FLOOD RISK ASSESSMENT

for

CLITHEROE FOOTBALL CLUB

PROPOSED CREATION OF CAR PARKING AND AREA OF SOFT LANDSCAPING

at

CLITHEROE FOOTBALL CLUB

SHAWBRIDGE STREET, CLITHEROE, BB7 1LZ

OCTOBER 2021

REFORD

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А	Location plan

- B Environment Agency information
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1. INTRODUCTION

- 1.1 This flood risk assessment has been produced on behalf of Clitheroe Football Club in support of a planning application for the proposed creation of car parking (including lighting) and area of soft landscaping to redundant land behind the stands at Clitheroe Football Club, Shawbridge Street, Clitheroe, BB7 1LZ. A location plan is included within Appendix A.
- 1.2 The Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (NPPG) in relation to Flood Risk and Coastal Change, and describes the existing site conditions and proposed development. It assesses the potential sources of flooding to the site from tidal, fluvial, groundwater, surface water and other sources, taking a risk based approach in accordance with National Policy.

Site summary

Site Name	Clitheroe Football Club
Location	Shawbridge Street, Clitheroe, BB7 1LZ
NGR (approx.)	SD747418
Application site area	0.3 ha (approx.)
Development type	Leisure
Vulnerability	Less Vulnerable
Indicative Flood Zone	Flood Zone 3
Local Planning Authority	Ribble Valley Borough Council

2. DESCRIPTION OF THE SITE

Existing site

- 2.1 The proposal relates to the area of redundant land behind the stands to the rear of the houses on Taylor Street at the existing sports and leisure complex that comprises Clitheroe Football Club. The area of the site is approx. 0.3 ha.
- 2.2 A number of watercourses lie within close proximity to the site. They are:
 - The Mearley Brook, classified as 'Main River', lies approx. 60m to the west of the site in open channel and flows to the south to discharge into the Pendleton Brook and ultimately the River Ribble.
 - The Shaw Brook, classified as 'Main River', lies approx. 60m to the south of the site and discharges into the Mearley Brook at Shawcross Street.
 - An unnamed watercourse, classified as 'Main River', flows from the north to discharge into the Mearley Brook at Holden Street, approx. 120m to the northwest of the site.
 - An unnamed ordinary watercourse flows west approx. 200m to the north of the site to discharge into the Mearley Brook at Whittle Close.
 - A drain in open ditch lies at the north eastern corner of the ground.

Proposed development

- 2.3 It is proposed that the development site will comprise the creation of car parking and area of soft landscaping, which is to be used as a secondary car park for players and officials only, with limited hours of operation on match and training days only. The primary public entrance is unchanged.
- 2.4 The indicative site layout plan is shown on drawing 2136 PL.01 accompanying the planning application.
- 2.5 It is proposed that the access into the developed site will be through the established access off Bright Street.

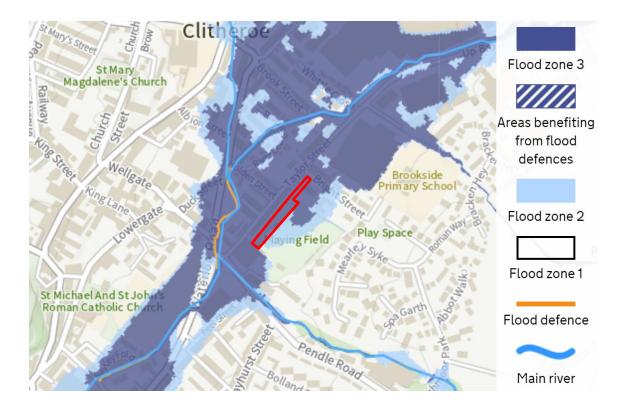
3. SCOPE OF THE ASSESSMENT

Flood risk planning policy

- 3.1 The National Planning Policy Framework (NPPF) sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Supporting Planning Practice Guidance is also available.
- 3.2 The NPPF sets out the vulnerability to flooding of different land uses. It encourages development to be located away from areas at highest risk (whether existing or future), and states that where development is necessary in such areas, the development should be made safe for its lifetime. It also stresses the importance of preventing increases in flood risk offsite to the wider catchment area.
- 3.3 The NPPF also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.
- 3.4 As set out in NPPF, local planning authorities should only consider development in flood risk areas appropriate where informed by a site specific Flood Risk Assessment. This document will identify and assess the risk associated with all forms of flooding to and from the development. Where necessary it will demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account.
- 3.5 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance in relation to Flood Risk and Coastal Change.

Flood zones

- 3.6 In investigating the flood risk relating to the site, the site is identified on the Environment Agency's flood mapping as lying within Flood Zone 3. Flood Zone 3 is a high risk and is land having a 1 in 100 or greater annual probability of river flooding. The flood risk is fluvial from the Mearley Brook.
- 3.7 An extract from the Environment Agency's Flood Zone Map for Planning is shown below.



Strategic Flood Risk Assessment

3.8 The site is within the area covered by the Ribble Valley Borough Council Revised Level One Strategic Flood Risk Assessment, April 2017.

Sequential Test

- 3.9 A requirement of NPPF is that all plans should apply a sequential, risk-based approach to the location of development, taking into account the current and future impacts of climate change so as to avoid, where possible, flood risk to people and property. The aim of the Sequential Test is to steer new development to areas with the lowest risk of flooding.
- 3.10 The purpose of the Sequential Test is to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed. A sequential approach should be used in areas known to be at risk from other forms of flooding. In areas at risk of river or sea flooding, preference should be given to locating new development in Flood Zone 1. If there is no reasonably available site in Flood Zone 1, the flood vulnerability of the proposed development can be taken into account in locating development in

Flood Zone 2 and then Flood Zone 3. Within each Flood Zone new development should be directed to sites at the lowest probability of flooding from all sources as indicated by the SFRA.

- 3.11 Strategic Flood Risk Assessments refine information on the probability of flooding, taking other sources of flooding and the impacts of climate change into account. They provide the basis for applying the Sequential Test, on the basis of the flood zones in NPPG Table 1.
- 3.12 The site already has an existing use as a sports and social club. The proposed facilities are to be used in conjunction with the existing sports and social club. There is no land lying within a lower flood zone within the development site that can be used for this proposal. Therefore the sequential test has been passed.

4. CONSULTATIONS AND DATA ACQUISITIONS

Environment Agency

- 4.1 The Environment Agency's flood mapping identifies the site as lying within Flood Zone 3. Flood Zone 3 is a high risk and is land having a 1 in 100 or greater annual probability of river flooding.
- 4.2 The flood risk is fluvial from the Mearley Brook.
- 4.3 Product 4 information was requested from The Environment Agency. Modelled flood levels for the development site were provided in addition to information on the local flood defences. The information is included within Appendix B.
- 4.4 The information provides the following modelled flood levels from the Mearley Brook within the area of the new car park:

Return Period	<u>Undefended</u>	<u>Defended</u>
20 year	75.41m AOD	75.45m AOD
100 year	75.62m AOD	75.68m AOD
100 year + 30% cc	-	75.84m AOD
100 year + 35% cc	-	75.86m AOD
100 year + 70% cc	-	75.99m AOD
200 year	-	75.79m AOD
1000 year	75.99m AOD	76.06m AOD
1000 year + 30% cc	-	76.22m AOD

4.5 The site lies within a flood warning area where free flood warnings are issued to homes and businesses when flooding is expected.

United Utilities

4.6 The site lies within the urban area which is served by the public sewer network.

Topographical Survey

- 4.7 Two topographical surveys have been carried out for this site and are included within Appendix C. The survey shown the levels across the site prior to the car parking area being formed and the levels once the work had been completed.
- 4.8 The ground levels between the two surveys are comparable.

Site Investigation

- 4.9 Site investigations have not been carried out for the site.
- 4.10 The online Soilscapes Viewer has identified that the geology encountered will be slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage.

5. SOURCES OF FLOOD RISK

Potential Sources of Flood Risk

5.1 Potential sources of flood risk to the site are identified below. The significance of these sources is investigated further into Section 6.

Fluvial flooding

- 5.2 A number of watercourses lie within close proximity to the site. They are:
 - The Mearley Brook, classified as 'Main River', lies approx. 60m to the west of the site in open channel and flows to the south to discharge into the Pendleton Brook and ultimately the River Ribble.
 - The Shaw Brook, classified as 'Main River', lies approx. 60m to the south of the site and discharges into the Mearley Brook at Shawcross Street.
 - An unnamed watercourse, classified as 'Main River', flows from the north to discharge into the Mearley Brook at Holden Street, approx. 120m to the northwest of the site.
 - An unnamed ordinary watercourse flows west approx. 200m to the north of the site to discharge into the Mearley Brook at Whittle Close.
 - A drain in open ditch lies at the north eastern corner of the ground.
- 5.3 The Environment Agency's flood mapping identifies the site as lying within Flood Zone 3. Flood Zone 3 is a high risk and is land having a 1 in 100 or greater annual probability of river flooding. The flood risk is fluvial from the Mearley Brook.
- 5.4 Product 4 information was requested from The Environment Agency. The information provides the following modelled flood levels from the Mearley Brook within the area of the new car park:

Return Period	<u>Undefended</u>	<u>Defended</u>
20 year	75.41m AOD	75.45m AOD
100 year	75.62m AOD	75.68m AOD
100 year + 30% cc	-	75.84m AOD

100 year + 35% cc	-	75.86m AOD
100 year + 70% cc	-	75.99m AOD
200 year	-	75.79m AOD
1000 year	75.99m AOD	76.06m AOD
1000 year + 30% cc	-	76.22m AOD

Tidal flooding

5.5 The site is a significant distance from the nearest tidal estuary and is, therefore, not at risk of flooding from the sea. The site is not identified as being at risk of flooding from the sea by any Environment Agency Flood Zone maps or within the SFRA for the area. As such, coastal and tidal flooding is not considered further within this assessment.

Canals, reservoirs and other sources

- 5.6 There are no canals or other artificial sources within close proximity of the site.
- 5.7 The Environment Agency risk of flooding from reservoirs map identifies the site is not at risk.

Groundwater

- 5.8 Groundwater flooding tends to occur after much longer periods of sustained high rainfall. The areas that are at risk tend to be those low-lying areas where the water table is shallow. Flooding tends to occur in areas that are underlain by major aquifers, although groundwater flooding is also noted in localised floodplain sands and gravels. The main causes of groundwater flooding are:
 - Natural groundwater rising due to tidal influence, or exceptionally wet periods leading to rapid recharge;
 - Groundwater rebound due to cessation of abstraction and mine dewatering;
 - Existence of confined aquifers and springs.
- 5.9 There are no recorded incidents of flooding associated with groundwater levels within the site.

Sewers

- 5.10 Flooding from a drainage system occurs when flow entering a system exceeds its discharge capacity, the system becomes blocked or, in the case of surface water sewers, it cannot discharge due to high water level in the receiving watercourse. Sewer flooding is often caused by surface water discharging into the combined sewerage system, sewer capacity is exceeded in large rainfall events causing backing up of flood waters within properties or discharging through manholes.
- 5.11 Surface water (including the risk of sewers and culverted watercourses surcharging) poses the highest risk of more frequent flooding. Surface water drainage from new developments is critical in reducing the risk of localised flooding.
- 5.12 Where possible the preference for dealing with surface water runoff from the developed site is for it to infiltrate back into the ground or alternatively to a watercourse. Only if it is not possible for either of these options is surface water from the development to be allowed into the public sewers.
- 5.13 The site lies within the urban area which is served by the public sewer network.

Pluvial runoff

- 5.14 The Environment Agency Risk of Flooding from Surface Water map indicates the site is a high risk of flooding.
- 5.15 It should be noted that surface water 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.

Development drainage

5.16 Surface water (including the risk of sewers and culverted watercourses surcharging) poses the highest risk of more frequent flooding. Surface water drainage from new developments is critical in reducing the risk of localised flooding.

- 5.17 If surface water runoff is not managed appropriately, there may be an increased risk presented elsewhere from development drainage, and the aim should be to implement appropriate sustainable drainage systems (SuDS) to treat and contain flows and mimic the existing conditions.
- 5.18 Where possible the preference for dealing with surface water runoff from the developed site is for it to infiltrate back into the ground or alternatively to a watercourse. Only if it is not possible for either of these options is surface water from the development to be allowed into public sewers.
- 5.19 The site is an area of redundant land behind the stands to the rear of the houses on Taylor Street. The proposals are for the creation of a gravel car parking area and area of soft landscaping. As such the proposed development will not increase the area of impermeable surfaces on site and therefore does not have the potential to alter the surface water runoff regime of the site or to have an adverse effect on flood risk elsewhere in the wider catchment.

Historic flooding

5.20 The Environment Agency Historical Flood Mapping on GOV.UK shows that there no previous incidences of flooding occurring on the site.

6. FLOOD RISK ASSESSMENT

6.1 This section of the Flood Risk Assessment looks at the flood risk to the site before any mitigation measures are put into place and hence identifies where mitigation will be required. Section 7 continues to explain the mitigation measures proposed and the residual risk following implementation of any proposed mitigation.

Risk of Flooding to Proposed Development

Fluvial Flood Risk

- 6.2 The proposal is for the creation of car parking and an area of soft landscaping, which is to be used as a secondary car park for players and officials only, with limited hours of operation on match and training days only. The primary public entrance is unchanged.
- 6.3 The Environment Agency's flood mapping identifies the site as lying within Flood Zone 3.
- 6.4 Modelled flood levels from the Mearley Brook within the area of the new car park have been provided by the Environment Agency and the site is affected by flooding events, including those taking account of the impact of climate change.
- 6.5 The facility will not be occupied full time and as such there is a low risk to public safety due to the limited periods of use. The risk is also reduced further as training sessions and the games are likely to be called off during periods of intense wet weather and the facilities not reused until the area has recovered.
- 6.6 Topographical surveys have been carried out to show the levels across the site prior to the car parking area being formed and the levels once the work had been completed. The ground levels between the two surveys are comparable and therefore there is little impact that the works have had on the flood risk to the area.

Canals, reservoirs and other sources

6.7 There are no canals or other artificial sources within close proximity of the site.

- 6.8 The Environment Agency's risk of flooding from reservoirs mapping identifies no risk of flooding from reservoirs that are local to the area.
- 6.9 As such the risk of flooding from canals, reservoirs and other sources is low.

Groundwater

- 6.10 The SFRA states that groundwater flooding is not thought to be a significant issue in the Ribble Valley Borough Council area.
- 6.11 There are no recorded incidents of flooding associated with groundwater levels within the site and the flood risk from groundwater is low.

Sewer Flooding and Pluvial Runoff

- 6.12 The site lies within the urban area which is served by the public sewer network.
- 6.13 Should any issues arise, the ongoing operational and maintenance responsibility of the sewers is with United Utilities. The risk from sewer flooding is therefore low.
- 6.14 The Environment Agency Risk of Flooding from Surface Water map indicates the site is at a high risk of flooding where the car park is located.

Effect of the Development on the Wider Catchment

Development Drainage

- 6.15 The site is an area of redundant land behind the stands to the rear of the houses on Taylor Street. The proposals are for the creation of a gravel car parking area and area of soft landscaping.
- 6.16 As such the proposed development will not increase the area of impermeable surfaces on site and therefore does not have the potential to alter the surface water runoff regime of the site or to have an adverse effect on flood risk elsewhere in the wider catchment.
- 6.17 As such there will therefore be no change to the flood risk upstream or downstream of this location and the risk of flooding from the development drainage is low.

7. PREDICTED IMPACTS AND MITIGATION

7.1 This section of the FRA sets out the mitigation measures recommended to reduce the risk of flooding to the proposed development and outlines any residual impacts.

Site arrangements

Access / Egress

- 7.2 The site lies within a flood warning area where free flood warnings are issued to homes and businesses when flooding is expected. Evacuation of the site can therefore occur prior to any flood event. In addition it is unlikely that the facilities would be in use during times of severe adverse weather conditions.
- 7.3 If an extreme event was to occur, access to the site would be best taken from Shawbridge Street.

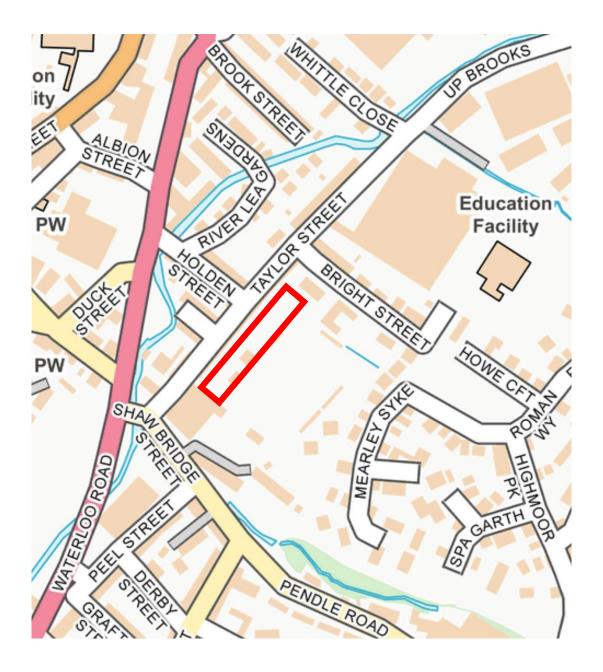
Upstream and downstream effects

- 7.4 There is no material effect on the floodplain due to the proposed development. Topographical surveys have been carried out to show the levels across the site prior to the car parking area being formed and the levels once the work had been completed. The ground levels between the two surveys are comparable and therefore there is little impact that the works have had on the flood risk to the area.
- 7.5 The site is an area of redundant land behind the stands to the rear of the houses on Taylor Street. The proposals are for the creation of a gravel car parking area and area of soft landscaping. As such the proposed development will not increase the area of impermeable surfaces on site and therefore does not have the potential to alter the surface water runoff regime of the site or to have an adverse effect on flood risk elsewhere in the wider catchment.

8. CONCLUSIONS

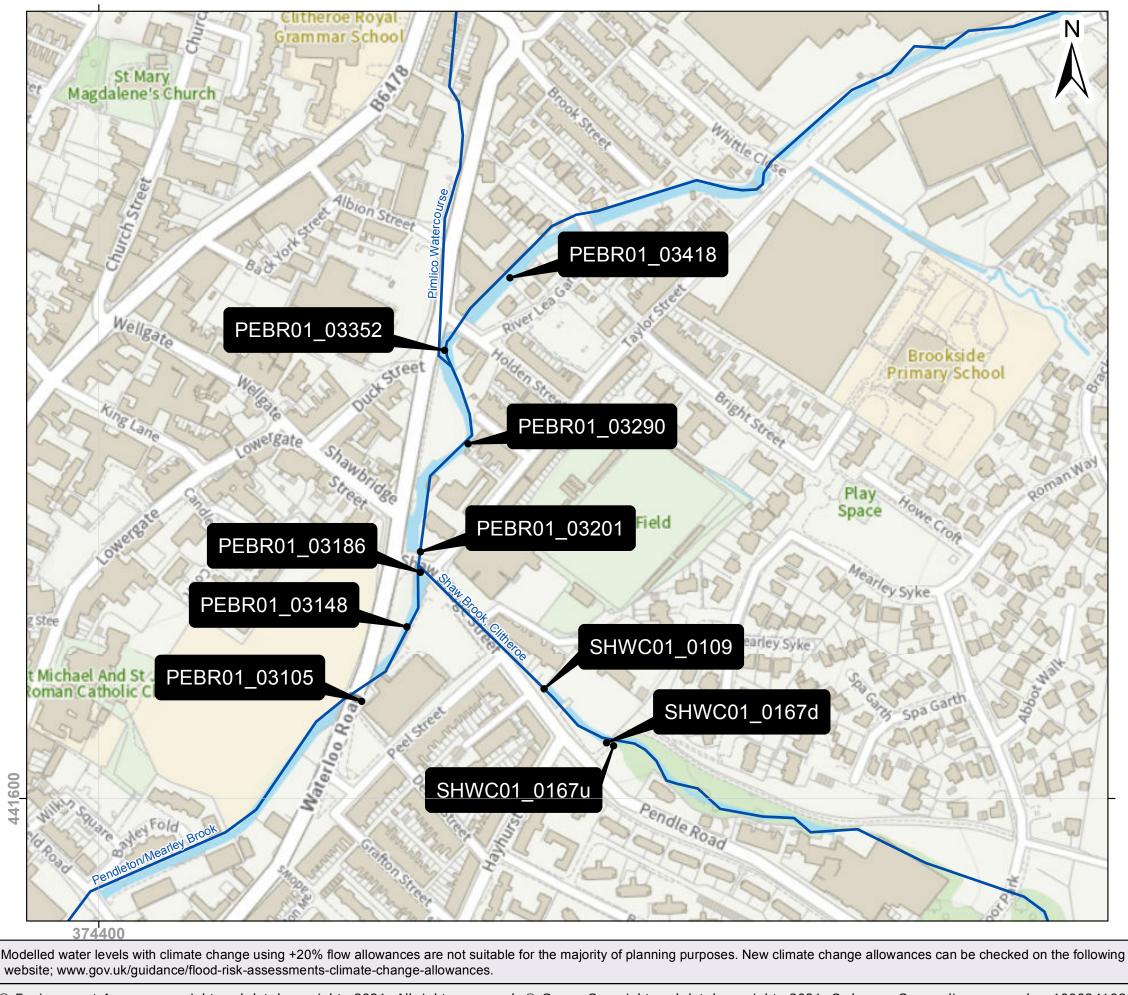
- 8.1 This flood risk assessment has been produced on behalf of Clitheroe Football Club in support of a planning application for the proposed creation of car parking (including lighting) and area of soft landscaping to redundant land behind the stands at Clitheroe Football Club, Shawbridge Street, Clitheroe, BB7 1LZ.
- 8.2 The Environment Agency's flood mapping identifies the site as lying within Flood Zone 3. Flood Zone 3 is a high risk and is land having a 1 in 100 or greater annual probability of river flooding. The flood risk is fluvial from the Mearley Brook.
- 8.3 The proposals are for the creation of a gravel car parking area and area of soft landscaping on an area of redundant land behind the stands to the rear of the houses on Taylor Street.
- 8.4 The facility will not be occupied full time and as such there is a low risk to public safety due to the limited periods of use.
- 8.5 The Environment Agency Risk of Flooding from Surface Water map indicates the site is at a high risk of flooding where the car park is located.
- 8.6 The Environment Agency Historical Flood Mapping on GOV.UK shows that there no previous incidences of flooding occurring on the site.
- 8.7 The risk of flooding from canals, reservoirs and other artificial sources is low.
- 8.8 The flood risk from groundwater is low.
- 8.9 The risk from sewer flooding and pluvial runoff is low.
- 8.10 The risk of flooding from the development drainage is low.
- 8.11 There is no material effect on the floodplain due to the proposed development. Topographical surveys have been carried out to show the levels across the site prior to the car parking area being formed and the levels once the work had been completed. The ground levels between the two surveys are comparable and therefore there is little impact that the works have had on the flood risk to the area.

APPENDIX A



LOCATION PLAN

APPENDIX B



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Modelled Water Levels Map

Ciltheroe FC

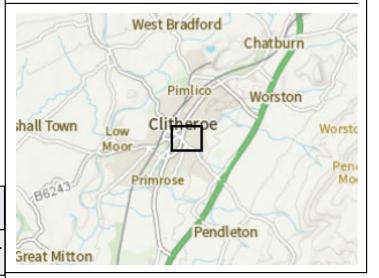
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Node Points •

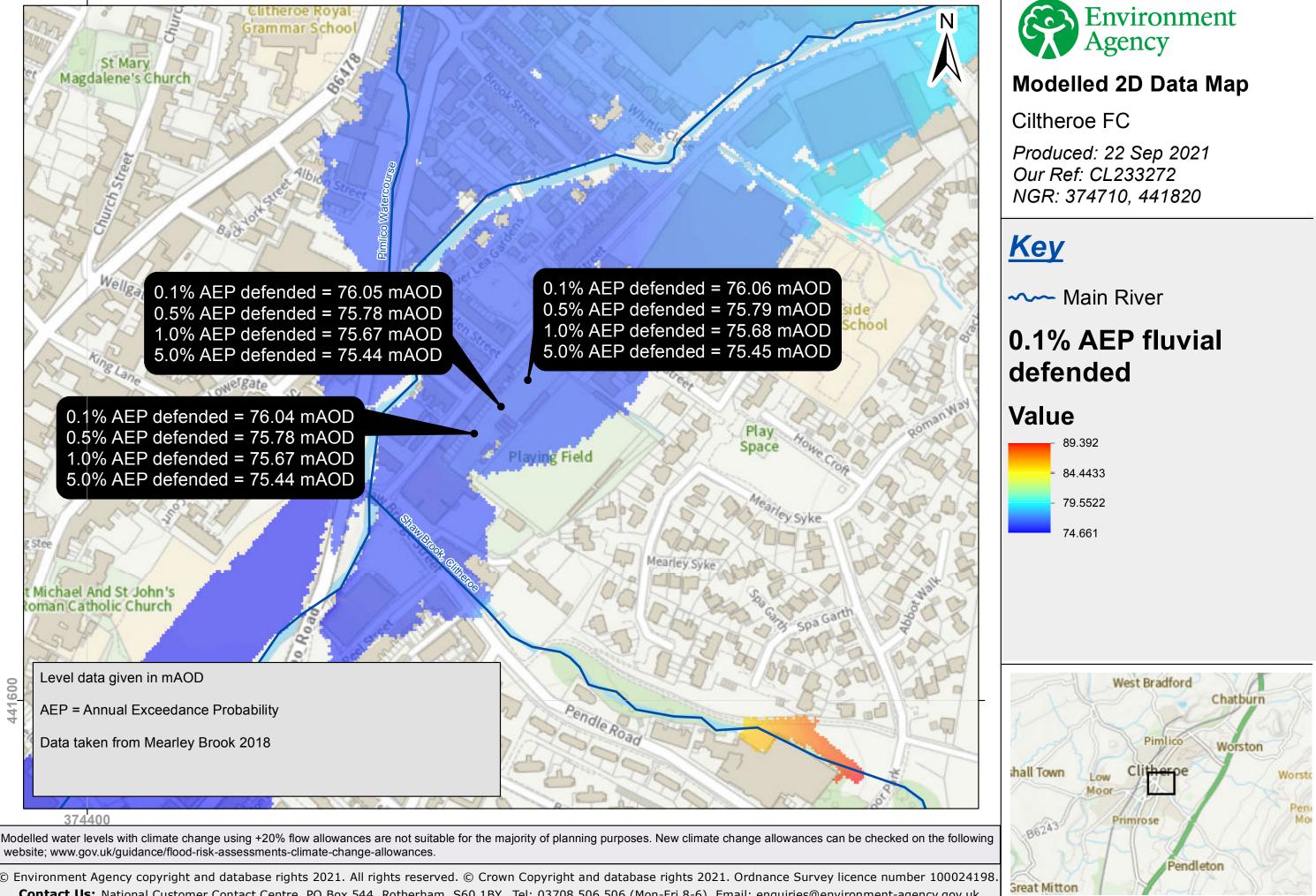


✓ Main River



			FI	ood Flow (m ³ s ⁻¹) and	Level (mA	OD) data f	or a range	of annual	probability	of flooding	g		
Node Point	0.1%				0.5%		1.0%				5.0%			
	Defe	nded	Undef	ended	Defe	nded	Defe	nded	Undef	ended	Defe	nded	Undefended	
Map ID	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
SHWC01_0167u	78.04	6.04	77.66	6.04	77.49	3.86	77.39	3.24	77.39	3.24	77.27	2.22	77.27	2.22
SHWC01_0167d	78.03	6.04	77.66	6.04	77.49	3.86	77.38	3.24	77.38	3.24	77.26	2.22	77.26	2.22
SHWC01_0109	77.74	4.69	76.53	3.46	76.85	3.85	76.26	3.23	76.21	3.23	75.61	2.22	75.61	2.22
PEBR01_03418	76.15	21.44	76.11	21.81	75.98	20.28	75.93	19.25	75.91	19.44	75.84	15.97	75.81	16.05
PEBR01_03352	76.07	16.96	75.96	17.26	75.82	16.29	75.72	15.92	75.63	16.36	75.55	14.84	75.46	15.51
PEBR01_03290	75.94	18.16	75.93	12.70	75.74	15.28	75.63	15.18	75.60	12.66	75.34	14.76	75.40	12.62
PEBR01_03201	75.83	18.29	75.81	18.77	75.58	18.14	75.45	17.97	75.40	18.42	75.10	16.27	75.15	17.33
PEBR01_03186	75.67	22.61	75.62	22.07	75.40	21.88	75.27	21.15	75.22	21.50	74.97	18.47	75.00	19.52
PEBR01_03148	75.40	25.27	75.34	24.78	75.06	23.34	74.90	22.11	74.79	22.14	74.52	18.68	74.45	19.54
PEBR01_03105	75.02	35.68	74.92	35.03	74.64	30.06	74.47	27.40	74.18	26.34	74.14	21.16	74.09	20.51
			Level data	in mAOD (metres abo	ove ordnar	nce datum)	. Flow data	a in m ³ per	second				
					Data take	n from Me	arley Broo	k 2018	•					

	Flood Flow (m ³ s ⁻¹) and Level (mAOD) data for a range of annual probability of flooding								
Node Point				1%+Climate Change		•	U		
	Change	(+30%)	(+/	0%)	(+3	5%)	(+3	0%)	
	Defe	nded	Defe	nded	Defe	nded	Defended		
Map ID	Level	Flow	Level	Flow	Level	Flow	Level	Flow	
SHWC01_0167u	78.35	7.83	77.97	5.52	77.65	4.36	77.58	4.20	
SHWC01_0167d	78.20	7.83	77.97	5.52	77.65	4.36	77.58	4.20	
SHWC01_0109	77.81	4.74	77.71	4.66	77.36	4.35	77.19	4.19	
PEBR01_03418	76.28	21.60	76.10	21.42	76.02	20.66	76.01	20.57	
PEBR01_03352	76.21	17.12	76.01	16.81	75.89	16.51	75.87	16.43	
PEBR01_03290	76.04	22.02	75.89	16.78	75.80	15.32	75.78	15.31	
PEBR01_03201	75.97	18.37	75.77	18.25	75.65	18.18	75.63	18.17	
PEBR01_03186	75.84	22.68	75.60	22.55	75.47	22.24	75.45	22.14	
PEBR01_03148	75.59	26.04	75.32	24.98	75.16	24.08	75.13	23.86	
PEBR01_03105	75.24	38.24	74.93	34.48	74.74	31.71	74.71	31.27	
Level data	a in mAOD	(metres ab	ove ordna	nce datum)). Flow data	a in m ³ per	second		
		Data take	en from Me	arley Broo	k 2018				

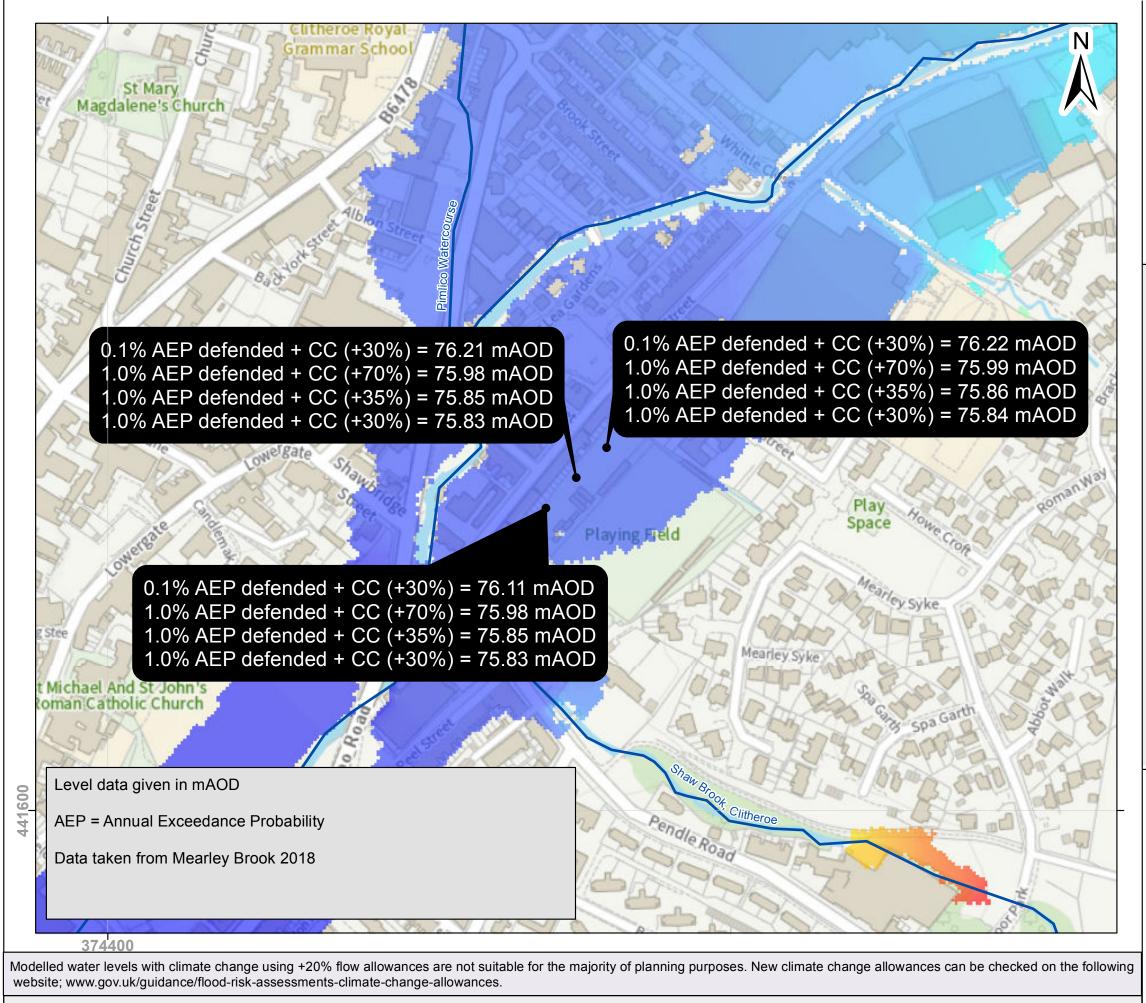


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Modelled 2D Data Map

Ciltheroe FC

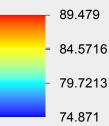
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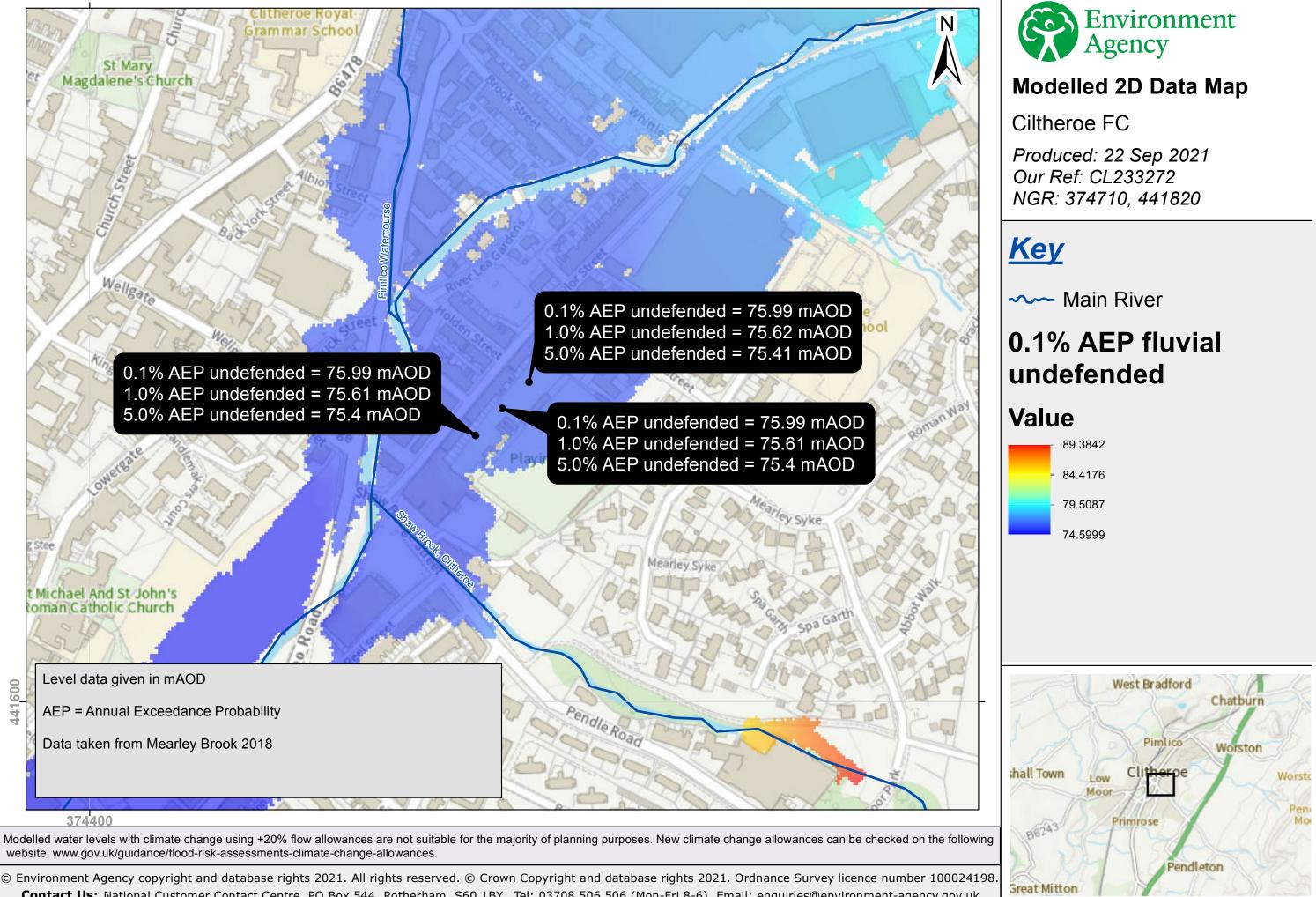
✓ Main River

0.1% AEP fluvial defended + 30% Climate Change

Value

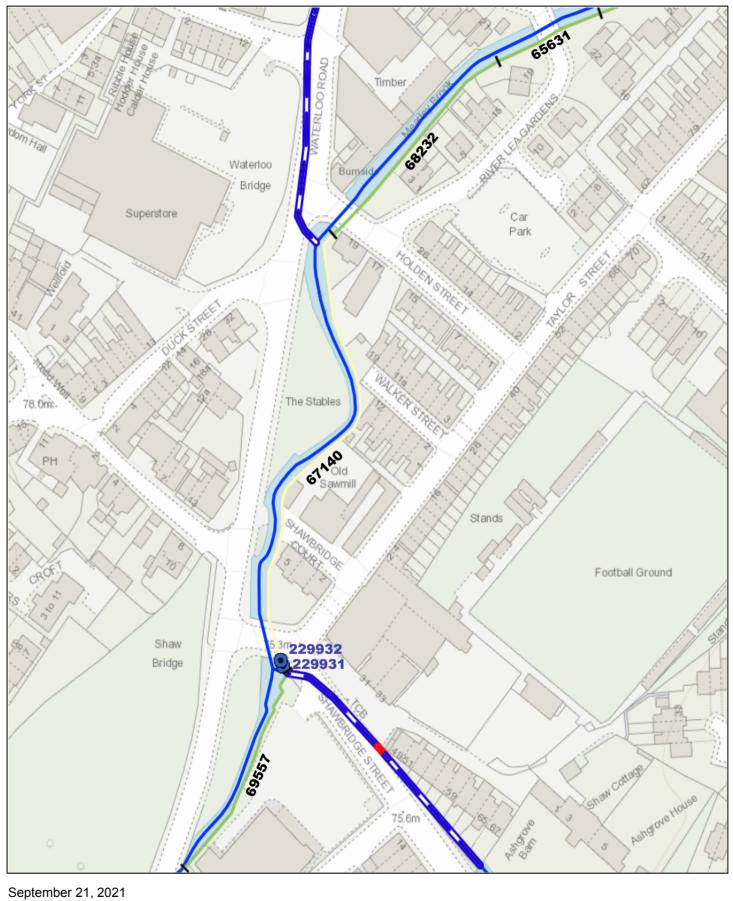


West Bradford Chatburn Pimlico Worston thall Town Clither pe Moor Clither pe Moor Primrose Pendleton Great Mitton



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CL233272 Clitheroe FC, Rear of Taylor Street, Clitheroe





Site Location Clitheroe FC, Rear of Taylor Street, Clitheroe CL2332

Asset ID	National Grid Reference	Asset Type	Protection Type	Location	Maintained By	Design Standard (Return Period)	(andition	Effective Crest Level (m)		E.C.L Data Quality (Reliable 1-4	Length (m)	Height (m)
	Reference		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					UCL (mAOD)	DCL (mAOD)	Unreliable)	(11)	(,
69557	SD7457841673	Natural High Ground	Fluvial	A671 Waterloo Road to Shawbridge Street	Unknown	10	3 - Fair	-	-	-	85.94	-
67140	SD7461941745	Wall	Fluvial	Shawbridge Street to Holden Street	Environment Agency	5	3 - Fair	76.01	75.92	1	179.94	3.8
68232	SD7463741905	Natural High Ground	Fluvial	Holden Street to downstream of River Lea Gardens	Unknown	10	3 - Fair	-	-	-	91.77	-
65631	SD7470341968	Natural High Ground	Fluvial	Downstream of River Lea Gardens to upstream of River Lea Gardens	Unknown	10	3 - Fair	-	-	-	44.14	-

Fluvial Defences

The Environmental Permitting (England and Wales) Regulations 2016 require a permit to be obtained for any activities which will take place:

• on or within 8 metres of a flood defence structure or culvert (16 metres if tidal)

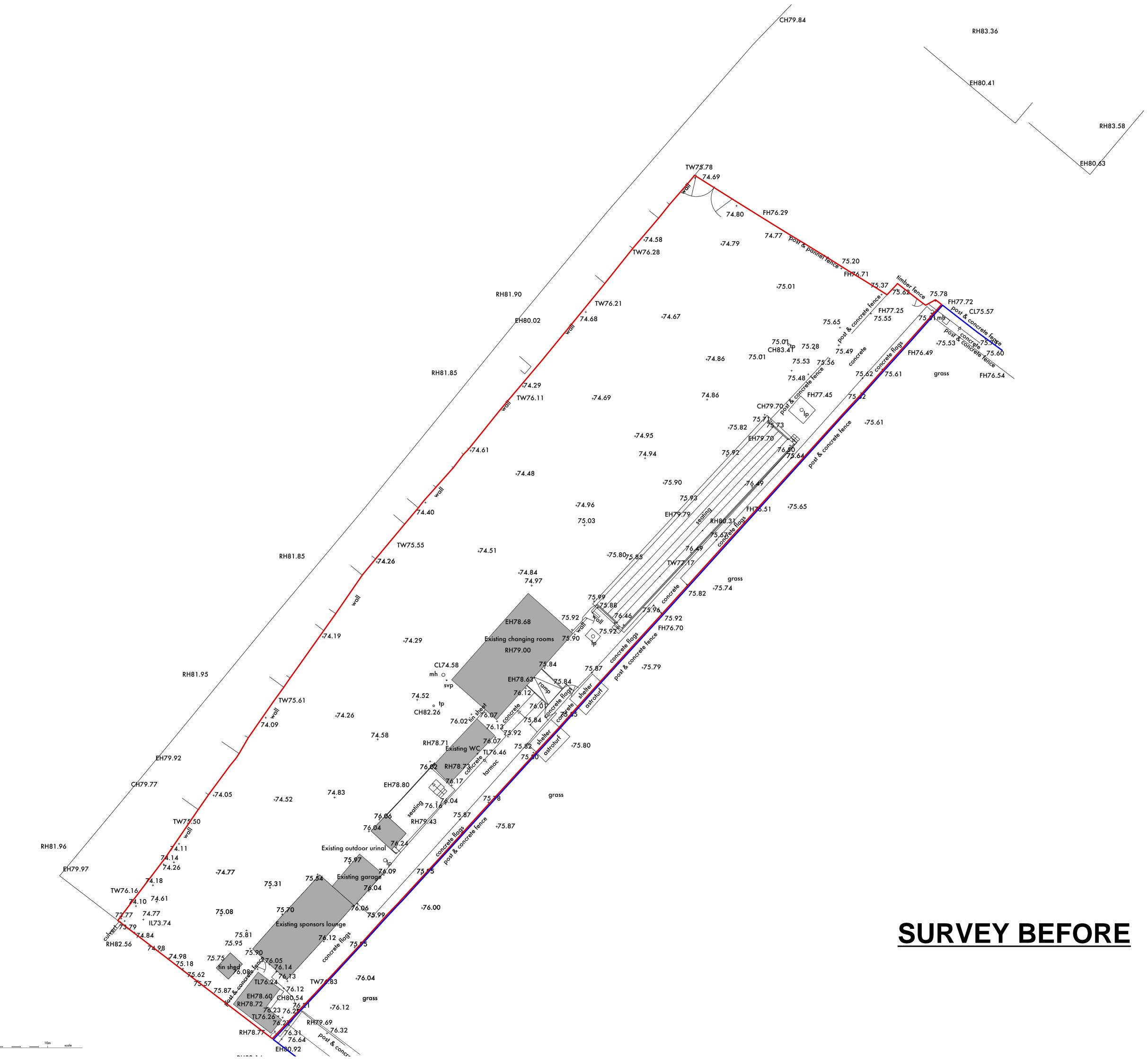
• on or within 16 metres of a sea defence

Site LocationClitheroe FC, Rear of Taylor Street, ClitheroeCL233272

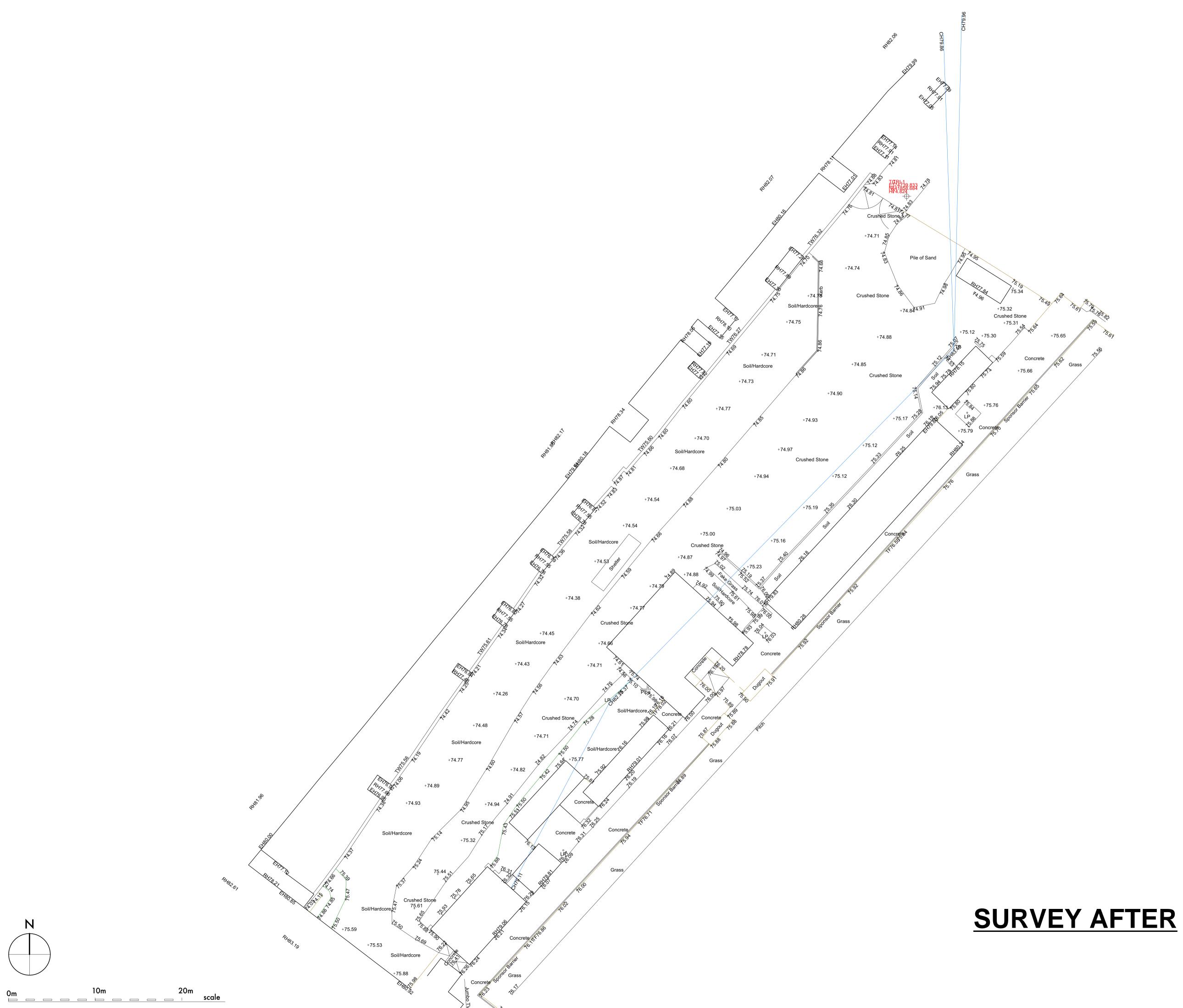
Fluvial Structures

Asset ID	National Grid Reference	Asset Type	Protection Type	Location	Maintained By	Design Standard (Return Period)	Overall Condition Grade	Width (m)	Height (m)
229931	SD74614174	Outfall	Fluvial	Downstream of Shawbridge Street	Private	-	3 - Fair	-	-
229932	SD74614174	Outfall	Fluvial	Downstream of Shawbridge Street	Private	-	3 - Fair	-	1.5

APPENDIX C



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