location and condition of the network upstream of the oil interceptors is currently unknown, and will need to be confirmed.
- 11.6 As the existing jetwash building already has surface water connections of its own, it is proposed that these existing connections will also serve the new bakery building, provided they are located and confirmed to be in working condition.
- 11.7 Therefore, no additional drainage works will be required on site, with the proposed developments utilising the existing. As there is no change to impermeable areas on site, intake into the surface water system and the discharge rate from the site will remain as existing.



12 FLOOD RISK MITIGATION MEASURES

- 12.1 The proposed development is in Flood Zone 3a and the site is at risk of flooding from fluvial and reservoir sources.
- 12.2 Any areas of the property on flood routes or in Flood Zone 3 should be designed so that flood waters are not displaced and that movement of flood waters are not disturbed or changed. As the proposed new building will be where the existing jetwash building is currently located, the flood waters will not be displaced in any way from the current existing state. The levels are the same as existing, and flow paths are unchanged.
- 12.3 The finished floor level of the proposed building is to be around 140.6mAOD, as level access is always required to the forecourt area, and this level is existing since the bakery will be built upon the existing demolished jetwash area. The building finished floor level is almost 1m below the design flood level of 141.56mAOD Design Flood.
- 12.4 Due to this, the building will need to be designed to be flood resilient, which will enable the building to be brought back into use quickly should flooding occur.
- 12.5 The building will be a steel framed building on a ground bearing slab. It will be constructed using cladding panels and roofing panels. These will be specified to be water stable and be suitable to be retained should they be immersed in flood water. The internal building will be clad and finished with suitable flood compatible building materials such as ceramics or plastics which will be ventilated and removable to allow the building to be dried prior to it being brought back into use after a flood.
- 12.6 Electrics and services will be provided at a higher level, however as the building is a bakery, ovens and food preparation equipment will need to be designed so that they are at a level circa 1.1m above floor level, to allow them to be retained in position in the event of a flood. Other allowances on the design of the building should be considered to allow for the building to be brought back into use, such as the use of ceiling based cooling units for fridges and freezers. And easy to clean and sanitise equipment and surfacing.
- 12.7 A building management plan should highlight to the tenant and building manager the flood resilience measures employed and have a checklist to be followed to enable the building to be brought back into use following a flood.
- 12.8 It will be up to the architect to specify flood resilient measures for the property in accordance with building regulations and current best practices.
- 12.9 In the case of a flood warning, users should avoid the flood prone areas surrounding the site and proper warning signs should be available to notify users of these areas. As the entire site is within Flood Zone 3a, a flood evacuation plan may be necessary for the site to ensure that tenants are fully aware of the risks and the planning for flooding in the area and know the processes to close down the site and prepare it in the event of a flooding event.



13 MAINTENANCE OF DRAINAGE SYSTEMS

- 13.1 Maintenance and suitable management of all existing drainage aspects should already be in effect on the site, to ensure that the network is operating correctly to ensure water and effluent quality and subsequently reducing the risk of flooding on the site. This should be linked with the wider site maintenance and is the responsibility of the owner/occupier and must be undertaken by a competent contractor.
- 13.2 The maintenance procedures of the drainage network will remain as existing on the site, as no new drainage works are to be undertaken due to existing connections being utilised. The existing drainage system is expected to be fully accessible and maintainable, with flooding easily visible as and when it occurs.
- 13.3 A log of all maintenance activities is to be kept and made available to Rochdale Metropolitan Borough Council on request.



14 CONCLUSION AND RECOMMENDATIONS

- 14.1 The site is in Flood Zone 3a. It is a less vulnerable development which is suitable for this flood zone. The Sequential and Exception tests are not required for this development.
- 14.2 The site is at risk from fluvial and reservoir flooding. The finished floor level of the proposed building will be 140.6mAOD as existing, which means there will be between 0.4m and 1.16m of flooding in some storm events.
- 14.3 Due to the new building being on the footprint of the existing car wash structure, and at the same levels, not impacting any flood pathways, a compensatory storage analysis is not required.
- 14.4 The site is not at risk from pluvial, existing infrastructure or groundwater flooding.
- 14.5 Proposed surface water and foul water drainage for the new building will consist of utilising the existing connections from the existing jetwash building and will not involve any new drainage works on the site. Due to there being no change in impermeable areas or levels, flood water will be unaffected by the development and discharge rates will remain the same as existing.
- 14.6 The building will need to be designed to be flood resilient to bring the building back into use quickly after flooding occurs. Mitigation measures will be to the architect's specification and should be in accordance with building regulations and current best practices.
- 14.7 The proposed development is wholly suitable for the proposed site based on national and local planning policy and will not have any implications on neighbouring properties in terms of flood risk.

Adam Wood

On behalf of Dudleys Consulting Engineers



APPENDIX A – EXISTING SITE INFORMATION

MFG Littleborough	
Date: 28/05/25	

MFG Littleborough

Church Street, Littleborough OL15 8JA

Revision History			
Version	Date	Changes	Initial
1.0	25/10/2024	First issue.	BR

MFG Littleborough	 BR Surveys
Date: 28/05/25	

Survey Area



Survey Specification

PAS128:2014 Type B utility survey to detect, locate and verify utilities on site within the specified survey area.

MFG Littleborough	
Date: 28/05/25	

Equipment

All equipment used is calibrated in accordance with manufacturer specification, calibration certificates are available if requested.

Equipment	Manufacturer	Model
Electromagnetic Locator (EML)	Radiodetection	RD8200
Signal Generator	Radiodetection	Tx-10
GNSS	Leica	GS14
Ground Penetrating Radar	IDS	Detector Duo
Total Station	Leica	TS16

- Cobra reel and 33Khz Sonde for locating sewers.
- Flexi-trace for empty and non-conductive duct routes.

Cautionary Note

Radio Frequency detection techniques have been used in the location of underground services. The results are not infallible and trial excavations must be carried out to confirm service identification, positions and particularly depths. Although all reasonable effort has been made in searching available record drawings, the completeness of the underground services information cannot be guaranteed.

General Notes

There were inspection covers all around the site, where there was only a well visible with some sort of feed or return pipe. Invert levels were taken to the depth of the wells; the PE pipe work was assumed running within shallow trench scars. These were recorded as unknown B3 assets on the drawing.

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Date: 28/05/25	



Findings

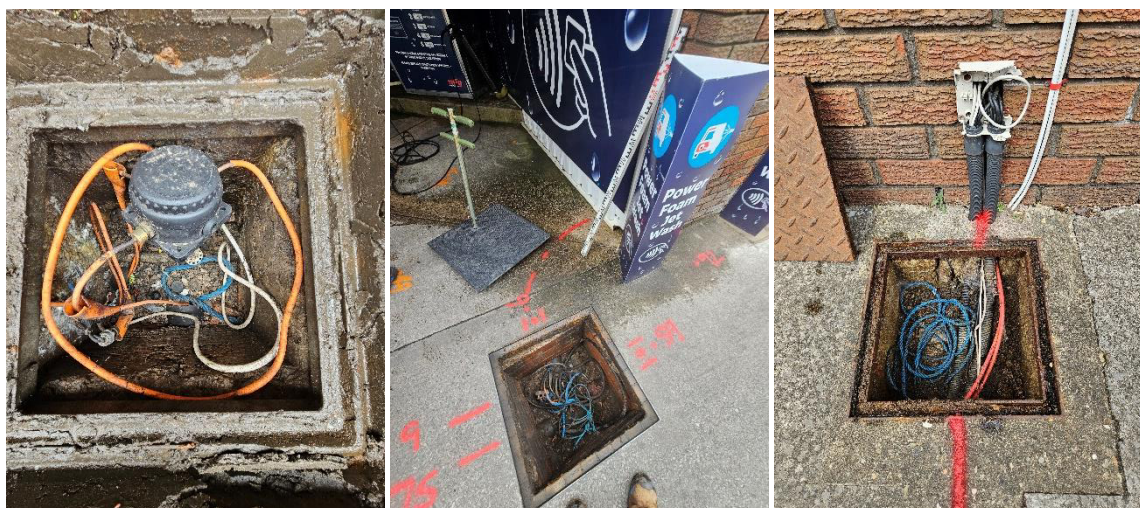
Electricity

Electricity was found feeding the building from the LV in the footpath and entering the PFS at the rear.

Cables were also located feeding the store rooms and jet wash area.

Much of the apparatus including the air, vacuum and totem sign were noted as being fed from cables above ground.

The pump arrangement was connected to but little signal was yielded. It is assumed this runs back to the PFS after the signal ended.



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Gas

No gas service was located on site or shown on records.

Water

A 20mm copper pipe was located, running along the jet wash building. The signal ended by the sump.

The records show the supply to the premises very close to this service.

Comms

All telemetry was located from the PFS back to the tanks.

No BT supply was located on site; records show the supply entering from the pit on Charles Street, however this was inspected and connected to with no signal located on site.

The virgin media also shows a supply largely in the same place as the BT drawing. These were not located on site.

Foul and Surface Water Drainage

Foul drainage was located, from the rear of the PFS, running across the site, taking the waste and discharging into the public sewer on Box Street. It was noted the foul run also takes from the oil interceptors on site; however, it is not known what is feeding into the oil interceptors.

The jet wash outfall was blocked shortly after the manhole; it is not known if this is intercepted before discharge into the foul line.

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Tanks & Fill Points

All tank covers were lifted and inspected as far as possible. Fuel lines have been shown indicatively and were not located.

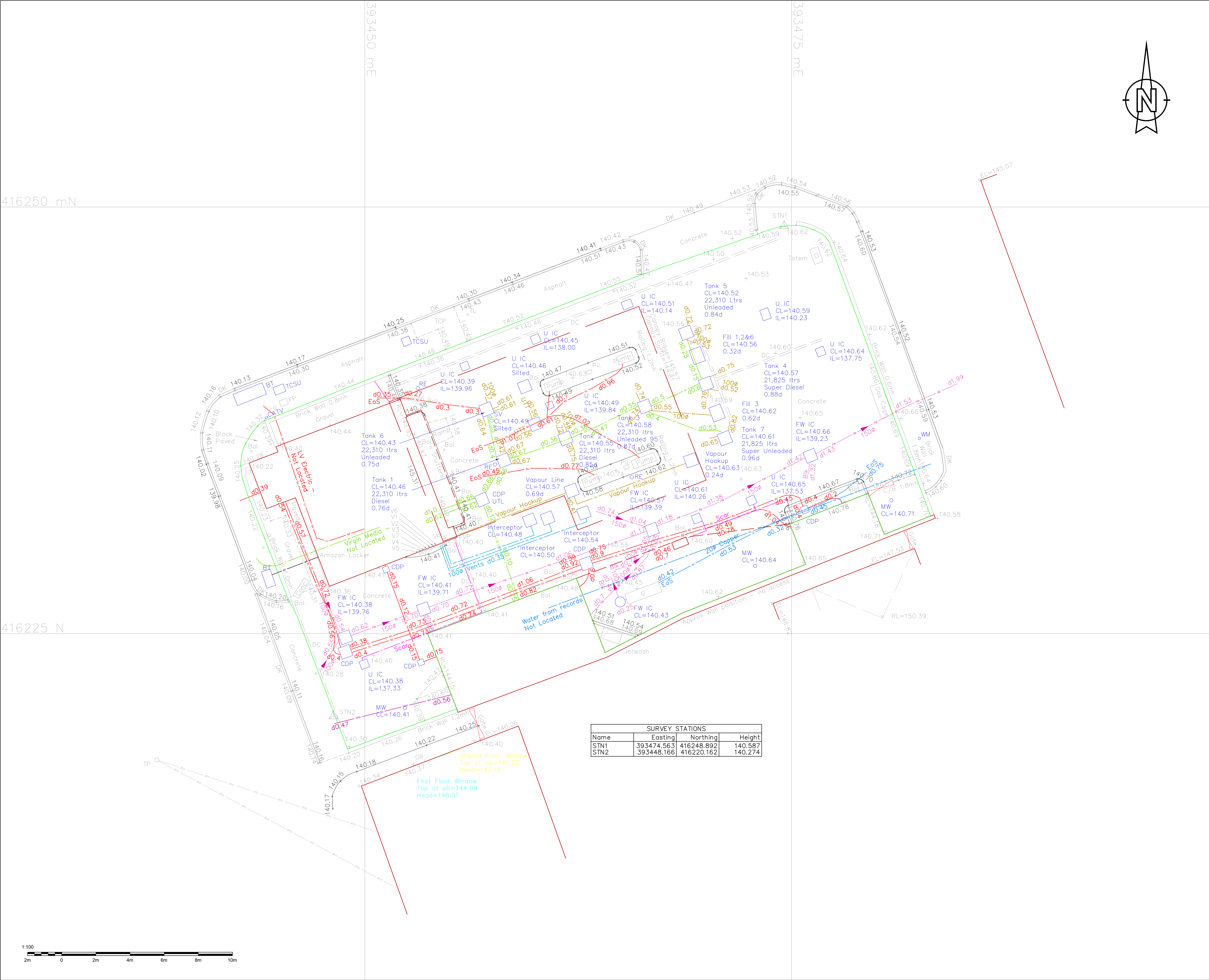


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Unknown Services

Multiple GPR targets and unknown signals were located across the survey area. It is not known what these are, and is recommended trial holes are undertaken where critical to design.



SURVEY LEGEND			
ABBREVIATIONS			
AV	AIR VALVE	RL	RIDGE LEVEL
BB	BELISHA BEACON	RS	ROAD SIGN
BH	BOREHOLE	RWP	RAIN WATER PIPE
BD	BACKDROP	SC	STOP COCK
BOL	BOLLARD	SL	SUMP LEVEL
CL	COVER LEVEL	SP	SIGN POST
CPL	COPING LEVEL	SV	SLUICE VALVE
DC	DRAINAGE CHANNEL	SVP	SOIL VENT PIPE
DK	DROP KERB	TCB	TELEPHONE CALL BOX
EP	ELECTRIC POLE	TCP	TACTILE PAVING
EL	EAVE LEVEL	TL	TRAFFIC LIGHT
FH	FIRE HYDRANT	TP	TELEGRAPH POLE
FP	FEEDER PILLAR	TPL	TOP OF PIPE LEVEL
GV	GAS VALVE	TS	TRAFFIC SIGNAL
G	GULLY	UNOB	UNOBTAINABLE
IC	INSPECTION CHAMBER	UTL	UNABLE TO LIFT
IL	INVERT LEVEL	VP	VENT PIPE
LB	LETTER BOX	WM	WATER METER
LP	LAMP POST	WL	WATER LEVEL
MKR	MARKER	WO	WASHOUT
NB	NAME BOARD		
FENCE TYPES			
B/W	BARBED WIRE	E/F	ELECTRIC FENCE
C/B	CLOSE BOARDED	H/F	HERAS FENCE
C/L	CHAIN LINK	P/R	POST & RAIL
C/P	CHESTNUT PALING	S/F	SECURITY FENCE
C/W	CHICKEN WIRE		
INSPECTION CHAMBER ABBREVIATIONS			
BT	BRITISH TELECOM	LB	LINK BOX
CW	COMBINED WATER	SW	SURFACE WATER
CATV	CABLE TV	TCSU	TRAFFIC SIGNALS
CDP	CABLE DRAW PIT	U	UNKNOWN
FW	FOUL WATER		

TREE INFORMATION			
SPECIES (if known)			
CMP/B = (clump/bole) diameter (m)			
S = Spread diameter (m)			
H= Height (m)			
SHEET JOIN			
UTILITY LINETYPES			
BT	COMMUNICATIONS	IP	IP GAS MAINS
E	ELECTRIC	HP	HP GAS MAINS
EHV	EHV ELECTRIC	FD	FOUL DRAINAGE
HW	HW ELECTRIC	CD	COMBINED DRAINAGE
LV	LV ELECTRIC	SD	SURFACE DRAINAGE
ST	STREET LIGHTING	GPR	GPR TARGET
LP	LP GAS MAINS	WM	WATER MAIN
MP	MP GAS MAINS	FO	FIBRE OPTIC
		HT	HEATING UTILITY
		UN	UNKNOWN UTILITY
BLK	BLOCKED		
EOT	END OF TRACE		
UTS	UNABLE TO SONDE		
UTT	UNABLE TO TRACE		
OVERHEAD CABLES			
OE	OVERHEAD ELECTRIC		
OE BT	OVERHEAD BT		
PAS 128 CODES			
SURVEY TYPE - D DESKTOP SEARCH (NO DEFINABLE ACCURACY)			
SURVEY TYPE - C SITE RECONNAISSANCE (NO DEFINABLE ACCURACY)			
SURVEY TYPE - B LOCATION			
QUALITY LEVELS SHOWN IN LINETYPE:			
B4 - NO DEFINABLE ACCURACY			
B3 - 0.5m PLAN / NO DEPTH ACCURACY			
B2 - 0.25m PLAN / +/- 40% OF ACTUAL DEPTH			
B1 - 0.15m PLAN / +/- 15% OF ACTUAL DEPTH			
IF SURVEY TYPE B IS SUFFIXED WITH 'P' IT HAS BEEN POST PROCESSED.			
SURVEY TYPE - A 'VERIFICATION' +/- 0.05m PLAN / +/- 0.025m OF ACTUAL DEPTH			

- NOTES**
- Unless otherwise stated, the survey grid and all levels are based on the coordinate system OSGB36(15), derived from the OS active network.
 - All control should be checked before use. All dimensions should be checked on site, prior to any design and construction. Any deviations or errors in this drawing should be reported to BR Surveys immediately.
 - All measurements of drainage inverts and sizes have been taken from the surface. Where this information is critical, entry teams should be used to confirm levels and dimensions.
 - All trees have been identified to the best of the surveyor's ability. Heights and canopy spreads are generally estimated. Where this information is important, services of an arboriculturalist should be employed.
 - Depths quoted on buried services are approximate and cannot be guaranteed. Where this information is critical trial holes should be utilised to confirm information.

REV.	DETAIL OF AMENDMENT	DATE	BY	CHKD

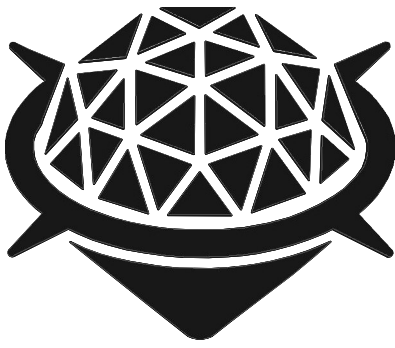
SITE ADDRESS
**MFG LITTLEBOROUGH
CHURCH ST. LITTLEBOROUGH OL15 8JA**

TITLE
EXISTING SITE & SERVICES LAYOUT

DATE	SURVEYED	CHKD	SCALE @ A1
JUN 2025	BR	LH	1:100

DRAWING NUMBER	REVISION
P2025-063	FIRST ISSUE

PLAN PRODUCTION BY:



BR Surveys

www.brsurveys.co.uk
07596 832 040
info@brsurveys.co.uk



APPENDIX B – PROPOSED SITE INFORMATION



SCHEDULE OF AREAS	
Site Boundary (Red Line)	0.06 H / 0.17 A
Existing Customer Parking	N/A
Proposed Customer Parking	3 Bays (Inc 1No. DDA)
Proposed Bakery Pod GEA	85m² / 915ft²
Proposed Bakery Pod GIA	70m² / 750ft²

- GENERAL NOTES**
- This plan has been prepared for the submission for planning approval only.
 - Any advertisement shown is subject to a separate application.
 - Site Level design by engineer.
 - Ownership boundary shown indicatively, to be confirmed.

DEMOLITION
The existing jet was structure along with all equipment is to be removed. Air/water & Vac machines along with the compound are to be removed.

BOUNDARY
Existing boundary wall is to be retained as shown.

CROSSINGS
All existing crossings are to be retained and utilised for the development.

FLOODLIGHTS (FL)
Floodlight positioning currently shown indicatively. Awaiting specialist design for confirmed positions.

BIN / PLANT COMPOUND
2M High closed boarded timber fence with double access gates.

SURFACE FINISHES:

Denotes in-situ cast concrete paving

PLANNING

PROJECT
LITTLE BOROUGH SERVICE STATION
Church Street
Littleborough, OL15 8JA

TITLE
Proposed Site Layout

CLIENT
Motor Fuel Group

8 Feast Field, Horsforth, Leeds, West Yorkshire, LS18 4TL
www.jennings-design.com 01274 395422 office@jennings-design.com

Drawn: JS

Check: JHJ

Scale: 1:100 @ A1

Date: June '25

Plan Number:

250215 - 102

0

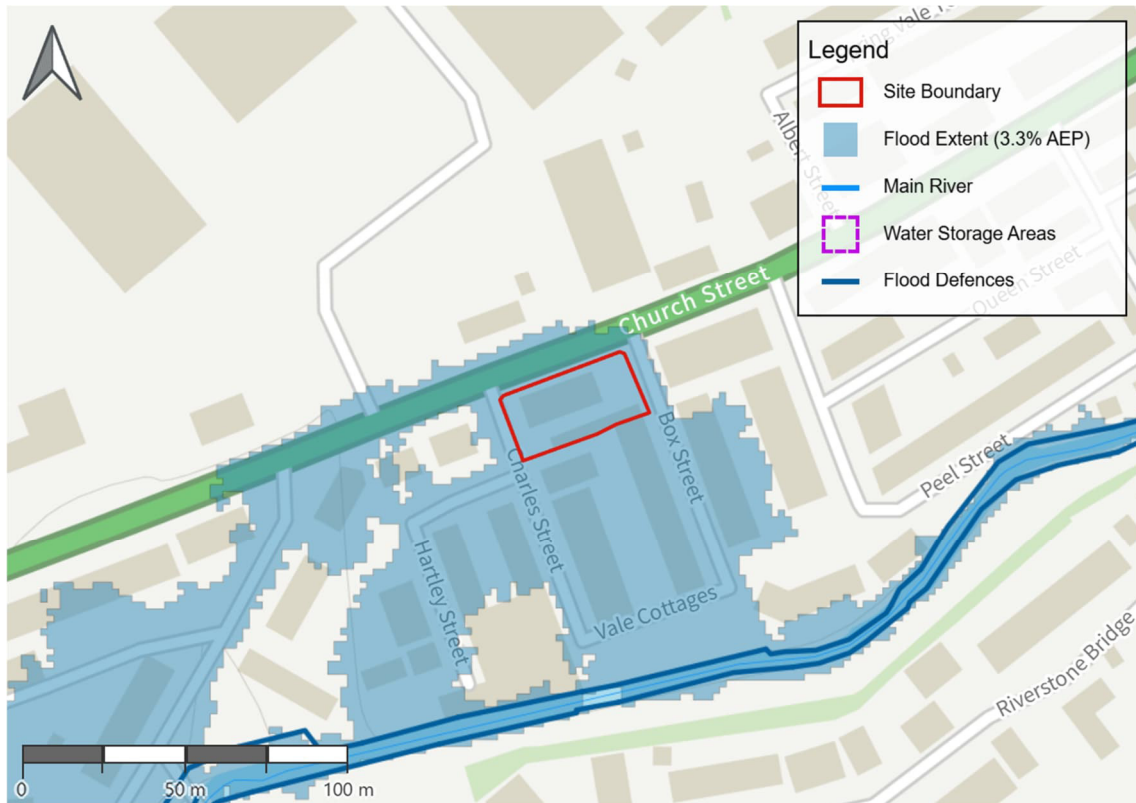
5

10

SCALE - METRES - 1:100



APPENDIX C – FLOOD MAP FOR PLANNING



Flooding Map for Planning – Rivers and Sea with Defences – 1 in 30 year (Zone 3b) (EA)





Risk of Flooding from Surface Water – 0.2m Depth (EA)



Risk of Flooding from Surface Water – 0.3m Depth (EA)



Risk of Flooding from Surface Water – 0.6m Depth (EA)



Risk of Flooding from Surface Water – 0.9m Depth (EA)



Risk of Flooding from Surface Water – 1.2m Depth (EA)

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
393463/416234

Created
4 July 2025 14:11

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2025 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Caldermoor

Flood map for planning

Your reference

Unspecified

Location (easting/northing)
393463/416234

Scale
1:2,500

Created
4 Jul 2025 14:11

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area


0 20 40 60m



APPENDIX D – FLOOD MODELLING AND DATA

Environment
Agency

Customer reference number: XJ8X6KE9NTJC

Map of the site location in Box Hill, Victoria. The map shows a residential area with streets including Church Street, Orron Street, Charles Street, and Box Street. A red rectangle highlights the selected area, which is a large rectangular plot bounded by Church Street to the north, Orron Street to the west, Charles Street to the east, and Box Street to the south. The map includes a north arrow, a scale bar (0 to 25 metres), and a site location inset map showing the area's position relative to the surrounding region. The map also shows various buildings, including a large 'Works' building and several residential plots with house numbers.

Scale 1:500
0 5 10 15 20 25 metres

Selected area
Main river

Site location

How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- past floods
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

When using the surface water map on the [check your long term flood risk service](#) the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- [reservoir flood risk](#)
- groundwater flood risk - you could use the [British Geological Survey groundwater flooding data](#), [groundwater: current status and flood risk](#) and the guide on [mining and groundwater constraints for development](#) - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is Rochdale District.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Rochdale and Littleborough 2013

Scenario(s): Defended fluvial, defences removed fluvial, defended climate change fluvial, defences removed climate change fluvial

Date: 1 June 2013

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

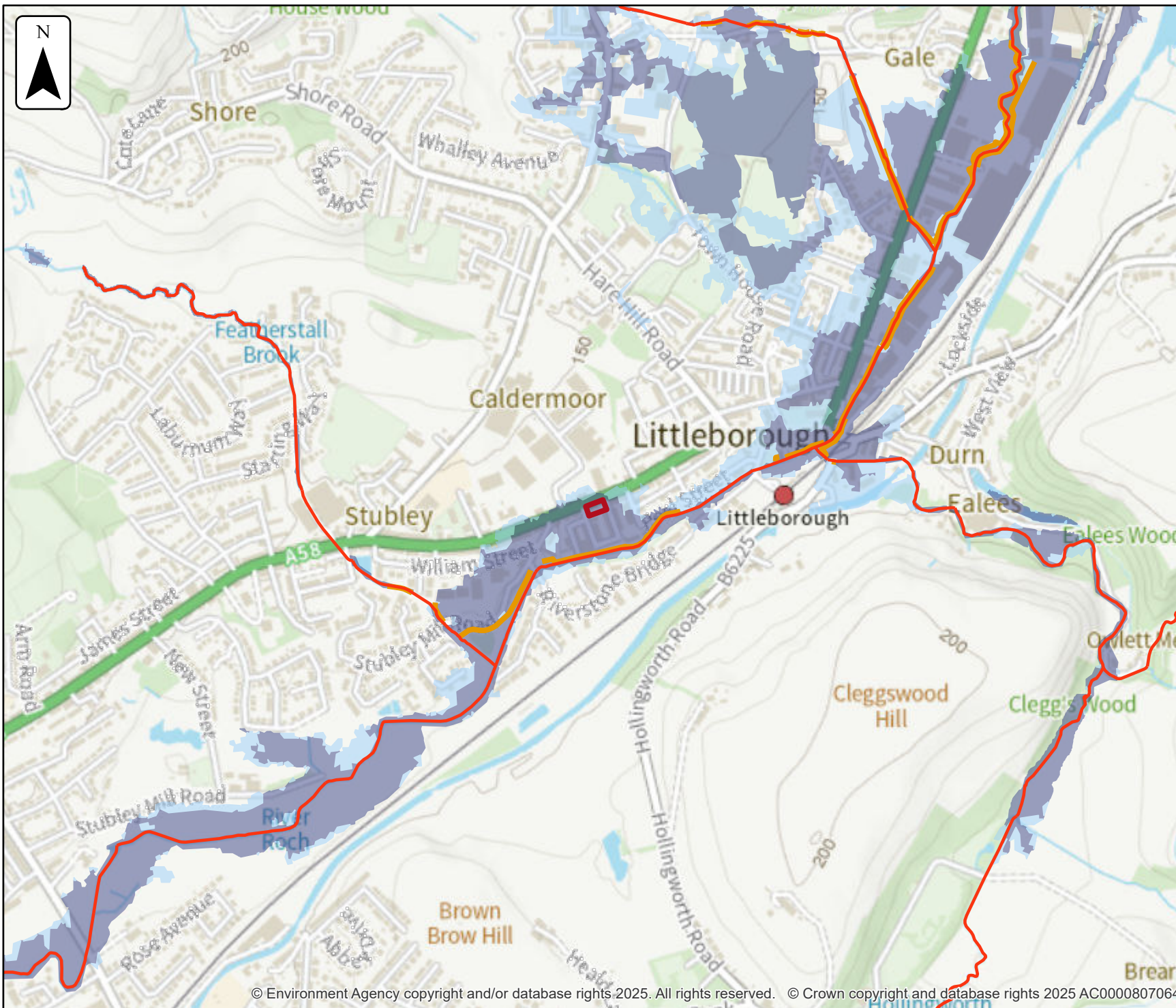
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change



Flood map for planning

Location (easting/northing)
393463/416234

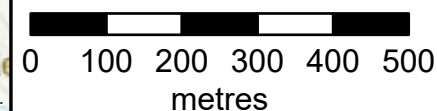
Scale

1:10,000

Created

4 Jul 2025

-  Selected area
-  Main river
-  Flood defence
-  Flood Zone 3
-  Flood Zone 2



Past floods

Past flood events included in this document

The recorded flood outlines included in this document are for areas of land local to your site location that have been flooded by any of these sources:

- ephemeral water
- main rivers
- ordinary watercourses
- the sea
- unknown

Data limitations

The outlines do not include flooding from:

- drainage where rainfall has led to surface water ponding or overland runoff
- artificial, water-bearing sewer, water supply and wastewater treatment pipelines

Changes to flood defences

The defences (also known as assets) that were in place may also have changed. For example, assets may have been built more recently than the last recorded flood outline.

What the recorded flood outlines dataset is

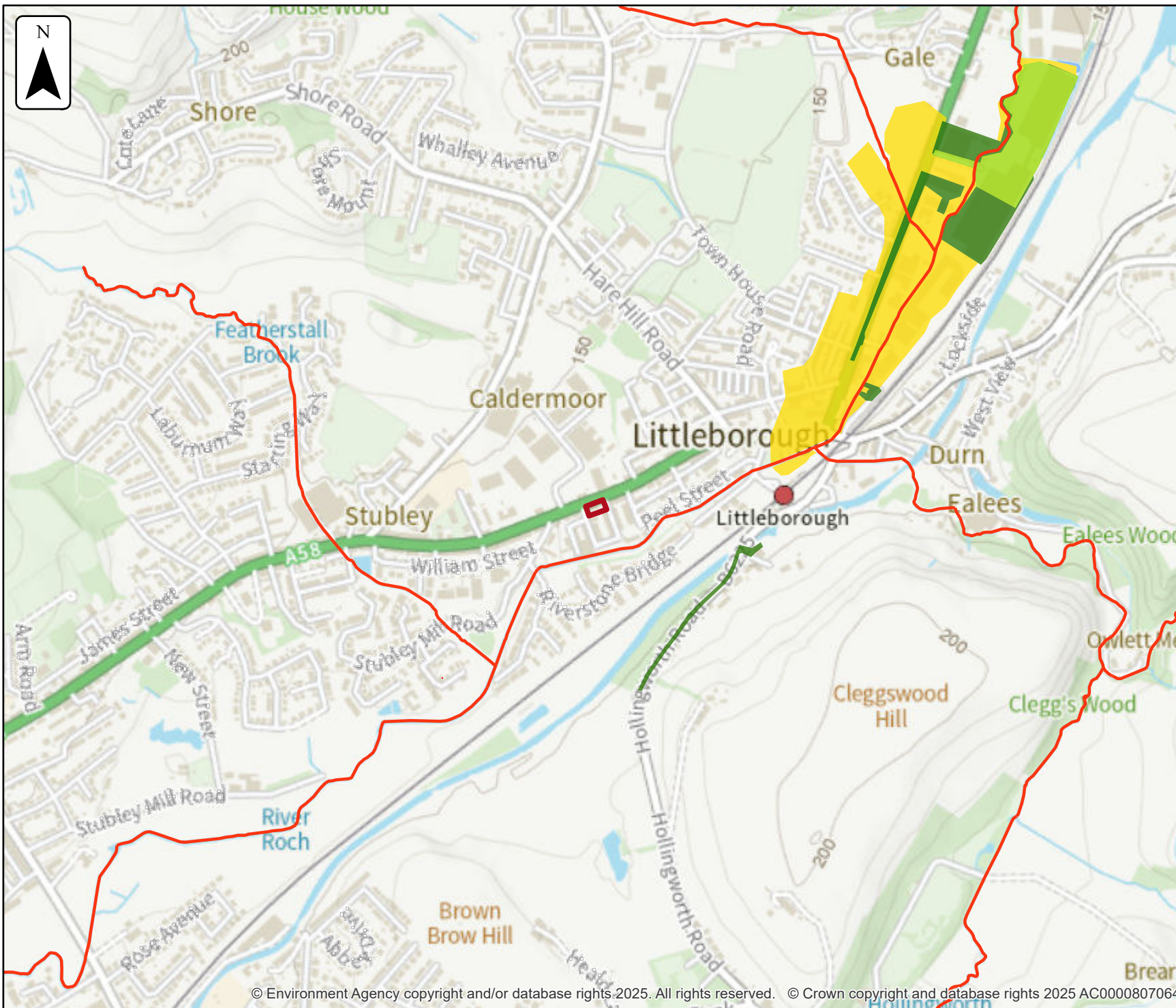
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- rivers
- the sea
- groundwater
- surface water

[Download the complete recorded flood outlines dataset](#), which includes data quality flags for outlines recorded after April 2020. This indicates the confidence we have in an outline.

Get flood information from other organisations

Contact Rochdale District Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.



Past floods

Location (easting/northing)
393463/416234

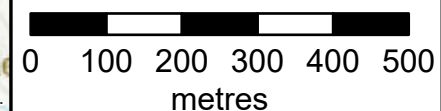
Scale

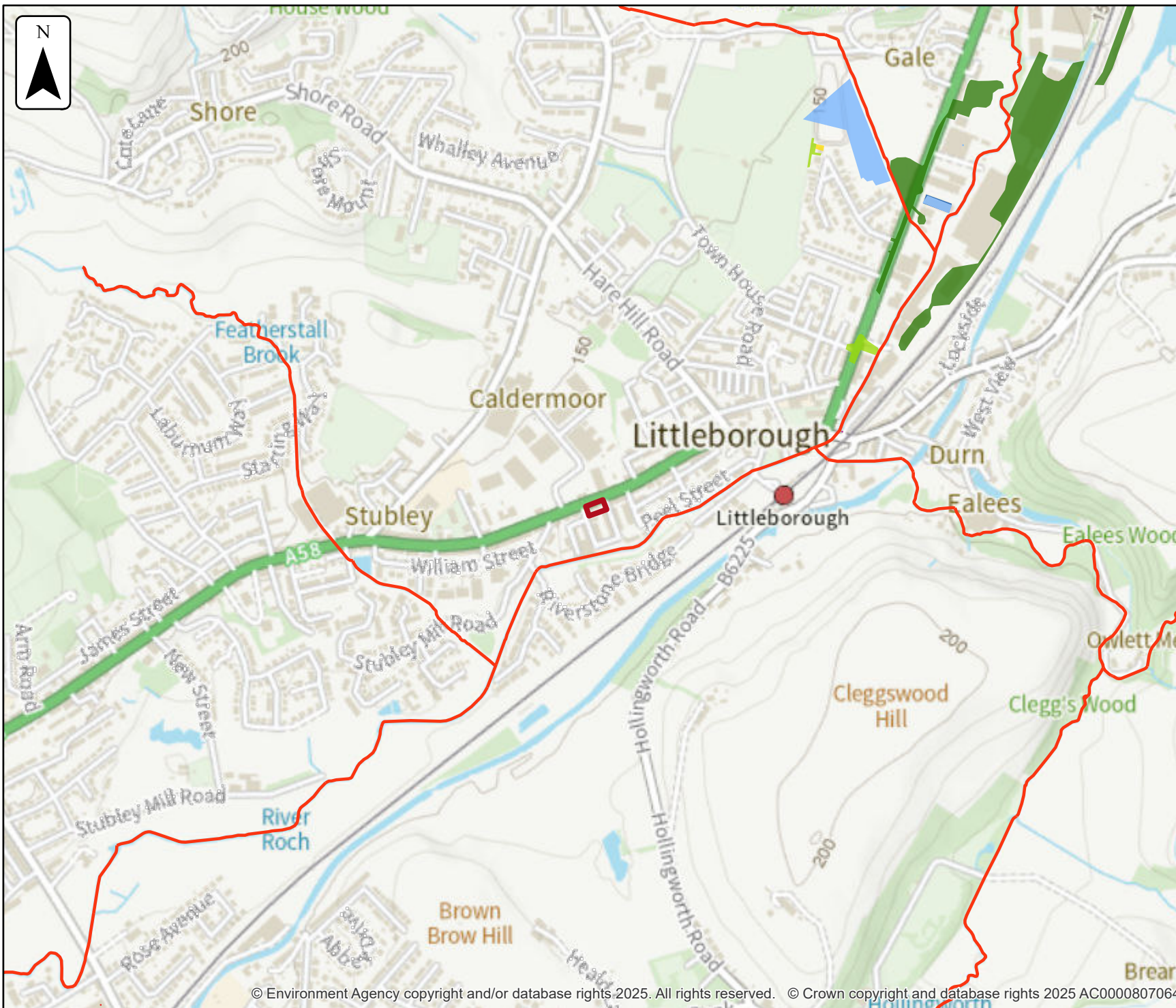
1:10,000

Created

4 Jul 2025

-  Selected area
-  Main river
- Date of flood event
 -  July, 2019
 -  March, 2019
 -  December, 2015
 -  July, 2012
 -  November, 2009
 -  January, 2008
 -  January, 2008
 -  July, 2003





Past floods

Location (easting/northing)
393463/416234

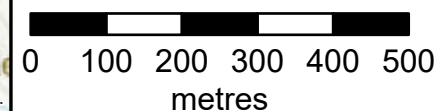
Scale

1:10,000

Created

4 Jul 2025

-  Selected area
-  Main river
- Date of flood event
 -  June, 2002
 -  February, 2002
 -  June, 2000
 -  October, 1998
 -  March, 1998
 -  January, 1995
 -  December, 1991
 -  October, 1980



Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
28 July 2019	31 July 2019	main river	channel capacity exceeded (no raised defences)	No
16 March 2019	16 March 2019	unknown	unknown	No
26 December 2015	26 December 2015	main river	overtopping of defences	No
6 July 2012	6 July 2012	main river	overtopping of defences	No
18 November 2009	19 November 2009	main river	operational failure/breach of defence	No
21 January 2008	22 January 2008	main river	unknown	No
10 January 2008	11 January 2008	main river	operational failure/breach of defence	No
17 July 2003	17 July 2003	main river	operational failure/breach of defence	No
14 June 2002	15 June 2002	main river	channel capacity exceeded (no raised defences)	No
8 February 2002	9 February 2002	unknown	channel capacity exceeded (no raised defences)	No
1 June 2000	2 June 2000	unknown	channel capacity exceeded (no raised defences)	No
23 October 1998	24 October 1998	unknown	obstruction/blockage - channel	No
6 March 1998	7 March 1998	unknown	obstruction/blockage - channel	No
28 January 1995	29 January 1995	unknown	channel capacity exceeded (no raised defences)	No
21 December 1991	22 December 1991	unknown	channel capacity exceeded (no raised defences)	No

Start date	End date	Source of flood	Cause of flood	Affects location
23 October 1980	24 October 1980	unknown	obstruction/blockage - channel	No

Flood defences and attributes

The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is in mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



Caldermoor

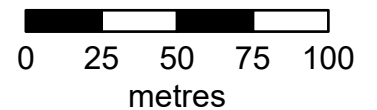
Flood defences

Location (easting/northing)
393463/416234

Scale
1:2,500

Created
4 Jul 2025

-  Selected area
-  Main river
-  Flood defence



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Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	130776	Embankment	100	Good	140.09	140.52	
2	130777	Wall	100	Good	140.36	140.28	
3	770622	Wall		Good			
4	130779	Wall	100	Good	140.41	140.39	
5	127937	Wall	100	Fair	140.80	140.64	
6	179623	Engineered High Ground	100	Good	141.03	139.67	
7	69809	Wall	100	Good	141.60	141.58	
8	177919	Wall	100	Poor	139.95	139.62	
9	46421	Wall	100	Good	141.84	142.01	
10	46422	Engineered High Ground	100	Poor	144.99	141.81	

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

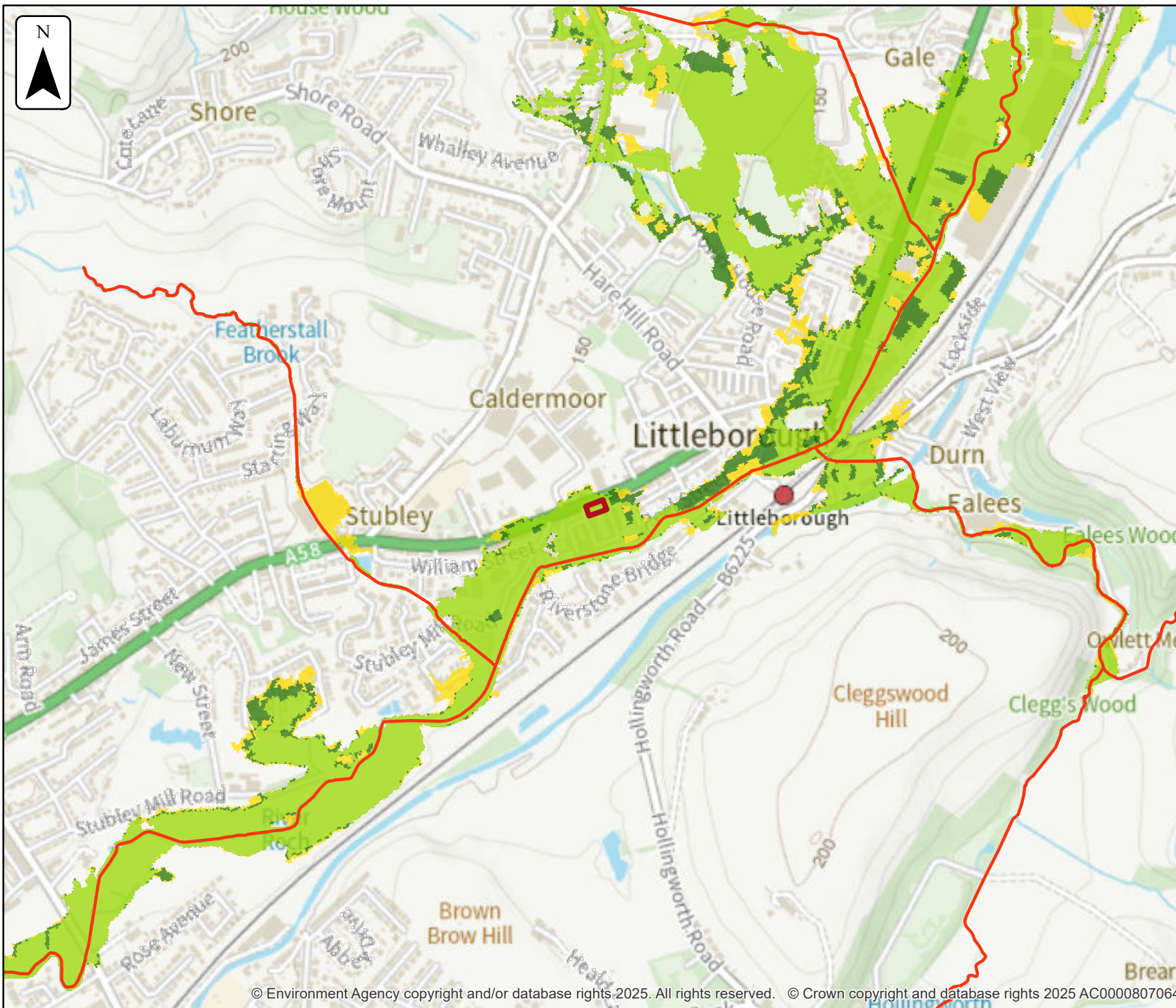
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended climate change modelled fluvial: risk of flooding from rivers where there are flood defences, including estimated impact of climate change
- Defences removed climate change modelled fluvial: risk of flooding from rivers where flood defences have been removed, including estimated impact of climate change



Defences removed climate change modelled fluvial extent

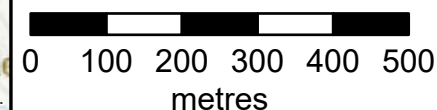
Location (easting/northing)
393463/416234

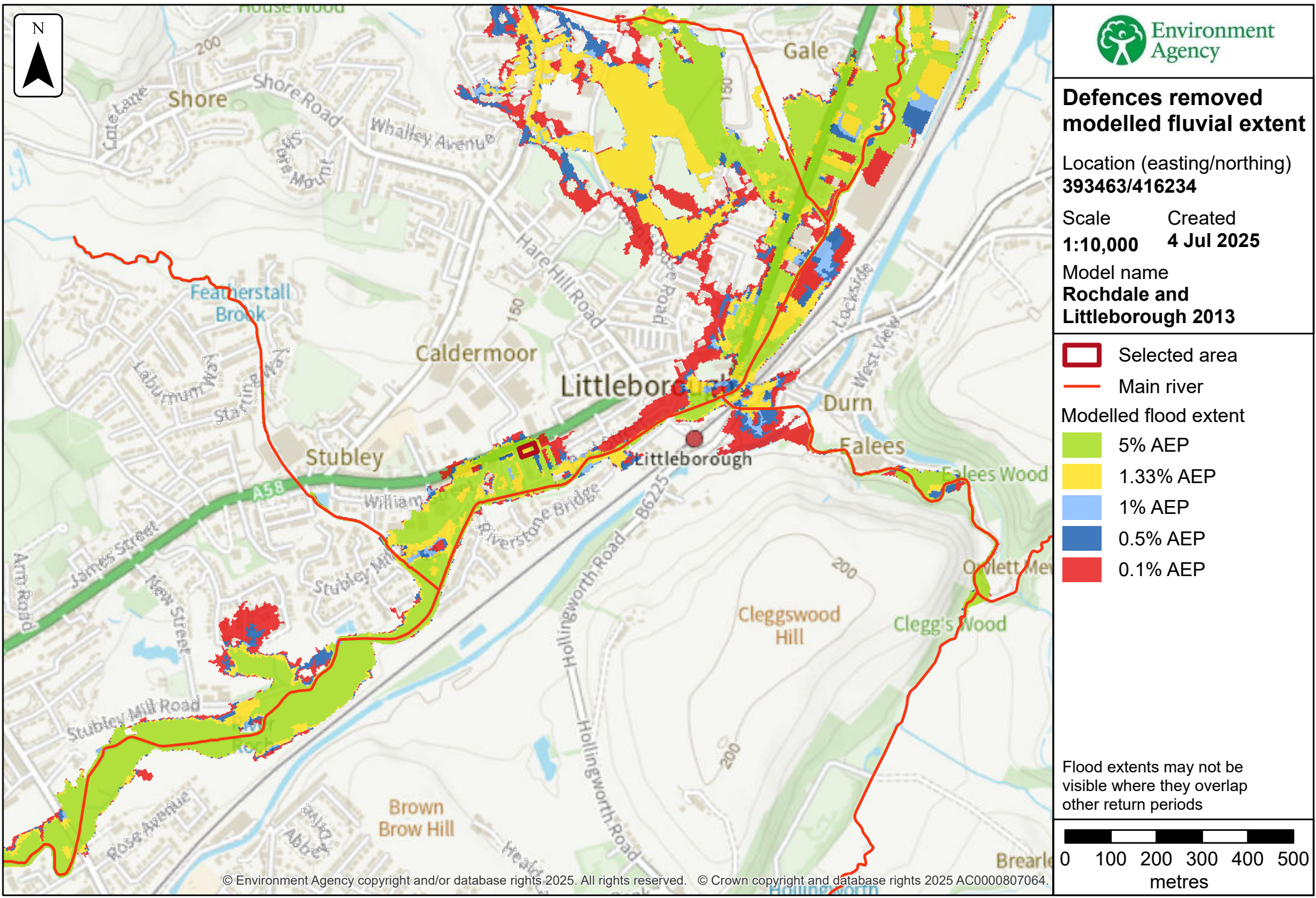
Scale Created
1:10,000 4 Jul 2025

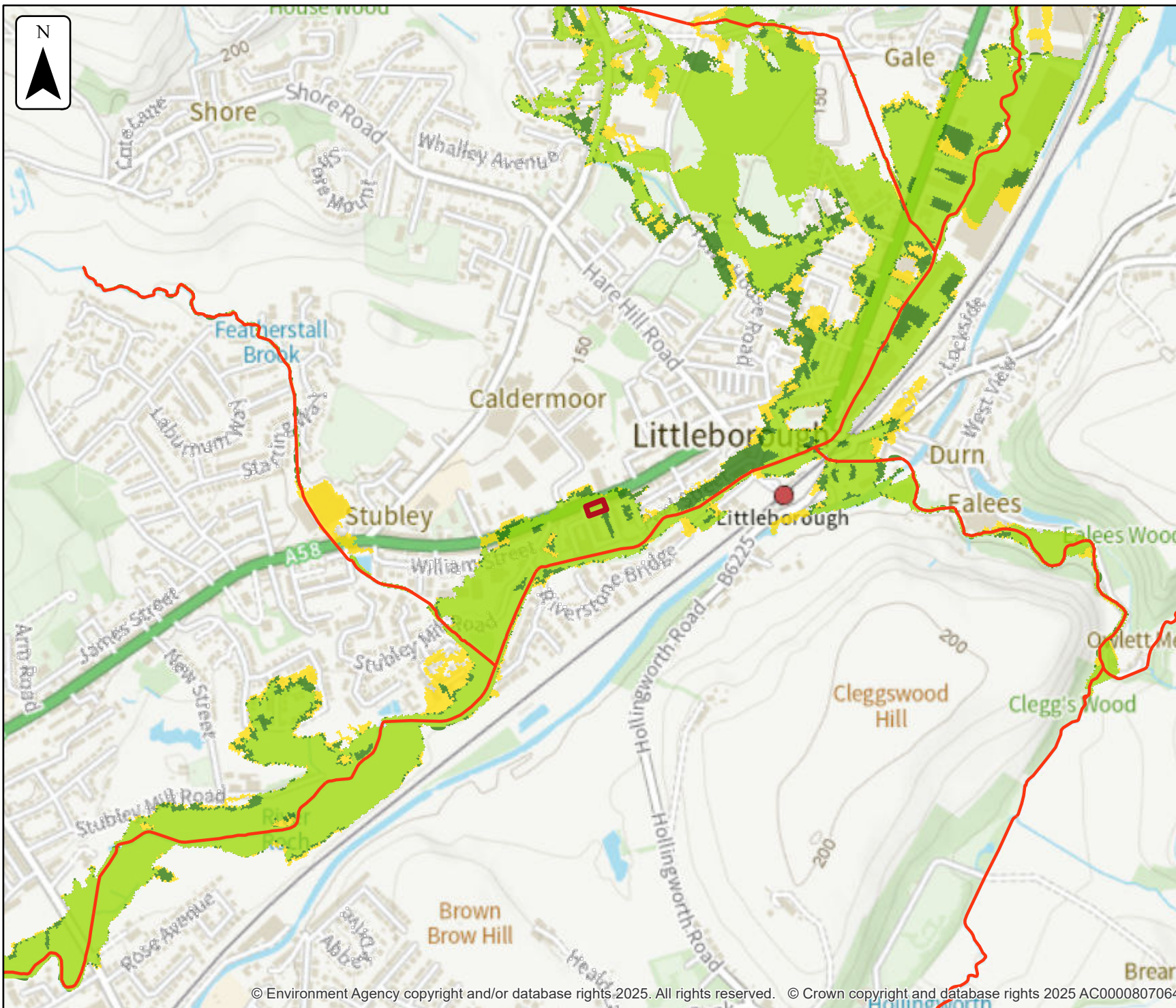
Model name
**Rochdale and
Littleborough 2013**

-  Selected area
-  Main river
- Modelled flood extent
 -  1% AEP (+20%)
 -  1% AEP (+35%)
 -  1% AEP (+70%)

Flood extents may not be
visible where they overlap
other return periods







Defended climate change modelled fluvial extent

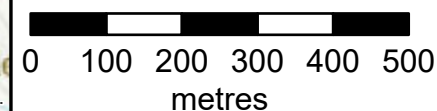
Location (easting/northing)
393463/416234

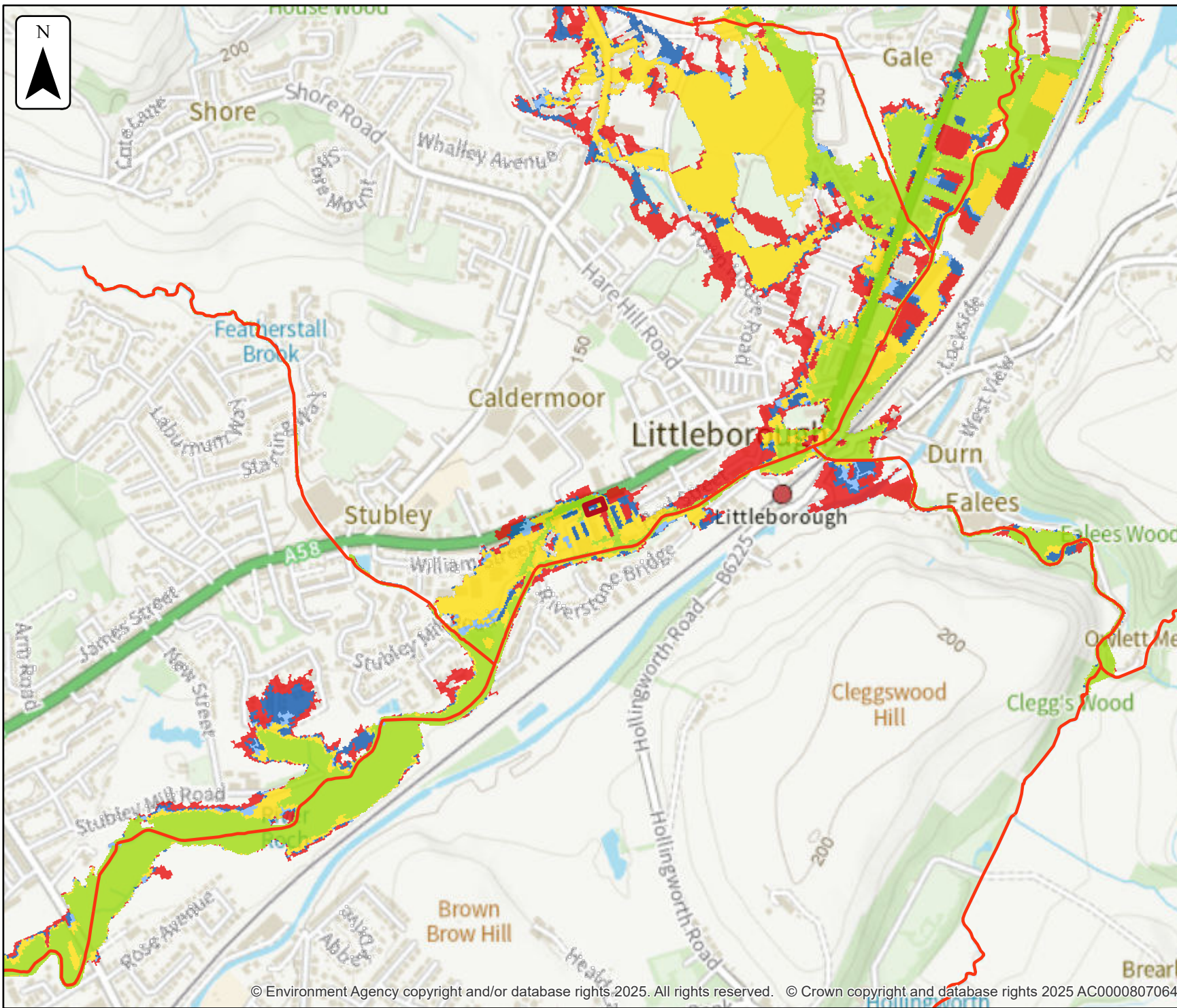
Scale Created
1:10,000 4 Jul 2025

Model name
Rochdale and Littleborough 2013

- Selected area
- Main river
- Modelled flood extent
 - 1% AEP (+20%)
 - 1% AEP (+35%)
 - 1% AEP (+70%)

Flood extents may not be visible where they overlap other return periods





Defended modelled fluvial extent

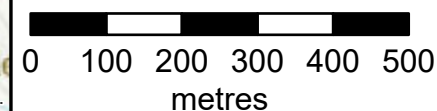
Location (easting/northing)
393463/416234

Scale Created
1:10,000 4 Jul 2025

Model name
**Rochdale and
Littleborough 2013**

-  Selected area
-  Main river
- Modelled flood extent
-  5% AEP
-  1.33% AEP
-  1% AEP
-  0.5% AEP
-  0.1% AEP

Flood extents may not be
visible where they overlap
other return periods





Caldermoor



Defences removed climate change modelled fluvial node locations

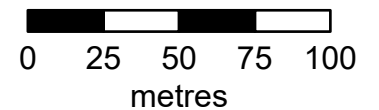
Location (easting/northing)
393463/416234

Scale Created
1:2,500 4 Jul 2025

Model name
**Rochdale and
Littleborough 2013**

-  Selected area
-  Modelled location
-  Main river

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Modelled node locations data

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level	Flow	Flow	Flow
1	1674587	393403	416129	140.50	140.60	140.72	32.33	35.45	39.62
2	1673933	393412	416132	140.38	140.48	140.64	29.88	32.02	34.13
3	1674257	393451	416140	140.82	140.91	140.99	29.11	31.23	34.44
4	1674173	393464	416143	140.96	141.16	141.37	28.57	28.51	28.61
5	1674424	393496	416151	141.22	141.25	141.26	32.03	39.24	50.83
6	1674445	393517	416156	141.31	141.41	141.59	37.54	42.43	51.12
7	1674451	393541	416158	141.54	141.62	141.83	40.21	45.48	53.77
8	1674729	393561	416172	141.59	141.72	141.92	40.23	45.85	54.28
9	1673876	393576	416192	141.92	142.04	142.19	40.47	46.41	55.88
10	1674172	393592	416211	142.22	142.27	142.36	40.76	48.21	59.99

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.



Caldermoor

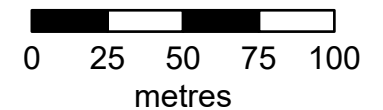
Defences removed modelled fluvial node locations

Location (easting/northing)
393463/416234

Scale Created
1:2,500 4 Jul 2025

Model name
**Rochdale and
Littleborough 2013**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defences removed

Label	Modelled location ID	Easting	Northing	5% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level
1	1674587	393403	416129	140.13	140.19	140.38	140.41	140.48	140.63
2	1673933	393412	416132	139.98	140.03	140.25	140.28	140.36	140.52
3	1674257	393451	416140	140.49	140.53	140.69	140.72	140.80	140.93
4	1674173	393464	416143	140.68	140.71	140.84	140.87	140.94	141.18
5	1674424	393496	416151	140.87	140.92	141.08	141.11	141.19	141.24
6	1674445	393517	416156	141.07	141.11	141.21	141.23	141.29	141.42
7	1674451	393541	416158	141.44	141.45	141.50	141.50	141.53	141.66
8	1674729	393561	416172	141.40	141.40	141.49	141.51	141.58	141.78
9	1673876	393576	416192	141.60	141.63	141.81	141.83	141.90	142.07
10	1674172	393592	416211	141.79	141.84	142.07	142.10	142.20	142.29

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.

Defences removed

Label	Modelled location ID	Easting	Northing	5% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow
1	1674587	393403	416129	23.72	24.75	28.87	29.60	31.83	36.10
2	1673933	393412	416132	23.53	24.32	27.46	27.98	29.53	32.27
3	1674257	393451	416140	23.54	24.33	27.25	27.69	28.95	31.66
4	1674173	393464	416143	23.54	24.32	27.09	27.44	28.43	28.79
5	1674424	393496	416151	23.60	24.45	28.57	29.22	31.53	42.16
6	1674445	393517	416156	24.13	25.32	32.47	33.62	36.86	45.10
7	1674451	393541	416158	25.20	26.85	34.77	36.0	39.50	48.26
8	1674729	393561	416172	25.20	26.85	34.76	35.99	39.50	48.78
9	1673876	393576	416192	25.20	26.85	34.86	36.17	39.81	49.94
10	1674172	393592	416211	24.69	26.32	34.70	36.19	40.09	52.76

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.



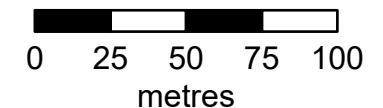
Defended climate change modelled fluvial node locations

Location (easting/northing)
393463/416234

Scale Created
1:2,500 4 Jul 2025

Model name
**Rochdale and
Littleborough 2013**

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defended climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level	Flow	Flow	Flow
1	1674587	393403	416129	140.58	140.70	140.88	34.47	37.61	46.0
2	1673933	393412	416132	140.34	140.46	140.71	34.46	36.86	41.41
3	1674257	393451	416140	140.94	141.10	141.36	33.80	34.39	36.32
4	1674173	393464	416143	141.07	141.37	141.68	34.50	34.34	34.58
5	1674424	393496	416151	141.52	141.52	141.53	37.30	44.40	56.46
6	1674445	393517	416156	141.63	141.71	141.76	38.50	43.85	55.82
7	1674451	393541	416158	141.98	142.03	142.03	39.46	45.89	56.95
8	1674729	393561	416172	141.83	141.89	142.02	39.83	46.40	57.89
9	1673876	393576	416192	142.03	142.12	142.27	40.27	47.57	59.96
10	1674172	393592	416211	142.25	142.30	142.46	41.16	50.27	63.84

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.



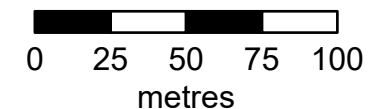
Defended modelled fluvial node locations

Location (easting/northing)
393463/416234

Scale Created
1:2,500 4 Jul 2025

Model name
Rochdale and Littleborough 2013

-  Selected area
-  Modelled location
-  Main river



Modelled node locations data

Defended

Label	Modelled location ID	Easting	Northing	5% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level	Level	Level
1	1674587	393403	416129	140.11	140.15	140.43	140.47	140.55	140.72
2	1673933	393412	416132	139.93	139.96	140.22	140.26	140.31	140.49
3	1674257	393451	416140	140.51	140.56	140.85	140.88	140.93	141.13
4	1674173	393464	416143	140.70	140.74	140.96	140.98	141.02	141.42
5	1674424	393496	416151	140.91	140.97	141.42	141.45	141.51	141.52
6	1674445	393517	416156	141.11	141.15	141.53	141.56	141.62	141.72
7	1674451	393541	416158	141.48	141.53	141.86	141.90	141.96	142.03
8	1674729	393561	416172	141.44	141.48	141.76	141.78	141.83	141.92
9	1673876	393576	416192	141.60	141.65	141.93	141.96	142.01	142.15
10	1674172	393592	416211	141.78	141.82	142.11	142.14	142.21	142.31

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.

Defended

Label	Modelled location ID	Easting	Northing	5% AEP	3.33% AEP	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow	Flow	Flow
1	1674587	393403	416129	24.17	25.26	32.60	33.19	34.32	38.76
2	1673933	393412	416132	24.16	25.26	32.59	33.20	34.32	37.54
3	1674257	393451	416140	24.16	25.26	32.17	32.61	33.70	34.89
4	1674173	393464	416143	24.16	25.26	32.67	33.28	34.40	34.60
5	1674424	393496	416151	24.16	25.27	33.22	34.11	36.32	46.94
6	1674445	393517	416156	24.16	25.26	33.80	34.92	37.56	46.40
7	1674451	393541	416158	24.16	25.26	33.93	35.21	38.35	48.52
8	1674729	393561	416172	24.17	25.27	34.05	35.40	38.67	49.18
9	1673876	393576	416192	24.17	25.26	34.08	35.53	39.08	50.67
10	1674172	393592	416211	23.64	24.87	34.30	36.08	40.05	54.42

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.



Defended climate change modelled fluvial extent and height

Location (easting/northing)
393463/416234

Scale Created
1:500 4 Jul 2025

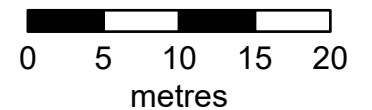
Model name
**Rochdale and
Littleborough 2013**

-  Selected area
-  Main river

Modelled 2D grid
Water level in mAOD

-  140 - 140.5
-  140.5 - 141.0
-  141.0 - 141.5
-  141.5 - 142.0
-  142.0 - 142.5
-  142.5 - 143.0
-  143.0 - 143.5
-  143.5 - 144.0
-  144.0 - 144.5

This map shows the
1% AEP +70% height data



Sample point data

Defended climate change

Label	Easting	Northing	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Depth	Depth
1	393446	416213	140.84	141.04	0.61	0.81
2	393455	416213	140.98	141.19	0.25	0.47
3	393437	416222	140.85	141.06	0.59	0.80
4	393446	416222	140.85	141.05	0.55	0.75
5	393455	416222	140.91	141.13	0.24	0.46
6	393464	416222	141.20	141.47	0.75	1.02
7	393473	416222	141.20	141.47	0.58	0.85
8	393482	416222	141.16	141.38	0.10	0.33
9	393437	416231	140.84	141.05	0.79	1.00
10	393446	416231	140.84	141.04	0.18	0.39
11	393455	416231	140.86	141.06	0.06	0.26
12	393464	416231	140.95	141.14	0.39	0.59

Label	Easting	Northing	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Depth	Depth
13	393473	416231	141.01	141.21	0.21	0.40
14	393482	416231	141.05	141.27	0.60	0.82
15	393491	416231	141.15	141.31	0.40	0.57
16	393437	416240	140.83	141.04	0.60	0.81
17	393446	416240	140.84	141.04	0.43	0.63
18	393455	416240	140.83	141.03	0.40	0.60
19	393464	416240	140.91	141.08	0.08	0.25
20	393473	416240	140.98	141.19	0.37	0.58
21	393482	416240	141.02	141.22	0.36	0.56
22	393455	416249	140.85	141.06	0.37	0.58
23	393464	416249	140.90	141.10	0.38	0.59
24	393473	416249	140.98	141.18	0.38	0.58

Label	Easting	Northing	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Depth	Depth
25	393482	416249	141.01	141.20	0.33	0.52
26	393473	416258	NoData	141.18	NoData	0.25
Max value in selected area:			141.15	141.41	0.60	0.82

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.

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



Defences removed climate change modelled fluvial extent and height

Location (easting/northing)
393463/416234

Scale Created
1:500 4 Jul 2025

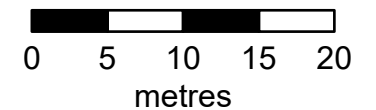
Model name
**Rochdale and
Littleborough 2013**

 Selected area
 Main river

Modelled 2D grid
Water level in mAOD

	140 - 140.5
	140.5 - 141.0
	141.0 - 141.5
	141.5 - 142.0
	142.0 - 142.5
	142.5 - 143.0
	143.0 - 143.5
	143.5 - 144.0
	144.0 - 144.5

This map shows the
1% AEP +70% height data



Sample point data

Defences removed climate change

Label	Easting	Northing	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Depth	Depth
1	393446	416213	140.85	140.98	0.62	0.76
2	393455	416213	141	141.15	0.27	0.43
3	393437	416222	140.86	141.00	0.60	0.74
4	393446	416222	140.86	141.00	0.55	0.70
5	393455	416222	140.92	141.07	0.26	0.41
6	393464	416222	141.25	141.42	0.80	0.98
7	393473	416222	141.24	141.43	0.63	0.81
8	393482	416222	141.18	141.33	0.13	0.28
9	393437	416231	140.84	140.99	0.80	0.94
10	393446	416231	140.84	140.99	0.19	0.33
11	393455	416231	140.87	141.00	0.07	0.20
12	393464	416231	140.97	141.08	0.42	0.53

Label	Easting	Northing	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Depth	Depth
13	393473	416231	141.03	141.15	0.23	0.35
14	393482	416231	141.06	141.19	0.62	0.74
15	393491	416231	141.15	141.26	0.41	0.52
16	393437	416240	140.84	140.98	0.60	0.75
17	393446	416240	140.84	140.99	0.43	0.58
18	393455	416240	140.84	140.98	0.40	0.54
19	393464	416240	140.92	141.02	0.09	0.19
20	393473	416240	141.00	141.13	0.39	0.51
21	393482	416240	141.04	141.16	0.38	0.50
22	393455	416249	140.86	141.00	0.38	0.52
23	393464	416249	140.92	141.05	0.40	0.53
24	393473	416249	141.00	141.12	0.40	0.53

Label	Easting	Northing	1% AEP (+35%)	1% AEP (+70%)	1% AEP (+35%)	1% AEP (+70%)
			Height	Height	Depth	Depth
25	393482	416249	141.04	141.15	0.36	0.47
26	393473	416258	NoData	141.12	NoData	0.21
Max value in selected area:			141.19	141.36	0.62	0.74

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.

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

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is Rochdale District.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

[Find out more about flood risk activity permits](#)

Help and advice

Contact the Greater Manchester Merseyside and Cheshire Environment Agency team at inforequests.gmmc@environment-agency.gov.uk for:

- [more information about getting a product 5, 6, 7 or 8](#)
- general help and advice about the site you're requesting data for