

Prepared on behalf of
A&D Repairs
Liversedge Mills,
Huddersfield Road,
Mirfield,
WF14 9DQ

Flood Risk Assessment

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1 Introduction

1.1 The following document has been prepared as a Flood Risk Assessment for the extension to the existing industrial building located at Liversedge Mills, Huddersfield Road, Mirfield, WF14 9DQ

1.2 This Flood Risk Assessment has been undertaken in accordance with the National Planning Policy Framework (NPPF) and supplementary Planning Policy Guidance.

1.3 The following assessment discusses the present and future flood risk to the site over the lifetime of the development, using a risk based approach and reference to the Sequential Test and Exception Test where appropriate.

1.4 This report also discusses and recommends mitigation measures that should be applied to the development to reduce the effects of a potential flood event, to ensure the development does not increase flood risk elsewhere and to protect the end users from the effects of flooding.

2 Existing Situation

2.1 Existing Site Description

2.1.1 The site is located off Huddersfield Road within Mirfield approximately 3.5km north west of Huddersfield town centre.

2.1.2 The site itself is bound to the north by Huddersfield Road, neighbouring industrial buildings to the east, south and west with the River Calder to the south.

2.1.3 The site itself is currently an existing industrial development with adjoining hardstanding areas.

2.1.4 Vehicular access is currently gained to the north of the site off Huddersfield Road.

2.1.5 The closest watercourse is River Calder and generally flows from west to east.

2.2 Existing Site Analysis

2.2.1 The site area is 1,358m² taken from information provided by the client. The existing site layout has been assessed to establish the estimated surface water run-off.

2.2.2 The existing surface water runoff rate from the site has been assessed using WinDES software. The 1 in 1 year rate is calculated at 28.6l/s, based on an unrestricted discharge.

3 Consultation

3.1 Environment Agency

3.1.1 As part of this Flood Risk Assessment, the Environment Agency have been consulted regarding the flood risk for this site.

3.1.2 The response from the Environment Agency confirms that the site falls within Flood Zone 3a having a 1 in 100 or greater annual probability of river flooding.

3.1.3 The site is defended by high ground, private walls, industrial unit and natural bank with an actual upstream crest level of 47.22m AOD and a downstream crest level of 44.90m AOD.

3.1.4 Watercourse levels have been provided for the River Calder for a 1 in 100 year + climate change and 1 in 1000 year flood scenario.

3.1.5 From the data provided, the nearest node to the site is node EA1231293_CALD10_1318 which shows a 1 in 100 year + climate change flood level at 46.94m AOD.

3.1.6 The Environment Agency have provided information regarding historic flooding in the area and shows that the site was unaffected from the February 2002 and January 2008 flood events.

3.2 Project Mirfield

3.2.1 The Project Mirfield website www.projectmirfield.co.uk was reviewed as part of the flood risk assessment. The website contains some really useful information regarding historic flood events and most recently the 2015 Boxing Day floods.

3.2.2 The website shows video footage and photos from the 2015 Boxing Day floods and estimates the volume of flood water which surged across the Mirfield flood plains. This can be reviewed at www.projectmirfield.co.uk/uncategorized/the-grand-total-of-flood-water-on-boxing-day-2015-calculates-to-263130-9-cubicmetres-of-flood-water.

3.2.3 The plan shows that numerous areas were affected by the flood event with each area of flooding categorised by a letter. However the site is located within an area without a letter therefore there is no evidence that the site was affected by the 2015 Boxing Day floods.

4 Proposed Development

4.1 The proposals include for the redevelopment of the existing industrial building with the end use remaining the same.

4.2 This includes creating a new extension to the building that ties into the existing structure.

4.3 The proposed floor slab and finished floor level is to be no lower than the existing finished floor level.

4.4 A plan provided by the architect is contained that show the nature of the proposals and the area of development.

4.5 Access to the site will continue to be gained from Huddersfield Road.

4.6 On assessing the proposed site layout, the permeable and impermeable areas of the site remain the same as existing with 1,358m² (100%) considered to be impermeable and 0m² (0%) permeable.

4.7 As the proposals do not increase the amount of impermeable areas within the site compared to that of the existing, the proposals will not increase the amount of surface water run-off and will have no significant effect on the existing surface water drainage system on site. The existing mains foul and surface water connections will be retained.

5 Sequential and Exception Test

5.1 Sequential Approach

5.1.1 Paragraph 104 of the National Planning Policy Framework states that applications for minor development and changes of use should not be subject to the Sequential or Exception Tests but should still meet the requirements for site-specific flood risk assessments.

5.1.2 The proposals include for the redevelopment of the existing industrial building with the end use remaining the same.

5.1.3 This includes creating a new extension to the building that ties into the existing structure.

6 Assessment of flood risk

6.1 Surface Water Flooding

6.1.1 The main risk of flooding from overland flow comes from the highways and impermeable areas within the vicinity of the site.

6.1.2 The Environment Agency have provided a surface water flooding plan which shows the building to be within a very low risk area with a less than 1 in 1000 (0.1%) chance in any given year. The access road to the site however does have a low risk area with a less than 1 in 100 (1%) but greater than or equal to 1 in 1,000 (0.1%) chance in any given year.

6.1.3 The total impermeable areas of the proposed site will remain the same at 100% impermeable

6.1.4 As the proposals do not increase the amount of impermeable areas within the site compared to that of the existing, the proposals will not increase the amount of surface water run-off and will have no significant effect on the existing surface water drainage system on site.

6.1.5 It is concluded that the risk of flooding from surface water flooding to the site is no worse from the proposals than the existing scenario. The mitigation measures proposed for the development as discussed in section 7 will also protect against any flooding from this source should the risk increase over the lifetime of the development.

6.2 Flooding from Rivers

6.2.1 As discussed in Section 3, the site falls within Zone 3 having a 1 in 100 or greater annual probability of river flooding (>1%).

6.2.2 The length of the River Calder that is in close proximity to the site is defended in the form of high ground, private walls, adjacent industrial units and natural bank with an actual upstream crest level of 47.22m AOD and downstream crest level of 44.90m AOD.

6.2.3 The Environment Agency have provided modelled fluvial flood levels for the River Calder which includes a number of flood return periods. For the purpose of this report flood data at node EA1231293_CALD10_1318 will be used, as this node is immediately upstream of the development and represents the worst case flood levels in direct vicinity of the site.

6.2.4 For the purpose of this report the 1 in 100 + climate change flood level will be used in the assessment of the site at node EA1231293_CALD10_1318.

6.2.5 At node EA1231293_CALD10_1318 the following anticipated flood levels have been provided (related to m AOD - meters above ordnance datum, Newlyn Cornwall). At the stated node a 1 in 100 + climate change is given at 46.94m AOD.

6.2.6 As the site is located within the upper extents of the flood defences reach the actual upstream crest level of 47.22m AOD has been used to assess the site. Therefore the defences protect the site against a 1 in 100 + climate change event.

6.2.7 If the defences were to breach or overtop then flood depths of up to 1.4m could be expected within the site demise.

6.2.8 It is concluded that the risk of flooding from the River Calder to the site is no worse from the proposals than the existing scenario. The mitigation measures proposed for the development as discussed in section 7 will also protect against any flooding from this source should the risk increase over the lifetime of the development.

6.3 Flooding from Sewers

6.3.1 If any of the sewers/drainage apparatus adjacent to the site were to surcharge and flood, it is likely that any floodwaters would be shallow, relatively slow moving and constrained within the limits of the carriageway.

6.3.2 At the time of writing the report there was no evidence available to suggest the site has been directly affected from flooding from overloaded sewers/drainage apparatus in the past.

6.3.3 As the proposals do not change the end use of the development it is concluded that the risk of flooding from sewer flooding to the site is no worse from the proposals than the existing scenario.

6.4 Flooding from Climate Change

6.4.1 It is generally considered that the intensity of rainfall will increase by up to 10% by the year 2025 and that winter months will become proportionately wetter.

6.4.2 Peak river flows are anticipated to increase by up to 20% due to climate change.

6.4.3 These factors should be considered when establishing relevant criteria for the hydraulic design of any surface water infrastructure given the expected lifetime of the development.

6.4.4 Section 7 discusses mitigation measures to be put in place which would provide additional protection for the proposed development which would more than offset any increase in flood risk due to climate change.

7 Mitigation of Flood Risk

7.1 Essential Mitigation Measures

7.1.1 It is important that any proposed development that has the potential to change the flood mechanisms on a site is designed such that there is no increased flood risk to the site itself, or sites upstream and downstream of the development.

7.1.2 The finished floor should be no lower than that of the existing.

7.1.3 The site lies within an Environment Agency flood alert area. To obtain up to date flood warnings Call Floodline on 0845 988 1188, select option 1 and enter quickdial number 137401 to get more information. Any flood warnings will also be broadcast on local television and radio.

7.1.4 If the site was to flood, then it is considered that if required (if employees and visitors do not evacuate at the time of a flood alert from the Environment Agency) they should take refuge from any floodwaters by simply moving to the first floor of the development as finished floor levels are above the anticipated 1 in 100 year + climate change flood level for this site.

7.1.5 The developer should also refer to the publication 'Preparing for Floods' published by the Office of the Deputy Prime Minister in October 2003. This document is an interim guidance for improving the flood resistance of domestic properties and small businesses.

7.2 Recommended Mitigation Measures

7.2.1 The layout of external surfaces within the new development should ensure that the grades of such surfaces fall away from any access points into the building to reduce the risk of flooding from overland flow.

7.2.2 Consideration should be given to introduce a removable flood gate to all ground floor doorways and air brick covers which can be installed quickly should the development become at risk of flooding to stop the ingress of flood water.

7.2.3 The replacement of any chipboard / reconstituted wood fixtures and fittings with plastic or steel fittings at ground floor level should be considered to decrease the need for replacement after a flood event.

7.2.4 All electrical circuits on the ground floor of the building should be at least 600mm above the finished floor levels at ground floor level in accordance with Part M of the Building Regulations 2000. The electrical circuits should be run to sockets and switches from the ceiling cavity between the ground and first floors to ensure that they are not affected should any flood water enter the building.

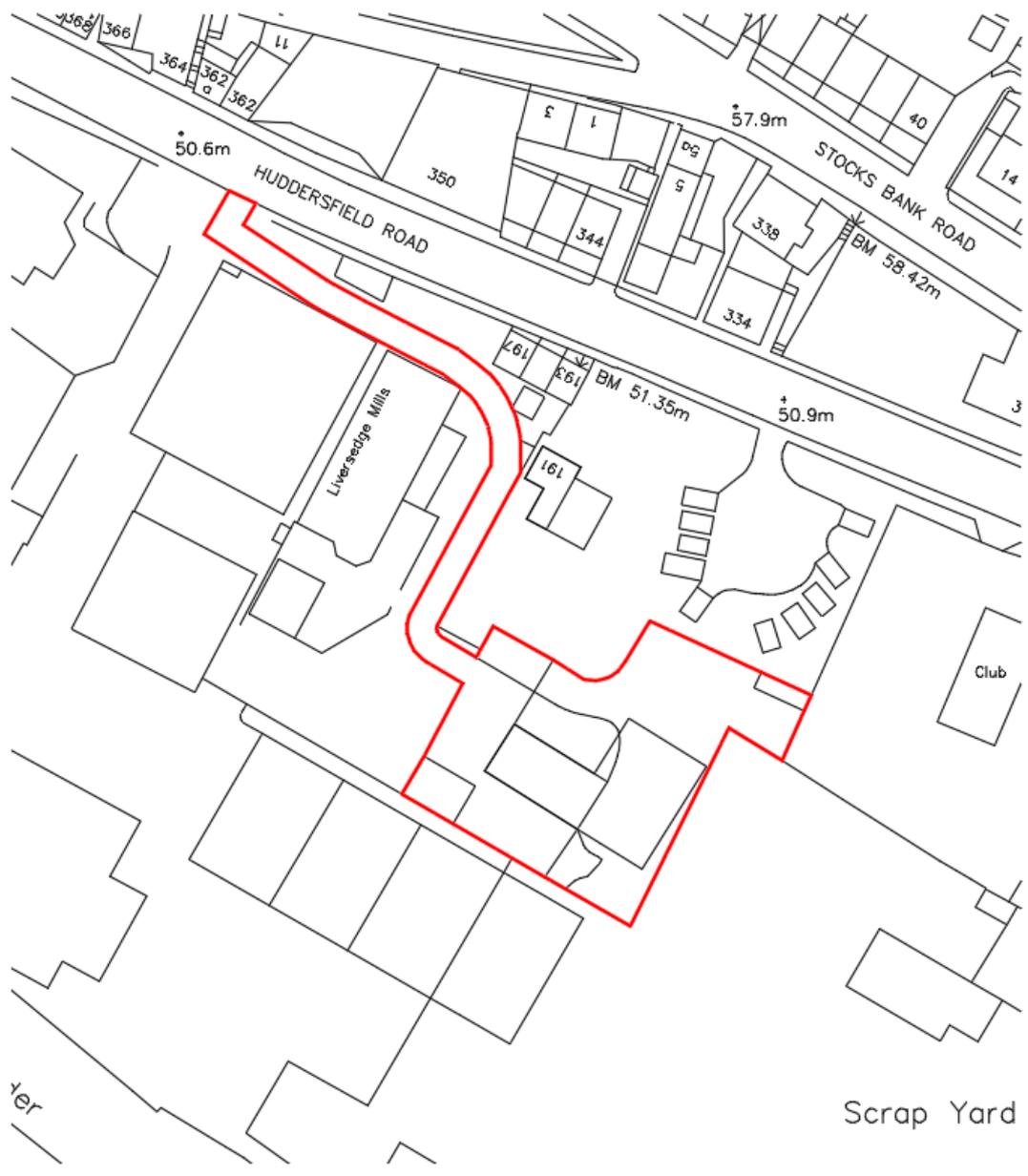
8 Conclusion

8.1 This report serves to review and assess the sources of potential flooding to the site, the impact of the proposed development on the flooding mechanisms of the site and the impact on existing development both upstream and downstream of the site.

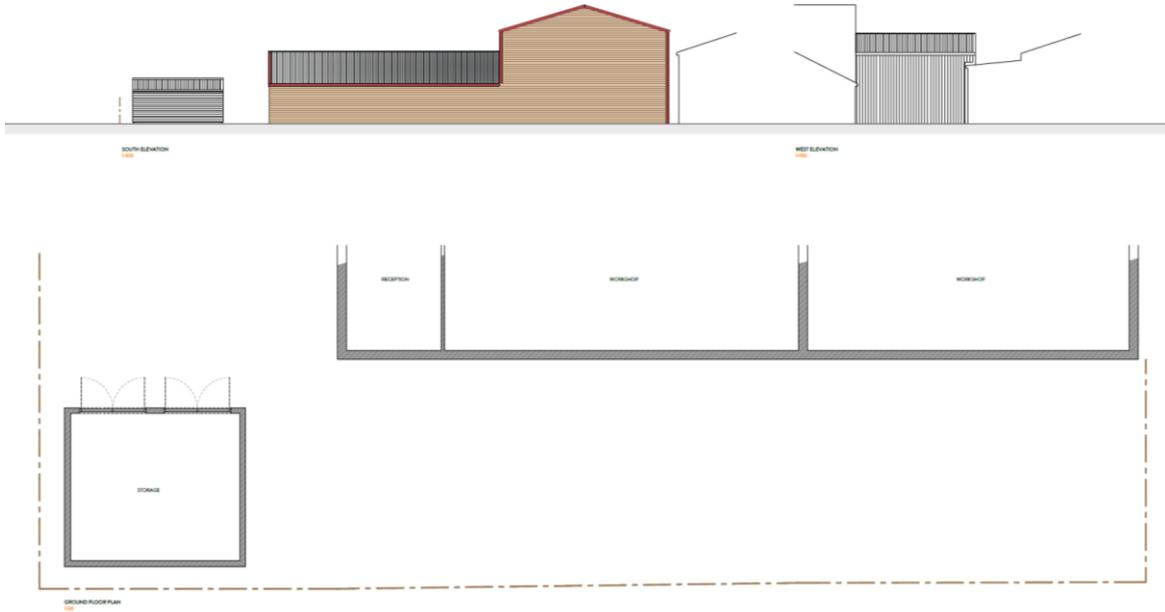
8.2 The report have been undertaken in accordance with the National Planning Policy Framework (NPPF) and it is concluded that the development is suitable for this location taking into account the proposed end use site.

8.3 Suitable mitigation measures have been recommended in Section 7 that will reduce this risk to acceptable levels for the end user should a flood event occur.

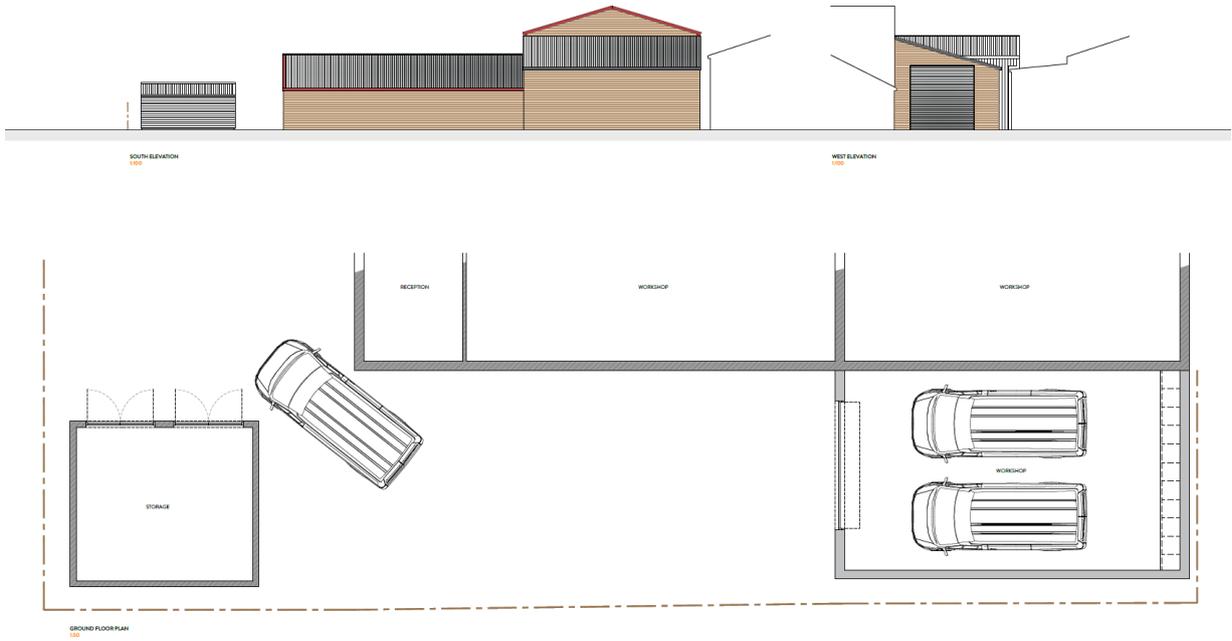
8.4 This report concludes that the proposed development can take place without being at an unacceptable risk of flooding and without increasing the risk to the site itself or other sites in the vicinity.



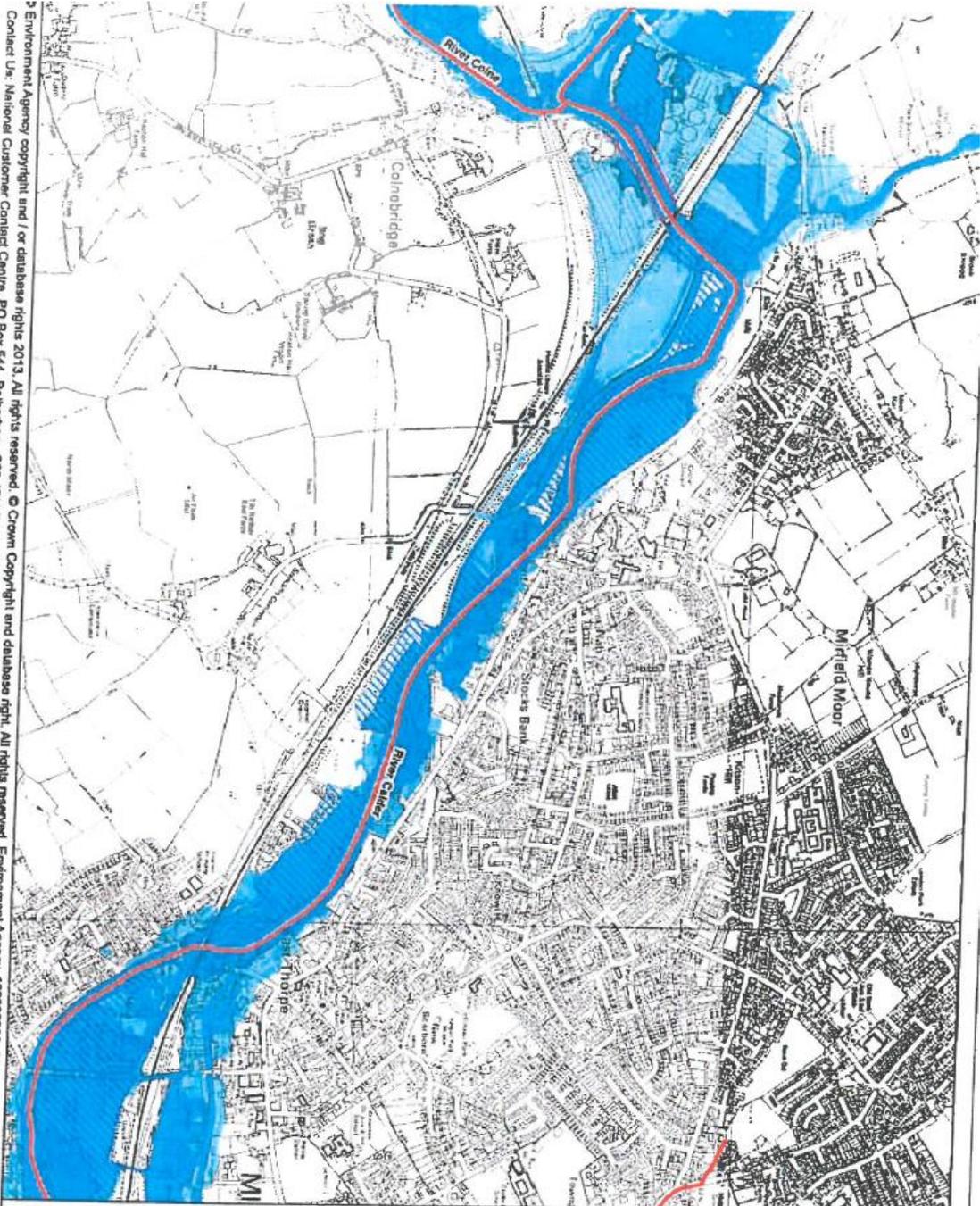
Location Plan



Existing GA



Proposed GA



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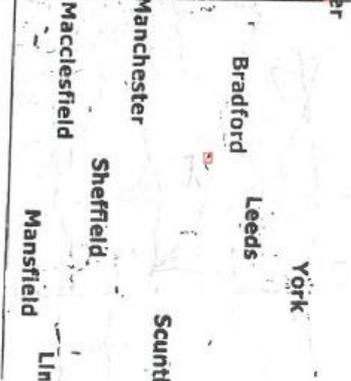


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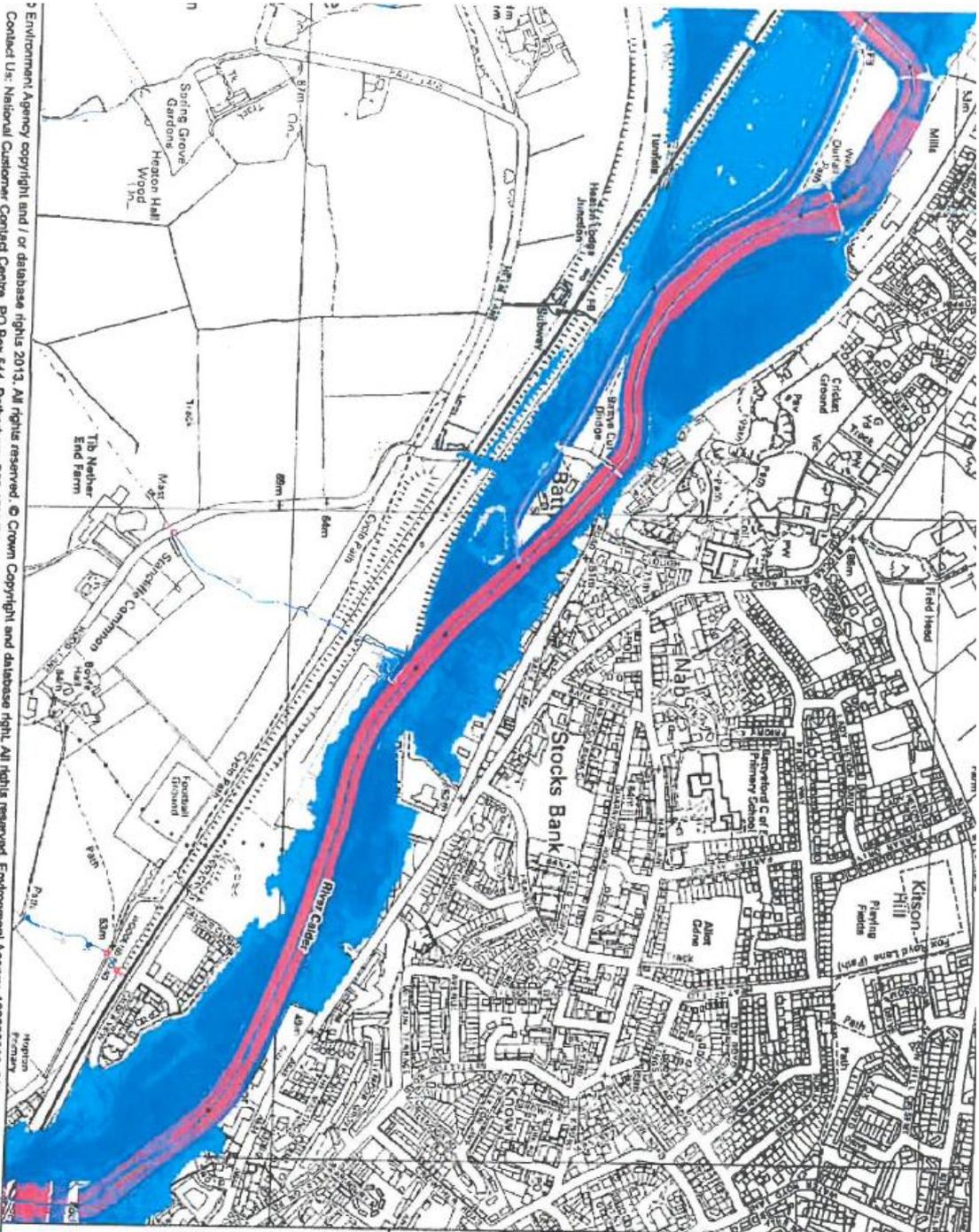


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- Flood Zone 1 (FZ1)
- Flood Zone 2 (FZ2)
- Areas Benefitting From Flood Defences
- Flood Storage Areas
- Flood Map Flood Defences
- Main River



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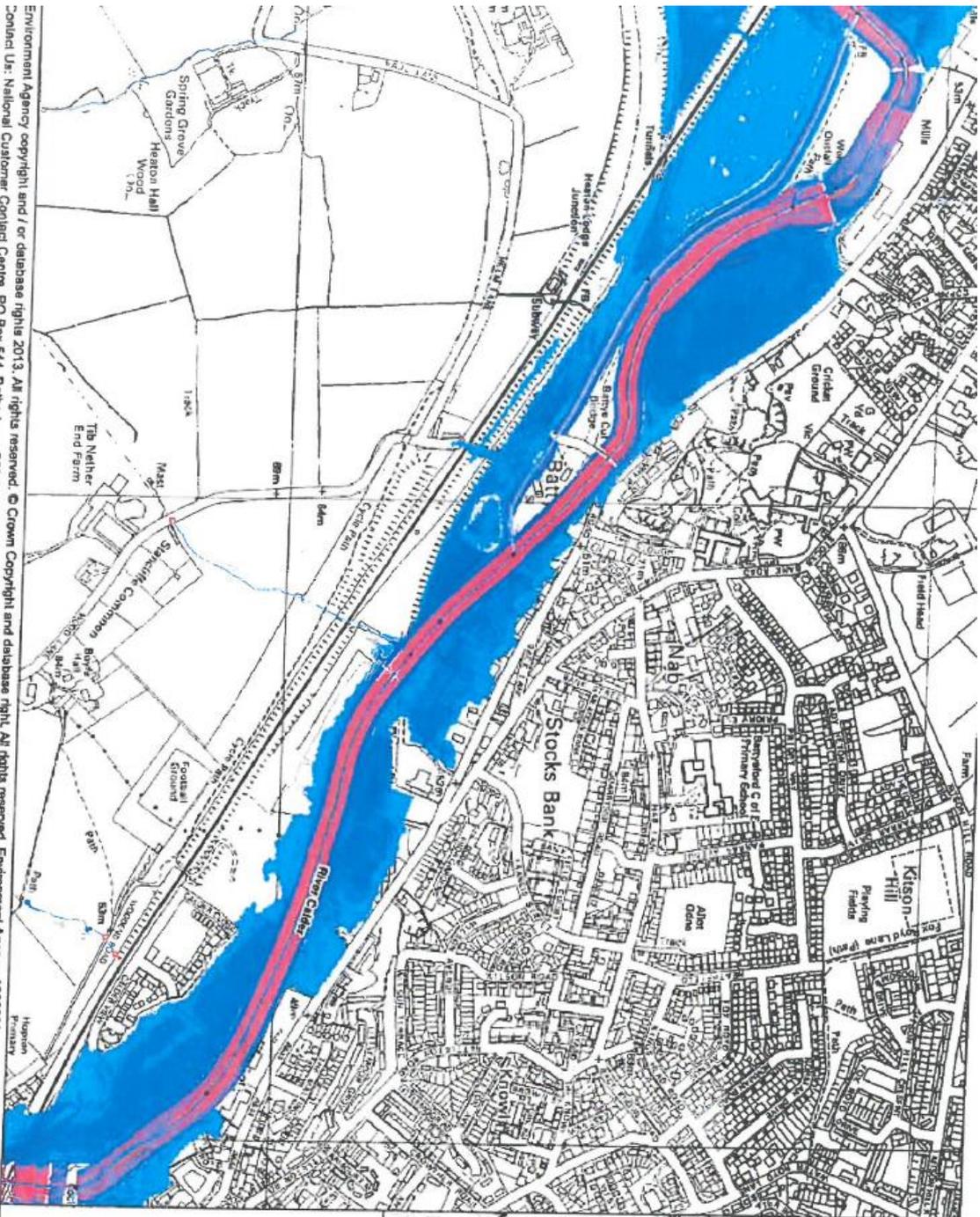


Bradford
 Leeds
 York
 Manchester
 Scunthorpe
 Sheffield
 Mansfield
 Macclesfield
 Lin

LEGEND

Defended 1 in 1000 year plus Depth GH
 MIR_DEW_005_1000Yr-Def_d_Max.asc

0 - 0.7
0.71 - 1.4
1.41 - 2.1
2.11 - 2.8
2.81 - 3.61
3.62 - 4.57
4.58 - 5.57
5.58 - 6.45
6.46 - 7.27
7.28 - 8.4
Main River



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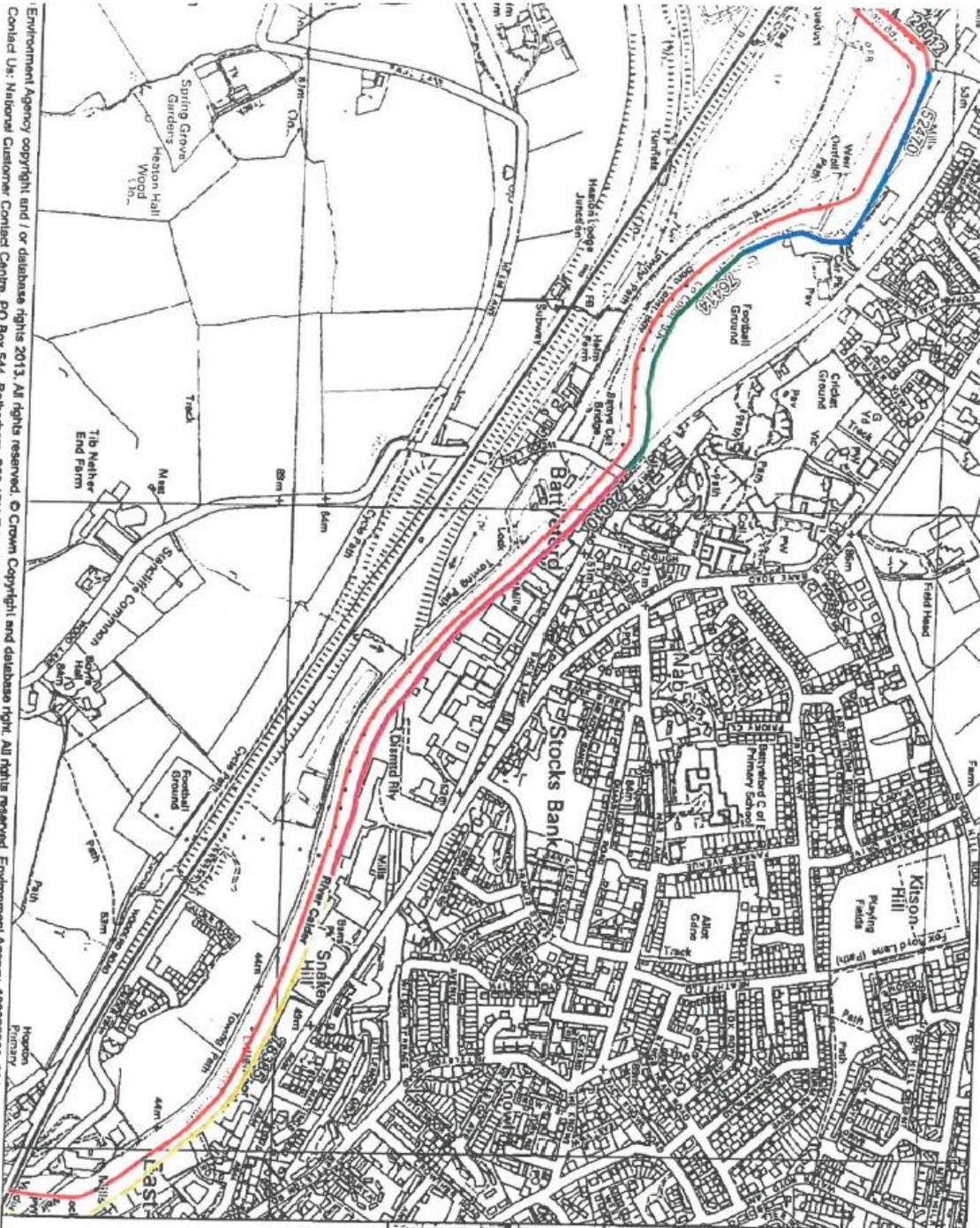
Underflooded 1 in 1000 year
Depth Grid

0 - 0.7
0.71 - 1.41
1.42 - 2.11
2.12 - 2.82
2.83 - 3.6
3.61 - 4.56
4.59 - 5.6
5.61 - 6.46
6.47 - 7.28
7.29 - 8.43
8.44 - 9.43

— Main River

Manchester
Sheffield
Macclesfield
Mansfield
Lin

Bradford
Leeds
York
Scunthorpe

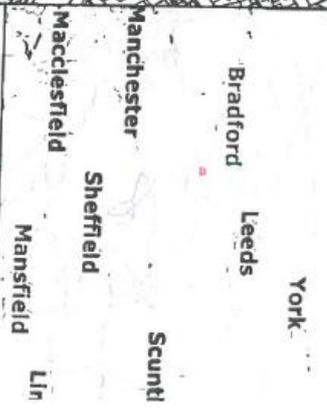


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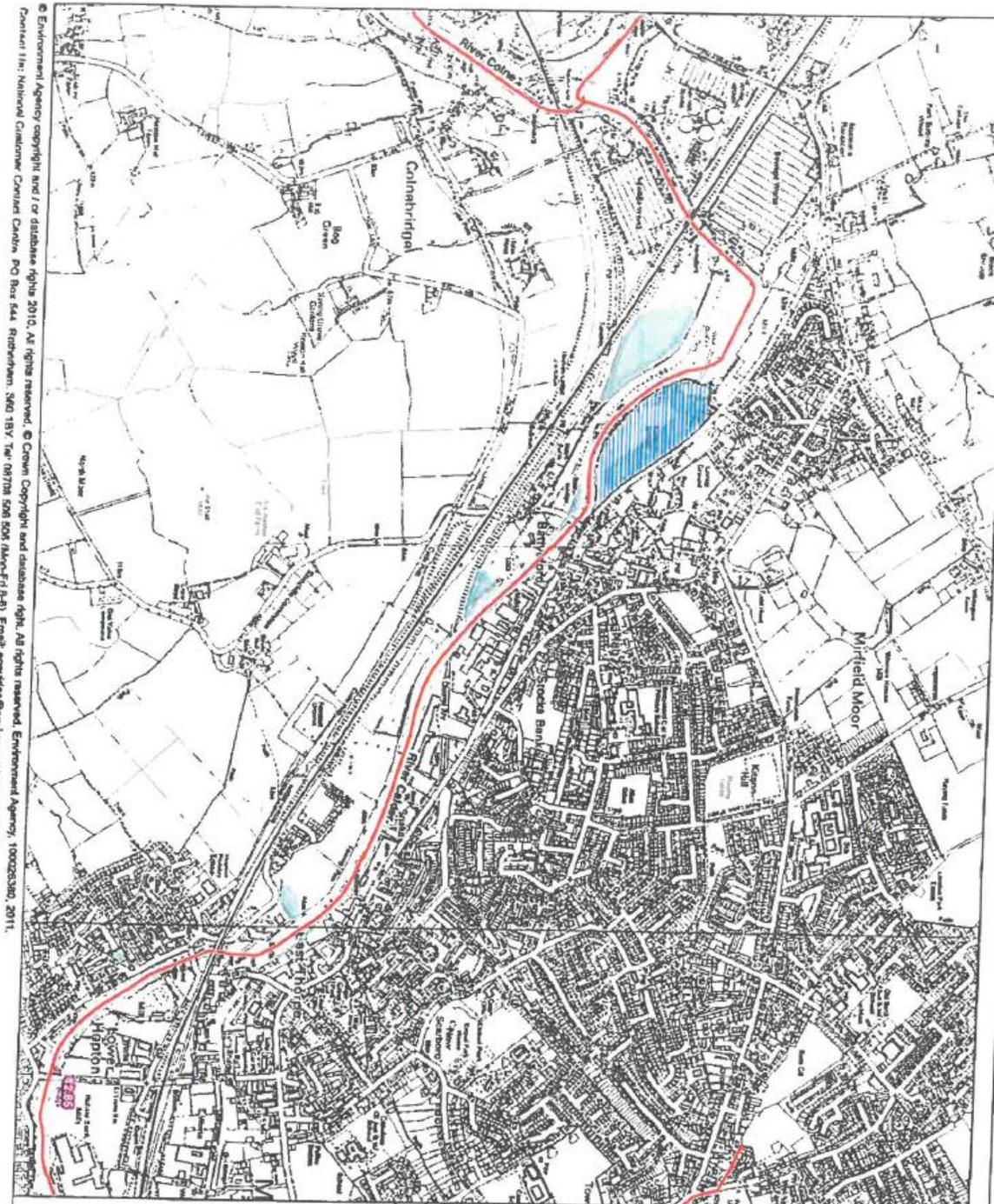
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Defences

ASSET_ID	Color
28010	Red
28012	Orange
52470	Yellow
76385	Green
76414	Blue
Main River	Red line



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 Mansfield
 Lint

Historical Flood Extents and Levels

- LEGEND**
- Feb 2002 Flood Event Flood Level (m)
 - Jan 2008 Flood Event Flood Extent
 - Feb 2002 Flood Event Extent
 - Main River