

FLOOD RISK ASSESSMENT (FRA)

Todmorden Road, Littleborough
For CRP Limited

Date 12/02/2025
Ref **22090/FRA001**

Report Details

Client	CRP Limited
Report Title	FLOOD RISK ASSESSMENT (FRA)
Project	Todmorden Road, Littleborough
Ref.	22090/FRA001
Bright Young Contact	J Bright – jeff@brightyoung.co.uk

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
2	Approval	12/02/2025	-			
				Hugh Morris BSc CEng MICE	Jeff Bright BEng CEng MStructE	David Young BSC AMICE

Bright Young Consulting Ltd

Consulting Engineers
Sandal Business Centre
Asdale Road,
Wakefield
WF2 7JE

Tel 01924 249500

Company No 05809281

Contents

Project Understanding	2
Scope of Works	2
Sources of Information	2
SITE DESCRIPTION	2
RELEVANT POLICY AND GUIDANCE.....	4
Introduction	4
Policy	4
Consultations	5
FLOOD RISK ASSESSMENT	5
Flooding from Rivers	5
Historical Flooding	6
Flood Risk Vulnerability Classification	6
Climate Change	7
Flood Modelling Nodes and Flood Levels	8
Proposed Floor Levels	10
Proposed Floor Levels – Consideration of Increased CC Allowance	10
Proposed Car Park Levels	11
Flooding from Surface Water.....	11
Flooding from Reservoirs	12
Sewer Flooding.....	13
Groundwater Flooding	13
Surface Water Run-Off.....	13
Flood Risk Elsewhere	14
Flood Resilience	14
Emergency Evacuation Plan	15
CONCLUSIONS AND RECOMMENDATIONS.....	16
Conclusions	16
Recommendations	17
APPENDICES	18
APPENDIX A – Proposed Development.....	18
APPENDIX B – Limitations	18

INTRODUCTION

Project Understanding

CRP Limited intend to develop land at their existing commercial premises at Todmorden Road, Littleborough, OL15 9EG, in accordance with design proposals developed by Hulme Upright Architects to provide a partial re-development of the commercial site.

Bright Young Consulting Ltd have been engaged to prepare a FLOOD RISK ASSESSMENT (FRA) in support of a detailed planning application for the development.

Scope of Works

This report is commensurate with the scale and type of development proposed and utilises information available to determine the flood risk at this site and considers, if necessary, a methodology to allow this site to be developed with minimum or acceptable and managed flood risk. It considers and assesses: -

- Whether the proposed development is likely to be affected by flooding.
- Determination of any sources of flood risk.
- How flood risk will affect the proposed development.
- Whether the proposals will increase the risk of flooding elsewhere.
- Details of how any flood risk will be managed so that the development remains safe.
- Mitigation measures to be used for the development.

Sources of Information

The following sources of information have been reviewed and assessed for the purpose of this Flood Risk Assessment:

- Environment Agency (EA) data through the Flood Risk Assessment Data (Product 4).
- Topographical survey information.

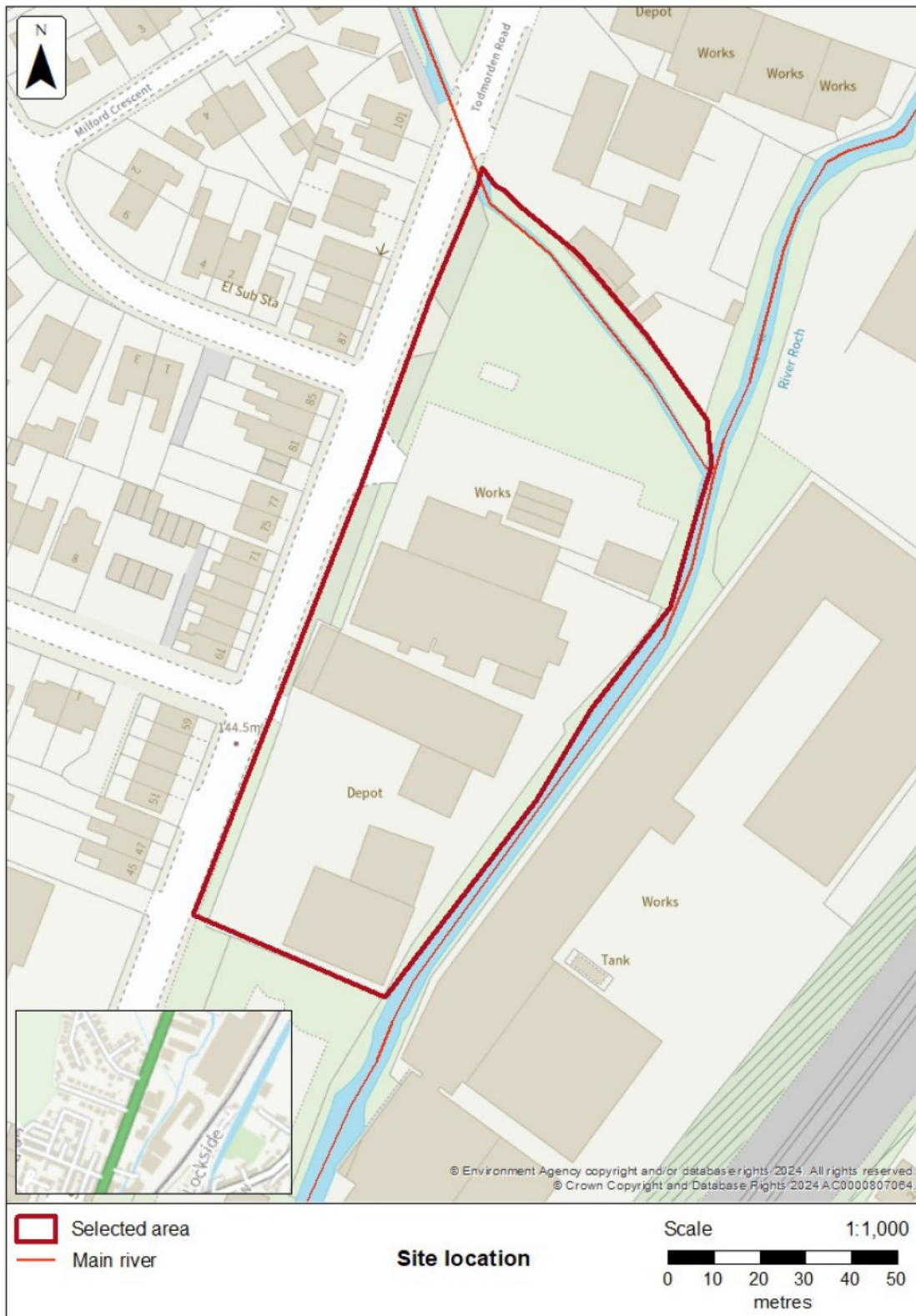
SITE DESCRIPTION

The site is adjacent to Todmorden Road, Littleborough to the west and is also adjacent to Town House Brook to the north and the River Roch to the east, both main rivers. The site centre is approximately at Grid reference SD 94061 16684 (394061E, 416684N).

The pre-development site is a brownfield site being buildings and hard-standing areas already used by CRP Limited. For this FRA, the development site should be considered brownfield.

A topographical survey has been undertaken of the site and the gross area of the whole site is approximately 9600 sq m (0.96 Hectares). The site slopes from north to south with levels around 145.5m to the north and around 144.4m in the south.

A site location plan and an aerial location plan of the site is shown below. The whole site outlined red.



Site Location Plan.



Site Location Plan – Aerial Location Plan.

RELEVANT POLICY AND GUIDANCE

Introduction

The aim of this section of the report is to discuss the main aspects of the local and national planning policies that are relevant to any proposed development on the site and relevant guidance and legislation.

Policy

This Flood Risk Assessment has been prepared in accordance with the National Planning Policy Framework (NPPF).

Consultations

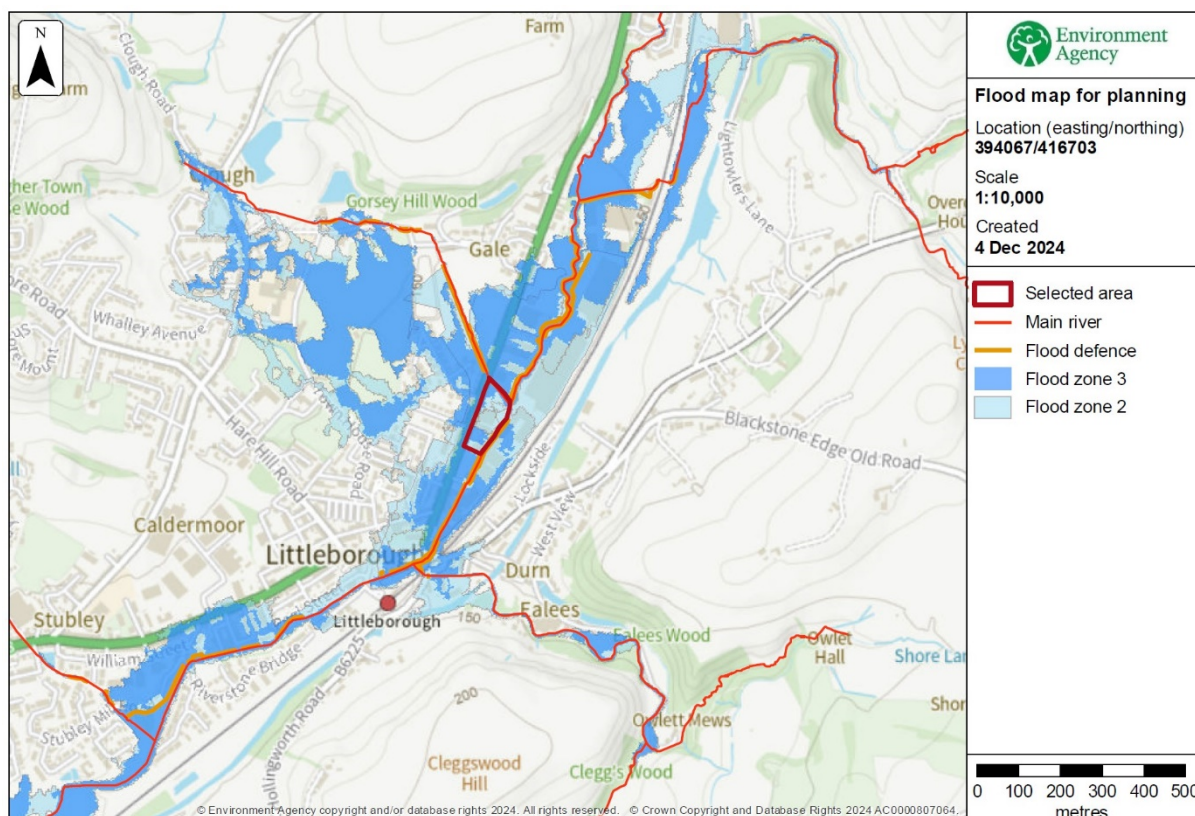
No consultation has taken place at this point with the approving local authorities in respect of flood risk. Appropriate Environment Agency published data has, however, been reviewed in relation to the development proposals. It is expected that detailed consultation will take place as the scheme develops with the regulators through the planning process.

FLOOD RISK ASSESSMENT

Flooding from Rivers

The Environment Agency (EA) flood map of fluvial flooding has the site within flood zone 2 and 3. The site is potentially at risk of flooding from the nearby rivers of Town House Brook and the River Roch.

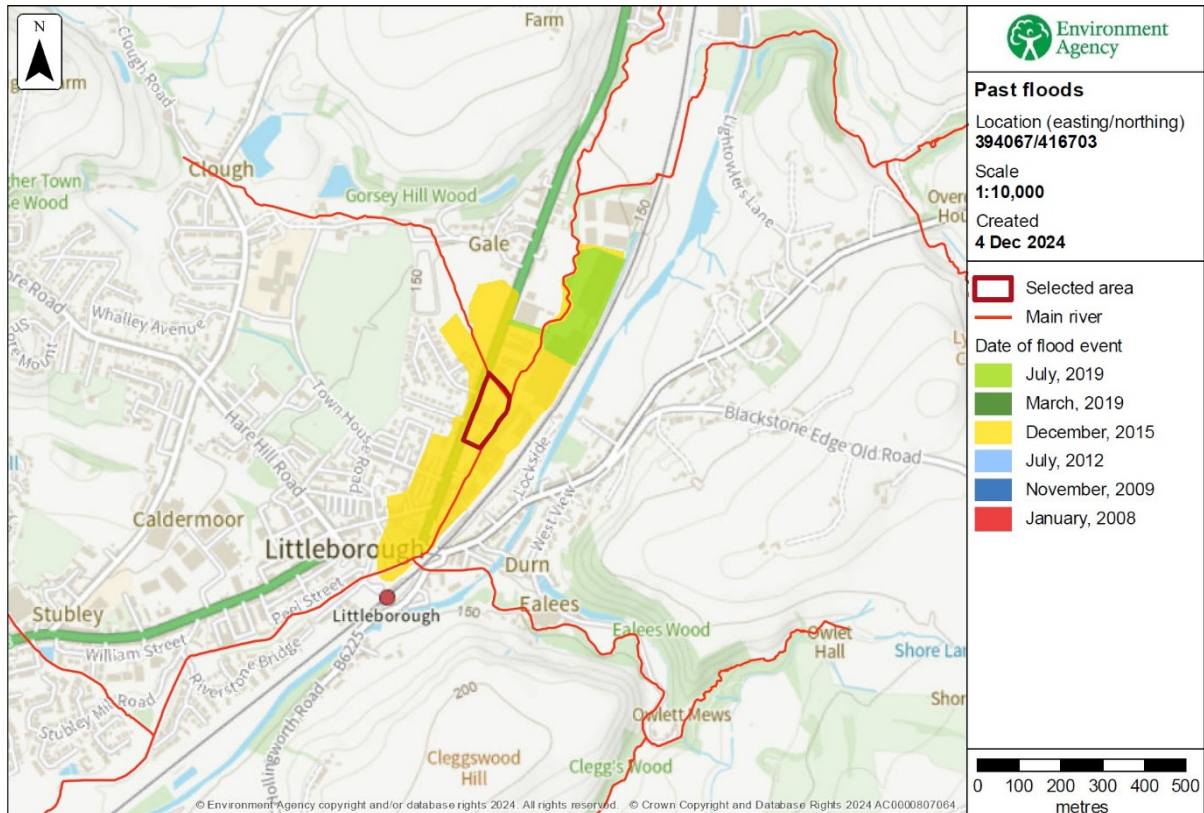
Below are extracts from the Environment Agency (EA) flood data, confirming the site is within flood zones 2 and 3. More detailed information has been provided by EA including the modelled flood data for the rivers.



EA Fluvial Flooding Data

Historical Flooding

The EA data provided shows that the proposed development site flooded in 2015. However, the site owners have confirmed that this was in fact not the case and that flooding was restricted to the public highway.



EA Historical Flooding Data

Flood Risk Vulnerability Classification

The proposed development is commercial units on an existing commercial development. The EA class this type of development as 'less vulnerable'. Using the EA flood risk vulnerability classification (shown below) determines that the type of development proposed is suitable for this location and flood zone (zones 2 and 3a). No exception test is required.

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	✓*

Key:

✓ Development is appropriate

x Development should not be permitted.

Climate Change

This flood risk assessment for this proposed development has to consider and include an appropriate allowance for climate change.

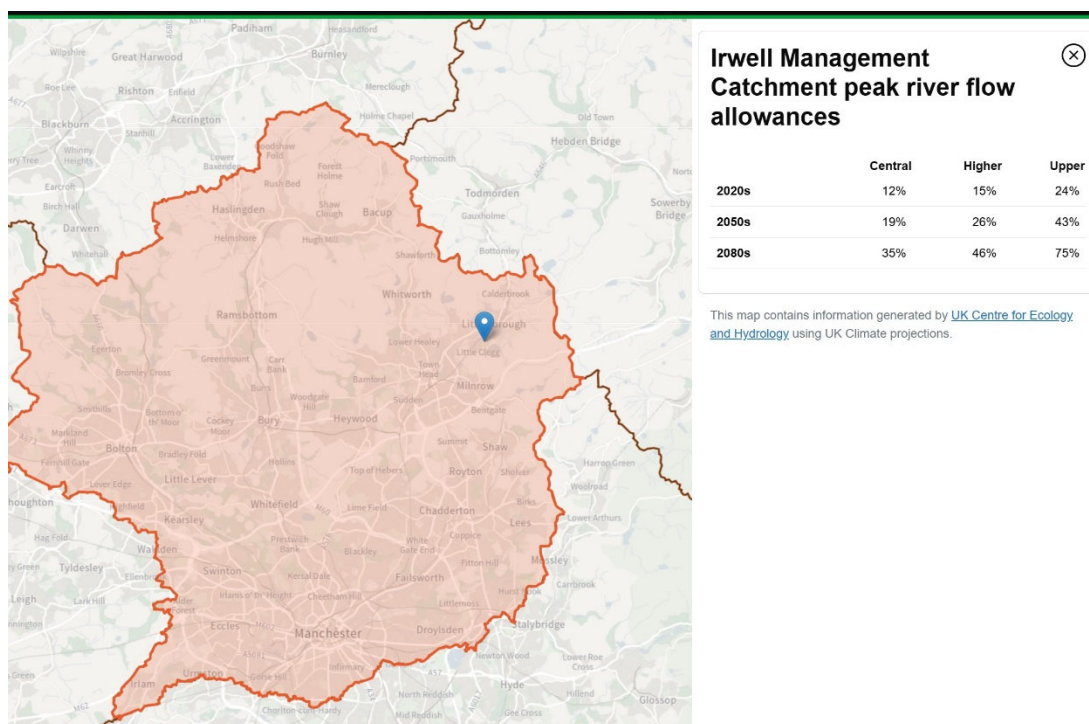
The catchment is within the Irwell Catchment and the suggested climate change allowances to consider are shown below.

As the commercial development is considered less vulnerable, then the central allowance should be used.

As the development is a commercial development, then lifetime is usually limited. The EA recommend that development with a lifetime up to 2060, should use the 2050's epoch. This would allow a 35 year lifespan and would be the most appropriate to confirm flood levels on the site.

The central allowance using the 2050's epoch suggests a climate change allowance of 19%. The EA modelled flood data has been provided that gives climate change allowances of +20%, +35% and +70%.

This FRA will use the 1% AEP +20% undefended data set as the development flood levels. The FRA will also look at the 1% AEP +35% to consider a potential longer lifetime for the development.

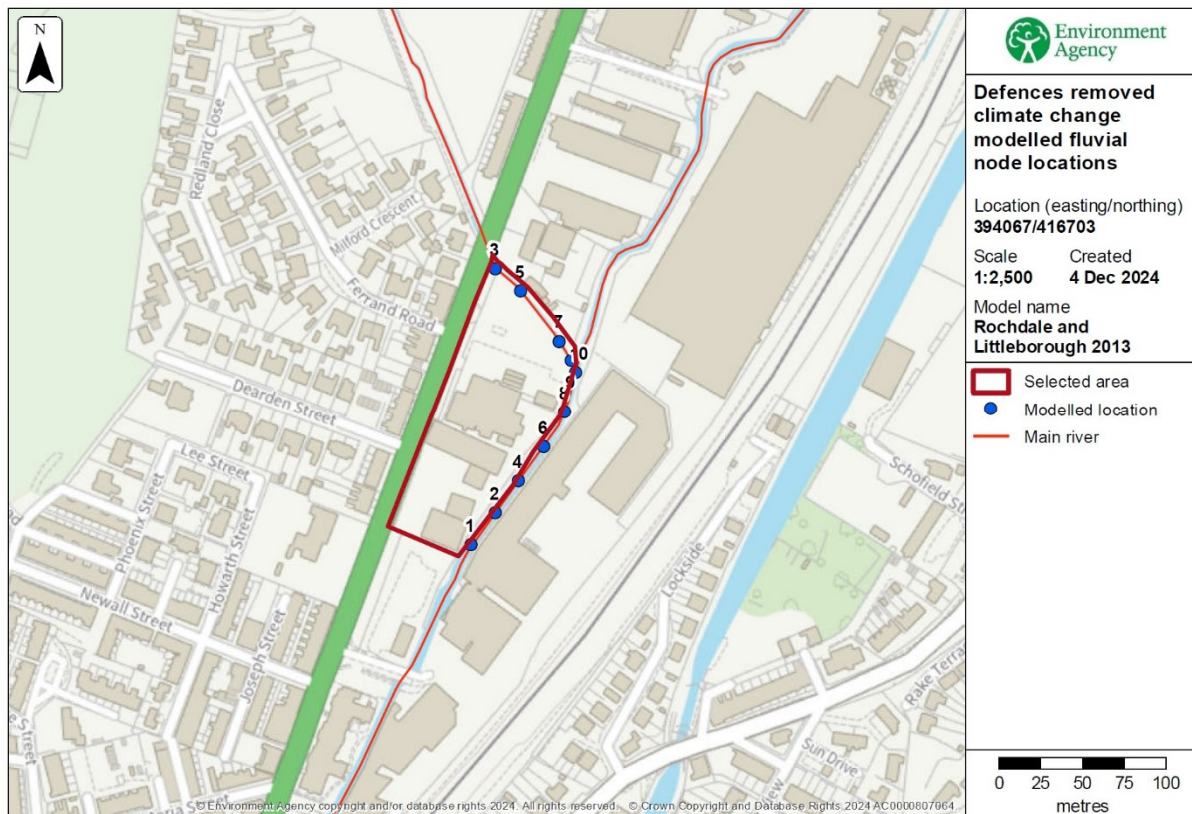


Climate Change Allowances.

Flood Modelling Nodes and Flood Levels

The detailed flood modelling for Town House Brook and the River Roch, include the following modelled node points, as shown in the plan below.

The modelled flood levels for the nodes shown are also shown in the extract from the EA food data, providing the 1% AEP (+20%, +35% and +70%) flood levels.



Modelled Flood Data – Node points

Modelled node locations data

Defences removed climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+20%)	1% AEP (+35%)	1% AEP (+70%)
				Level	Level	Level
1	1547718	394057	416624	144.80	145.05	145.37
2	1547597	394072	416643	144.99	145.29	145.51
3	1547706	394072	416790	145.72	145.81	145.92
4	1547857	394086	416662	145.19	145.34	145.51
5	1547795	394088	416777	145.69	145.79	145.91
6	1548022	394101	416683	145.40	145.56	145.69
7	1547211	394110	416747	145.60	145.73	145.85
8	1548053	394114	416704	145.48	145.63	145.73
9	1547228	394118	416735	145.56	145.71	145.82
10	1547904	394120	416728	145.56	145.71	145.82

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.

The proposed development is for two new units:-

- A manufacturing unit to the north of the site, which would be effected by modelled node levels 9 and 10 at it's northern end and nodes 6 and 8 at its southern end.
- A storage unit to the south of the site, which would be effected by modelled node level at node 1.

Therefore, the design flood levels for the development (the 1% AEP plus an allowance for climate change) should be as follows:-

- Manufacturing unit and north areas of the site, Northern end of the unit – 145.56m AOD and southern end of the unit – 145.45m AOD (interpolated between nodes 6 and 8).
- Storage unit and southern areas of the site – 144.80m AOD

Proposed Floor Levels.

The proposed development is for two new units:-

- Manufacturing unit - 145.55m AOD.
- Storage unit – 145.00m AOD.

The floor units of the proposed buildings are based on the requirements of the commercial activities and existing site constraints and to provide level floors between existing buildings and/or level access to the existing hard surfacing directly adjacent to the buildings. Therefore, the normal additional freeboard that is normally provided to proposed levels is not proposed in this case.

The proposed floor level for the manufacturing unit just encroach into flood zone 3, at its northern end, when the allowance for climate change is included in flood levels. At the northern end the flood depth could be expected to be approximately 10mm and so a very small depth. The remainder of the building is within flood zone 2.

As the building is almost entirely above the 1% AEP +20% CC flood level, then the building should be considered as being within flood zone 2.

The proposed floor level of the storage building is above the 1% AEP +20% CC flood levels and so should be considered to be in flood zone 2.

Proposed Floor Levels – Consideration of Increased CC Allowance

If the climate change allowance is increased to +35%, then the maximum flood depth at the proposed manufacturing unit in this scenario would increase by 150mm and so a maximum flood depth could be expected of 160mm.

Likewise, considering the increased CC allowance to +35% to the storage unit, then the unit would have some minor flooding to about 60mm depth.

Proposed Car Park Levels.

The proposed development includes a car park to the northern side of the manufacturing unit. This area is marginally within the flood zone 3, as existing ground levels are below the suggested 1% AEP +20%CC of 145.56 m AOD. However, the levels at the car parking area are generally around this or above and so the area is generally in flood zone 2.

It is proposed that the car park would be constructed at existing ground levels for operational requirements, but also to ensure that flood plain flood volume is not lost from the development site.

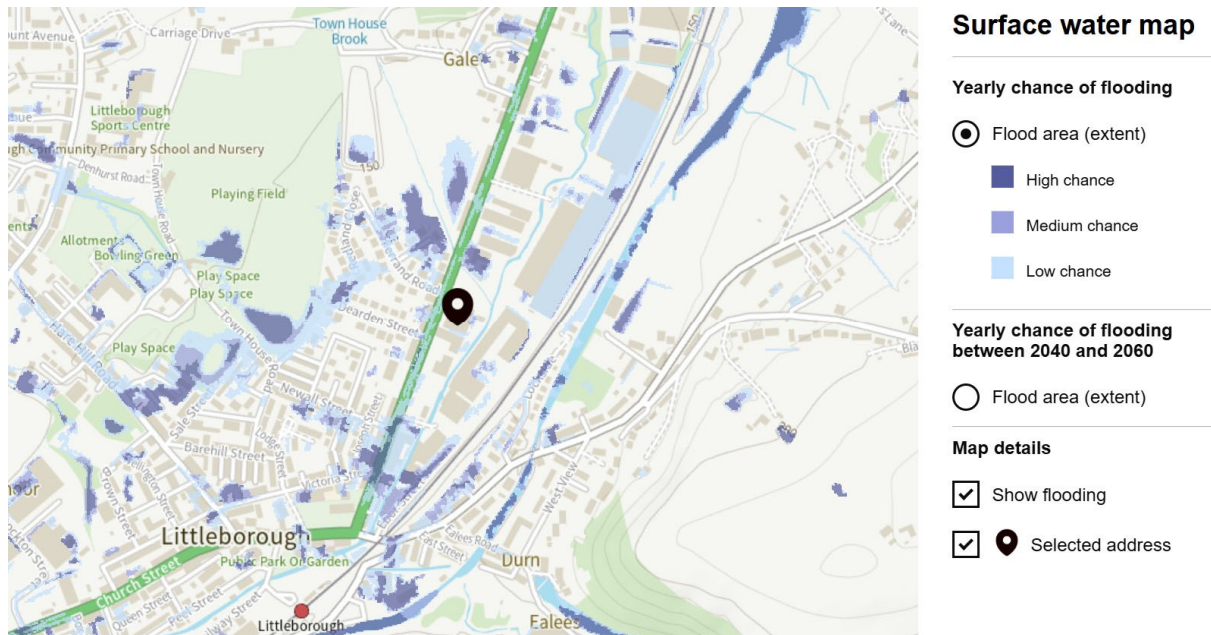
It is likely that car park levels would follow the existing ground levels and at a minimum of about 145.30m AOD to a maximum of about 145.60m AOD. Using the suggested modelled flood level of 145.56m AOD, then the proposed car park could be subject to maximum flood depths of about 260mm in the 1% AEP +20%CC flood event. This depth of flooding would not give potential for any major hazard and so would be considered acceptable. (Although it would be expected that the car park is evacuated prior to any major flood event).

Flooding from Surface Water

The Environment Agency publish on their website details of potential surface water flood areas. These are areas where intense rainfall or other events causes overland flow before water entering a watercourse or sewer.

The Surface Water flood map for the development site shows that there is some very minor potential for surface water flooding on site. Overall, the risk of surface water flooding should be considered as low.

The surface water flood map is shown below.

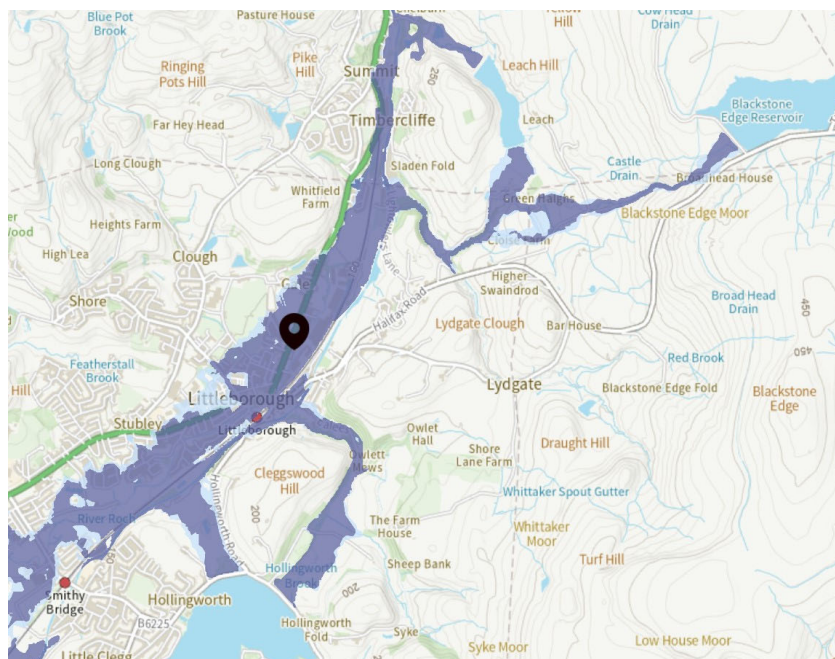


EA Surface Water Flooding Data

Flooding from Reservoirs

The flood risk from reservoirs is very small and unlikely to happen. The EA publish flood risk maps for areas that may be affected by a reservoir failure. The risk from reservoir flooding here would be from the Blackstone Edge Reservoir or the Hollingworth Lake.

A failure risk of the reservoirs is very low and, as such, flood risk for the site should be considered low.



Reservoirs map

- ☒ Extent
- When river levels are normal
 - When there is also flooding from rivers

Map details

- ☒ Show flooding
- ☒ Selected address

EA Reservoir Flooding data

Sewer Flooding

No records of public sewers has been obtained. However, an on site drainage survey has been undertaken and there are no sewers on site. Any public sewers would be located within Todmorden Road. Todmorden Road is lower than the development site and so any sewer flooding would not adversely affect the development.

Potential of sewer flooding should be considered low.

Groundwater Flooding

Groundwater flooding usually occurs in low lying areas underlain by permeable rocks and aquifers that allow groundwater to rise to the surface through the permeable subsoil following long periods of wet weather. Low lying areas may be more prone to flooding because the water table is usually at a much shallower depth and groundwater paths tend to travel from high to low ground.

The site is not low lying and it would be expected that if any water to occur on site, then this would flow from the site following the natural contours. Given that the site is not low lying and ground levels fall away from the site to the road, then the risk of ground water flooding is likely to be low.

Surface Water Run-Off

The pre-development site is generally commercial premises and hard-standing areas. The existing surface run-off generally is piped to the adjacent river. This would generally remain for the existing buildings and so not affect the current surface water run-off.

The proposed development will have a managed surface water drainage system and so surface run-off will be managed on site to an acceptable level similar to existing run-off rates. A Drainage Strategy is provided as part of the planning application to confirm proposals.

Flood Risk Elsewhere

The new development on this site will be drained to a high standard and surface water run-off from the development will be low and close to greenfield rates. The surface water system has been considered more fully in the Drainage Strategy for the development.

The buildings are to be constructed in flood zone 2 and so will not affect flood zone 3. If a larger flood event happens then flood water would enter the buildings and so no flood volume for flood water is lost for the development. Likewise, the proposed car parking area is to be constructed over flood zone 2 and 3 areas, but will follow existing ground levels and so not reduce flood storage areas adjacent to the rivers.

Potential flood risk elsewhere created by this proposal should be considered to be low.

A plan of the proposed development site is shown in the appendix.

Flood Resilience

For operational purposes the two proposed buildings floor levels are to be set at about existing ground levels that are at or just above the design flood level of the 1% AEP + 19%CC level. As such, no freeboard is to be provided to the floor levels. Therefore, there is a risk, in the design event, that a small depth of water will enter the buildings. In addition, if the design event is exceeded, then again flood water would enter the buildings to a greater depth.

The buildings are commercial use and are categorised as less vulnerable in flood events. In addition, the proposed offices are to be located at first floor level above any risk of flooding. Therefore, consideration has already been made to operational requirements in a flood risk zone. It would also be a sensible precaution to store any goods that would be subject to water damage at least 600mm above the proposed floor levels.

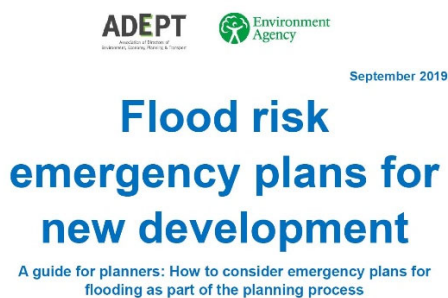
As the buildings are at low risk of water ingress during a major flood event, it is proposed that the buildings should be constructed with flood resistance material and measures for a minimum of 600mm above the proposed floor levels. This could include:-

- Walls constructed out of a water resistant material not affected by flood water.
- A suitable insulation material that is not affected by flood water.
- Telescopic vents, if required, set above the flood level.
- Solid floor slabs that would not allow ingress of water to any part of the structure.
- Suitable robust and water resistant floor finishes.
- Ability to wash out flood buildings.
- Electrical work that takes into account flood levels and includes the consideration of electrical sockets and distribution boards fitted at higher levels within the buildings.

With the addition of these sensible mitigation measures, the buildings should remain at low risk from flooding for their lifetime.

Emergency Evacuation Plan

As this site is within flood zone 2 and 3, the site should have an emergency flood evacuation plan (EP) prepared. It is recommended that the EP follows the recommendations of the Adept Flood Risk Emergency Plans for New Development.



Woman being carried through floodwater by emergency services staff

The guide provides a full checklist on how to prepare a suitable plan and be ready to prepare, act and survive a flood event. The Adept checklist is, briefly

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

These items should be considered fully during the preparation of the EP. For this FRA, some advice is provided for items 5, 6 and 7.

- Flood Warnings and Associated Actions.

The Environment Agency provide a free flood alert service. The business can sign up to Floodline to obtain flood warnings for the premises. This is important to provide an early warning of potential flooding so that the business can prepare or act to the flood warnings.

- Safe Access and Egress

Safe access and egress will be as currently used and that will be to Todmorden Road. On exiting the business onto Todmorden Road turn right and head towards the flood zone 1 area, about 120m to the north-east.

This escape route may not stay flood free throughout a flood event and so the early warning from Floodline is important. This should be recognised and planned for in the EP.

- Safe Refuge.

It is recommended that the EP include for evacuation of the site prior to a major flood event that would adversely affect the business site. However, there is a potential for a safe refuge at first floor level within the proposed offices. This should be considered as whether this may be a viable emergency option during preparation of the EP.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- This proposed development site is in flood zone 2 and 3.
- The site is at some risk from fluvial flooding from the adjacent rivers.
- All other risks have been assessed and should be considered low.
- The modelled design flood levels (1% AEP+20% CC) are, for the manufacturing building, between 145.56m AOD and 145.45m AOD and for the storage building 144.80m AOD.
- The proposed floor levels, taking into account site restraints and operational requirements are, for the manufacturing building, 145.55m AOD. And for the storage building 145.00m AOD. Which places the floor levels marginally above the design flood event.
- A lack of freeboard to floor levels will be mitigated by the use of sensible operational procedures and flood resilience measures incorporated into the buildings.
- All sources of flood risk have been considered and the overall flood risk for the proposed buildings should be considered low. Therefore, the development proposed is suitable for this site.
- Car park levels should be at existing ground levels so not to reduce available flood volume on site.
- Car park levels would potentially give a maximum flood depth of 260mm, which would be acceptable to avoid major hazards.
- This development will not increase flood risk on or off site.

Recommendations

- That a full Emergency Evacuation Plan is produced for the site.

APPENDICES

APPENDIX A – Proposed Development

APPENDIX B – Limitations

The discussion, conclusions and recommendations contained in this Report represent the professional opinions of Bright Young Consulting Limited (BYC), based upon the information listed in the Report, exercising the duty of care required of an experienced Engineering Consultant. BYC does not warrant the accuracy of the information or data forming the basis of the report and will not be responsible for any opinions which BYC has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by BYC for the sole and exclusive use of the Client and for the specific purpose for which BYC was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and BYC, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, BYC does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless BYC from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by BYC.