3201702 46P

Site Specific Flood Risk Assessment

For

29 Woone Lane
Clitheroe
BB7 1BG

Application: *Change of use from one dwelling house to three one-bed flats.*

Introduction

This Flood Risk Assessment has been put together as part of the validation for the application for the flat conversion at 29 Woone Lane, Clitheroe. The Local Authority has requested a Flood Risk Assessment due to part of the site being partially included in Flood Zone 2.

The project entails internal changes to the terraced property to form three flats, one on each level: basement level, ground floor and first floor. The land slopes down toward the rear of the property so that the basement can be accessed via external ground level at the back.

Information regarding the flood zone 2 at the application address has been obtained from The Environmental Agency through the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

<u>See:</u> *CL42377 29 Woone Lane Clitheroe BB7 1BG: Fluvial Flood Level Map*

Flood Zone

From looking at the flood zone map provided by The Environmental Agency; the outrigger of the property is included in Flood Zone 2. Flooding can occur anywhere and will get worse in the future so it is important to plan for any possible flooding in the lifetime of the proposal.

The proposed dwellings on the ground floor and first floor are considered 'More Vulnerable' where as the proposed flat at basement level is considered 'Highly Vulnerable'. Using the information in *Table 1*, the ground floor and first floor developments are appropriate but the basement flat will require an exception test for it to be suitable.

<u>See:</u> *Table 1: Flood Risk Vulnerability Classification*

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

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Table 1

Sources of Flooding

The main sources of flooding have been considered to determine what will pose the most risk to flooding the Woone Lane site. This will include groundwater, surface water, fluvial, tidal, sewer and reservoirs/ canals.

- Groundwater: As with any site, groundwater is a potential flooding threat, however the property has existed for almost 200 years with no known historical flooding of the basement, which would be a tell-tale sign that groundwater flooding would be an issue.

- Surface water: increase in rainfall and climate change mean that a sustainable approach to rainwater drainage needs to be considered, however as this proposal is not going to increase the amount of surface water to be drained away from the site, it can be considered that this would not impact the existing potential flooding risk from surface water.

- Fluvial: the flood zone 2 that can be seen on the map from Environmental Agency can be seen to come directly from the Pendleton/ Mearly Brook situated approximately 70m away from 29 Woone Lane. We can assume that this would be the main risk of flooding for the site.

- Tidal: the site is over 32km away from the sea, any tidal flooding that occurs would not affect this proposal due to the distance to any high tides. The hilly terrain of Clitheroe would also mean it is an area less likely to be affected by tidal flooding.

- Sewer: there have not been any recorded historical events in sewer flooding, and the proposed changes at the site will follow the existing drainage of the property to prevent any unwanted drainage implications from the new proposal.

- Reservoirs & Canals: with no reservoirs and canals in Clitheroe to pose a flood risk, it can be considered as no risk in this case.

Historical flooding

Presently there are no records of flooding occurring at the site of 29 Woone Lane, Clitheroe however it cannot be completely ruled out that flooding will never occur here. There have been records to show flooding of nearby River Ribble, and as such the

site is in the flood warning and alert area for the safety of the residents indicated by the Environmental agency.

Site Specific Flooding

Due to there being no historical flooding occurrences and the project only having minor internal changes, looking at regional flooding cases would not be appropriate here. A site-specific flood risk assessment will therefore suffice, looking at the potential flooding of the property as no building work will be taking place that could worsen the flood risk for the area or affect any third parties.

The flooding information provided by the Environment Agency shows the flood zone in more detail, and they have also provided details on the existing flood defences and structures along the Pendleton/ Mearly Brook. The wall that currently stands as defence has been graded to be of a good reliable quality yet it's condition is not the best nor is it critical. The Environment Agency have also mentioned that they are revisiting the flooding model for Clitheroe which may help bring the existing defences up to a better condition but this information will not be available until late summer 2017.

Looking at the information, the defences also flag up the weir along this water course, which would mean a change in level during the water's flow and could also be a reduction in flooding risk as the water has a lower level to fill before it could encroach onto the proposed site on Woone Lane. There is also an outfall to the north which could also reduce the flooding capacity of the river as an increase of water to the brook could be directed elsewhere before the water course would burst its banks.

See: CL42377 29 Woone Lane, Clitheroe: Flood Defence Data

Exception Test

As the proposed basement dwelling is classed as highly vulnerable in a flood zone 2, it is considered necessary to do an exception test to outweigh the potential risks with the benefit to the surrounding community.

As the proposal does not involve any additional building work, the risks will remain the same as the property currently stands. The proposed basement dwelling will be one of three one-bed flats proposed to provide Clitheroe with alternative and affordable housing that it currently requires offering a range of properties for the residents of Clitheroe. The basement dwelling will have the highest flooding potential being at the lowest level of the property. It is at risk from Fluvial flooding from the Brook and any potential ground water flooding. As the risk is only 1 out of 3 proposed dwellings, the potential harm would only be for the residents of the basement. This should be noted to the future tenant and make them aware of how to be alerted to flood warnings and alerts issued by the Environment Agency. The property owner should also be aware of the flooding risk and make sure the appropriate insurance is in place that would cover any costs for repairs in the event of a flood.

Mitigation & Resilience

Changes made to the basement dwelling can also help to keep the residents safe in the event of a flood such as: raising the level of plug sockets and switches higher than the predicted flood level, lightweight doors, resilient plasterboard, kitchen units on legs hidden by kickboards, white goods on a raised platform, valuable items kept at higher level would all help to reduce the amount of damage a flood could do. Flood barriers and blocks could also be stored in the rear yard, easily accessible in the event of a flood warning to reduce the flooding water entering the basement dwelling.

See: Possible Mitigation Measures from the Flood Guide for Home Owners.

Conclusion

The proposal would not affect any third parties and only one of the three proposed dwellings would be at risk. With flood alerts and warnings in place for the site, as well as suitable mitigation measures put in place, it is considered an appropriate development as the history and existing defences for the potential flooding show that it is not likely to happen. The lower risk for all and addition of three one-bed dwellings for Clitheroe outweighs the potential risk of flooding, with awareness and mitigation measures in place to ensure the safety of the residents throughout the lifetime of the development.

Resources

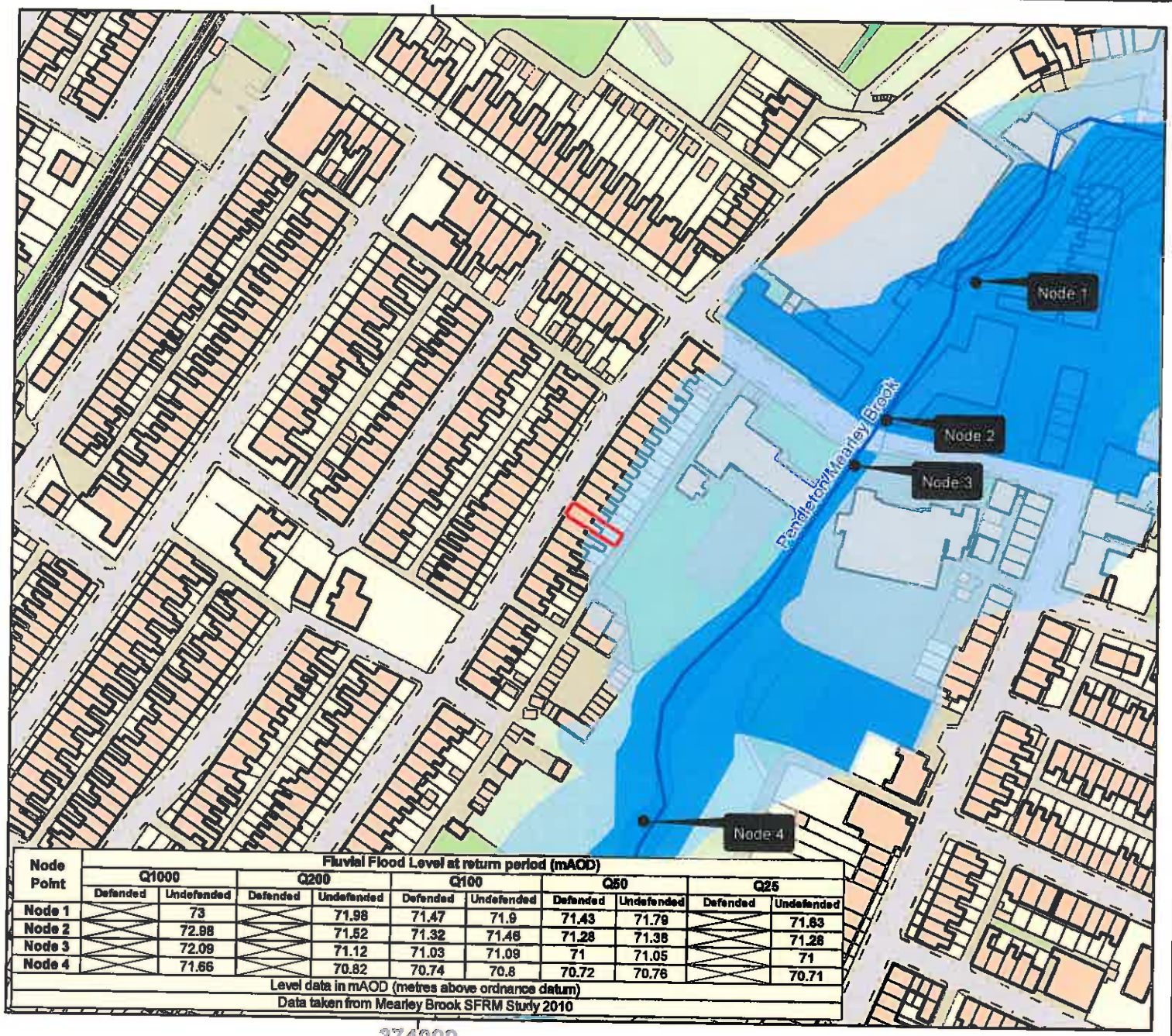
Information obtained from Environmental Agency: Fluvial Flood Level Map and Flood Defence Data.

Using the Open Government Licence: http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Flood Risk Assessment Vulnerability and Guide from 'An Introduction to Flood Risk Assessments' by Geosmart CPD.

Mitigation measures from the 'Homeowners Guide to Flood Resilience' from Mary Dhonau Associates Community Flood Consultants.

CL42377 29 Woone Lane Clitheroe BB7 1BG: Fluvial Flood Level Map



Node Point	Fluvial Flood Level at return period (mAOD)									
	Q1000		Q200		Q100		Q50		Q25	
	Defended	Undefended	Defended	Undefended	Defended	Undefended	Defended	Undefended	Defended	Undefended
Node 1		73		71.98	71.47	71.9	71.43	71.79		71.83
Node 2		72.98		71.52	71.32	71.46	71.28	71.38		71.26
Node 3		72.09		71.12	71.03	71.09	71	71.05		71
Node 4		71.66		70.82	70.74	70.8	70.72	70.76		70.71

Level data in mAOD (metres above ordnance datum)
Data taken from Mearley Brook SFRM Study 2010

Fluvial Flood Level Map: 29 Woone Lane, Clitheroe, BB7 1BG

Produced: 27/04/2017
Our Ref: CL42377
NGR: SD74055 41294

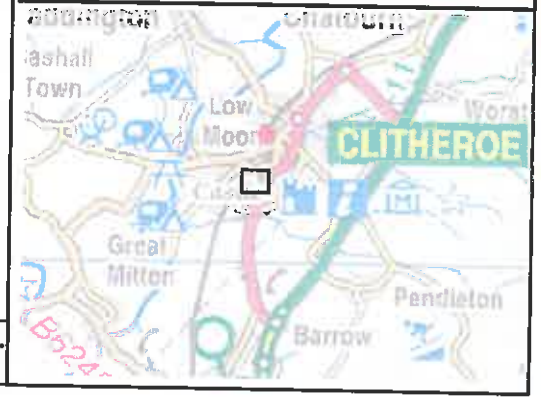
Key

- Main River
- Flood Zone 3
- Flood Zone 2
- Historic Flooding
- Areas Benefitting from Defences

Flood Zone 3 shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

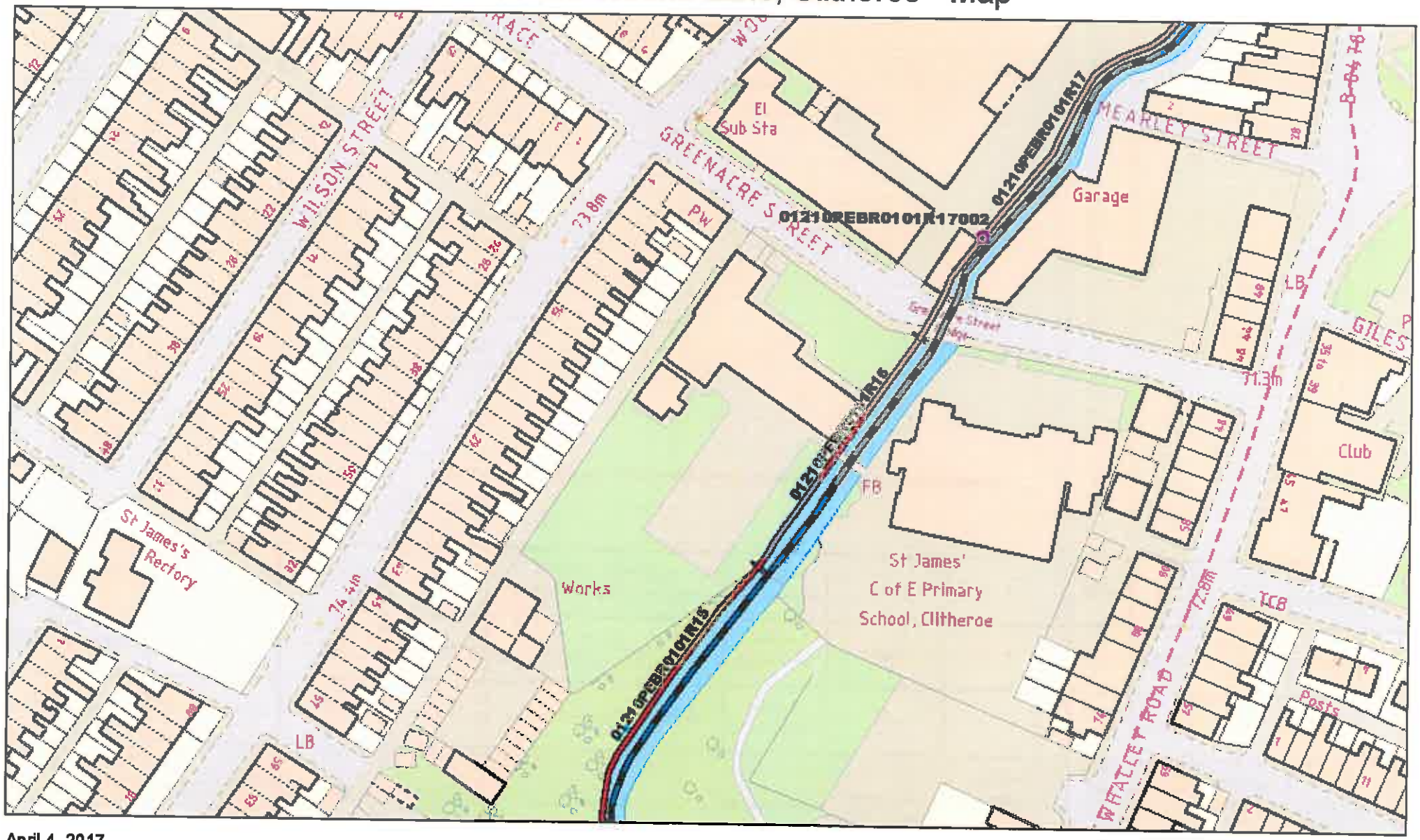
ABDs (Areas Benefiting from Defences) show the area benefiting from defences during a 1 in 200 tidal, or 1 in 100 fluvial flood event.



Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

CL42377 29 Woone Lane, Clitheroe: Flood Defence Data

CL42377 29 Woone Lane, Clitheroe - Map



April 4, 2017

Structures — CARTO_TEXT

Channels

Defences

1:1,134

0 0.0075 0.015 0.03 mi

0 0.015 0.03 0.06 km

Site Location	29 Woone Lane, Clitheroe	CL42377

Fluvial Defences

Asset Ref.	National Grid Reference	Asset Type	Protection Type	Location	Maintained By	Design Standard (Return Period)	Overall Condition Grade (Excellent 1- 5 Very Poor)	Effective Crest Level (m)		E.C.L Data Quality (Reliable 1-4 Unreliable)	Length (m)	Height (m)
								UCL (mAOD)	DCL (mAOD)			
01210PEBR0101R17	SD 74226 41417	Wall	Fluvial	End of Mill to Greenacre Street	Environment Agency	10	3	73.16	71.54	1	123.8	-
01210PEBR0101R16	SD 74153 41320	Wall	Fluvial	Greenacre Street to Weir at rear of School	Environment Agency	100	3	73.16	73.14	2	62.8	-
01210PEBR0101R15	SD 74117 41268	High Ground	Fluvial	Weir at rear of School to Weir upstream of Reservoir	Environment Agency	10	3	69.36	66.67	2	199.2	-

Consent is REQUIRED for any works undertaken within 8 metres of these defences

Site Location	29 Woone Lane, Clitheroe	CL42377

Fluvial Structures

Asset Ref.	National Grid Reference	Asset Type	Protection Type	Location	Maintained By	Design Standard (Return Period)	Overall Condition Grade (Excellent 1- 5 Very Poor)	Length (m)	Height (m)
01210PEBR0101R17002	SD 74167 41343	Outfall	Fluvial	Upstream of Greenacre Street	Private	-	2	-	-

Possible Mitigation Measures from the Flood Guide for Home Owners

Combined resistance and resilience measures

- keeping water out for as long as possible buys valuable time to raise / move your belongings