

# Wetheral

(The Mews, The Arches, Green Farm and  
Greystones)

## Flood Investigation Report

Flood Event 17<sup>th</sup> July 2011

This flood investigation report has been produced by Cumbria County Council as a Lead Local Flood Authority under Section 19 of the Flood and Water Management Act 2010.

Version	Undertaken by	Reviewed by	Approved by	Date
Preliminary	Anthony Lane			30 October 2012
Draft	Helen Renyard	Anthony Lane		9 January 2013
Final	Helen Renyard	Anthony Lane	Doug Coyle	7 November 2013

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## Executive Summary

This Flood Investigation Report (FIR) has been completed by Cumbria County Council (CCC) under our duties as the Lead Local Flood Authority (LLFA). Investigations on site were carried out by United Utilities, Carlisle City Council and Cumbria County Council's Highways team for the Carlisle District.

Section 19 of the Flood and Water Management Act 2010 (FWMA) states that on becoming aware of a flood in our area, when appropriate, we must investigate with the relevant flood risk management authorities involved and find out which flood risk management functions have been, or will be taken, if any.

It was deemed necessary to complete an investigation into the flood incidents in Wetheral as properties flooded internally and as yet no specific criteria have been introduced within the County's LLFA responsibilities to define a de-minimus for investigation.

This report provides a summary of the actions being carried out by each of the authorities involved; activities include general inspection, maintenance and inspection of the drainage system, as well as engaging with landowners.

The overall cause of flooding is most likely a result of localised heavy rainfall and under capacity of the public sewer system along with excessive surface water runoff. Section 5 of this report provides our recommendations to mitigate the risk of flooding as far as possible.

Cumbria County Council as Lead Local Flood Authority (LLFA) now has permissive powers in relation to management of surface water. It also has responsibility for highways drainage. United Utilities is responsible for the public sewer network.

Both United Utilities and Cumbria County Council have carried out works to minimise the flooding since the July 2011 flooding.

Residents should continue to monitor and report any future flooding incidents that they experience.

# 1. Introduction

## 1.1 LLFA Investigation

CCC as the LLFA has a responsibility to record and report flood incidents as detailed within Section 19 of the FWMA:

### Section 19

(1) On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate—

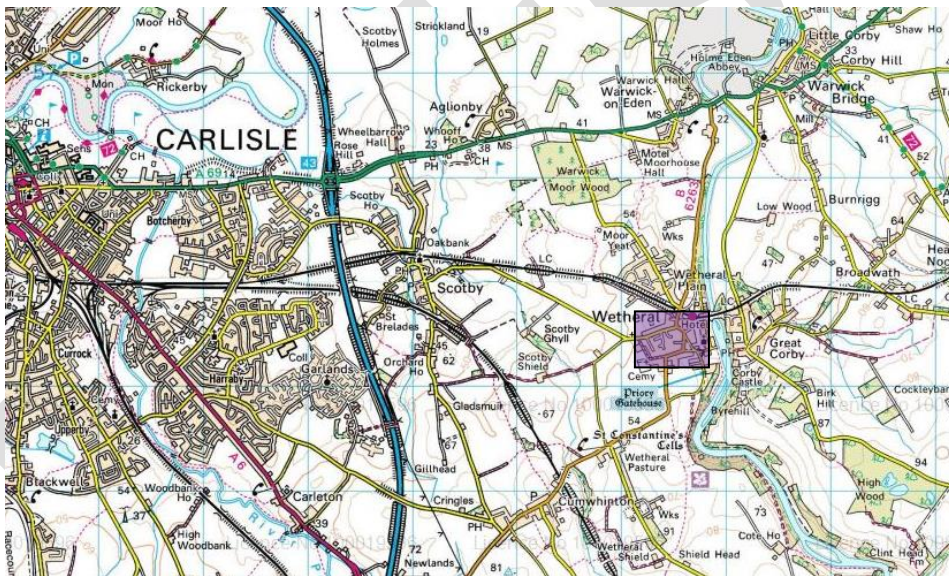
- (a) which risk management authorities have relevant flood risk management functions, and
- (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.

(2) Where an authority carries out an investigation under subsection (1) it must—

- (a) publish the results of its investigation, and
- (b) notify any relevant risk management authorities.

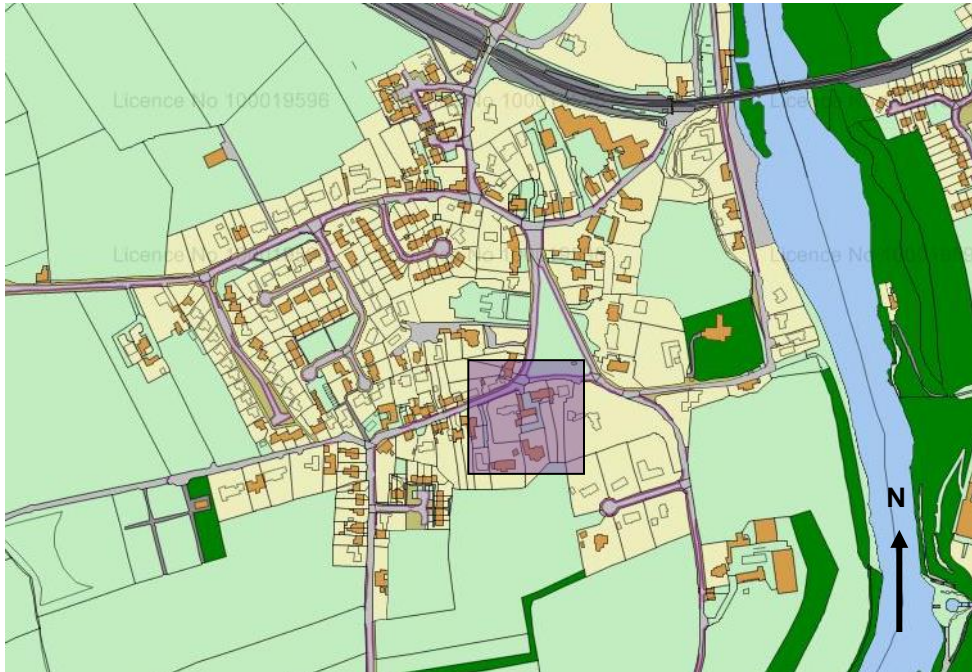
It was deemed necessary to complete an investigation into the flood incident in the Wetheral area as a number of properties flood internally during heavy rainfall events. This report provides a concise review of the rights and responsibilities of all risk management authorities involved, and an outline of their past or proposed actions, if any. We will also make recommendations for a possible way forward.

## 1.2 Site descriptions



**Figure 1** Map showing location of Wetheral

Wetheral is located on the western side of the River Eden, approximately 5 miles from Carlisle to the west (Grid reference NY 46600 54336). The area affected by the flooding is located alongside Steele's Bank Road. A collection of developments around the old farm house are affected by the flooding.



**Figure 2** Collection of developments affected in Wetheral

The access alongside “The Mews”, is shared by “The Mews”, “The Arches” and “South View Lodge”. This can be seen in figure 3 below.



**Fig 3.** Names of properties

### 1.3 Investigation

The flooding site had been visited by; Carlisle City Council, Cumbria County Council as LLFA and United Utilities. Residents of the properties which flood have also been contacted to gather further information regarding the flooding.

The findings of the investigation have been reported to the LLFA who have compiled this report.

## 2. Event Background

This section considers; the history of flooding in the areas concerned; the area which is affected and the works which have been carried out to reduce the risk of flooding.

### 2.1 Flooding History

Flooding has repeatedly occurred during heavy rainfall events in 2002, 2004 and 17<sup>th</sup> July 2011 with other occurrences in between.

### 2.2 How the flooding occurs

Sewer plans from the United Utilities website are included in Appendix 2.

The sewer which surcharges into the courtyard used to be a private sewer for the properties; "South View Lodge", "The Arches" and "The Mews". However since the change in UU's responsibilities this is now a public sewer owned by UU from the point where "South View Lodge" access meets "The Arches".

The combined sewer (conveying both foul and surface water) in the road (Steele's Bank) serves the properties to the west / uphill of the collection of properties which flood. This sewer is likely to have been extended to accommodate new developments.

The flooding occurs when the combined sewer in the road (Steele's Bank) reaches capacity in periods of heavy rainfall. This causes the systems which run through the courtyard and from "Greystone" to back up and surcharge through gullies and manholes. Also surface water running into the courtyard area and the rear of "Greystone" is unable to drain into the public sewer and then contributes to the flooding. On one occasion a blockage on the public sewer caused it to surcharge on to the carriageway which caused foul effluent to run into the courtyard area.

Also contributing to the flooding in the courtyard which will affect "The Mews", "The Arches" and "Green Farm" is the volume of surface water from land drains, originating at the rear of "The Arches" and "South View Lodge" that either connect into the foul drains or percolate through the ground outside "The Arches". The water from the land drains are contributing to the flow in the public sewer. The public sewer is not designed to accommodate land drainage and it is difficult to quantify how much land drainage flows into the courtyard through the 2 known land drains contributing to the flooding in the courtyard. The plan in Appendix B shows some of the land drains that are laid towards the courtyard. It is difficult to assess damage that may have occurred to land drainage in fields as the drains tend to be small and manholes are not usually incorporated into the systems. However, damaged field drains in the field behind "South View Lodge" may have the effect of reducing the flow through the two land drains leading to the courtyard. The damaged drain in the drive behind "Green Farm" should be repaired to prevent water bubbling through the ground causing water to run overland to gather in the courtyard.

Surface water run-off from Steele's Bank into the courtyard has also been a problem in the past contributing to the surface water and foul flooding in the courtyard. One resident has stated that surface water running down Steele's Bank can 'resemble a river' during heavy rainfall.

The owner of "Greystones" has confirmed that they suffer flooding from the surcharge of their foul drains from the surcharge of the combined public sewer in Steele's Bank.

### 3. Possible Causes

Information about possible causes was provided by a resident during a site visit in September 2011. Cumbria County Council's LFRM team, United Utilities and Carlisle City Council all attended the visit.

Each party attended with specific interests. Cumbria County Council attended the visit as Lead Local Flood Authority, United Utilities attended the visit with their interest to the new combined sewer in the courtyard and Carlisle City Council attended after taking enquires from the residents.

- During heavy rainfall events the combined sewer system in the road reaches capacity. The combined sewer from "The Arches" and "South View Lodge" in the courtyard adjacent to "The Mews" is unable to discharge with the amount of water, therefore, surcharges through gullies and manholes which floods the courtyard. Water can also enter the courtyard from the road and runoff from "South View Lodge" and other property to the south of courtyard. Runoff from the carriageway in Steele's Bank is also a major contributor to the flooding.
- The potential flooding at the rear of Green Farm, and Anchor Lodge could be the result of poor land drainage to the south of these properties. This could be exacerbated by the development that has taken place in this area.
- Due to the courtyard sitting at a lower level than Steele's Bank Road during rainfall events run-off enters the courtyard and is a major contributor to the flooding.



## 4. Rights and Responsibilities

The Flood and Water Management Act 2010 has altered elements of the previous legislation in relation to flood risk management. It has also introduced new duties and created Lead Local Flood Authorities. Typically these are Unitary and County Councils. Previously County Councils and Unitary Councils had an emergency response role during and post flood events. County and Unitary Councils are now the Lead Local Flood Authorities and when the Flood and Water Management Act is fully commenced they will have various duties and responsibilities to manage floods from local sources; local sources are defined as surface water, ordinary watercourses and groundwater.

Property owners and Riparian owners (those people who own land that extends to the edge of a watercourse) also have rights and responsibilities which can impact on flood risk.

### 4.1 Lead Local Flood Authority (LLFA) & Highways Authority

As stated in the introduction, CCC as the LLFA has a responsibility to investigate flood incidents under Section 19 of the FWMA.

The LLFA also has a responsibility to maintain a register of structures and features which have a significant effect on flooding from surface runoff, groundwater or ordinary watercourses as detailed within Section 21 of the FWMA. The register must contain a record about each structure or feature, including the ownership and state of repair. The register is being developed by the LLFA. The LLFA will therefore be looking for support from other authorities to ensure flood incidents are reported, and any assets which are having a significant effect on flood risk are recorded on our register.

The LLFA has a strategic overview on local flood risk. While we suggest possible causes of flooding at Wetheral, and make recommendations to ensure flood risk is mitigated as far as possible, the FWMA does not provide CCC, or the other Risk Management Authorities, with the mandate or funding to tackle all identified causes of flooding.

The FWMA 2010 has also amended Section 25 of the Land Drainage Act thus giving CCC permissive powers to serve notice on any persons impeding the flow in a watercourse and causing an increase in flood risk.

Cumbria County Council as the Highway Authority is responsible for the maintenance and inspection of the highway network.

Cumbria County Council's in-house highways maintenance services carry out gully cleaning and are responsible for all gullies on public classified roads and unclassified roads.

### 4.2.1 Carlisle City Council Highways

District Councils have a role in highways maintenance as they are the highways authority under claimed rights within the Highways Act 1980. For example all gullies located on unclassified roads within 30 mph limits are the responsibility of Carlisle City Council.

Update 02/09/13 – Carlisle City Council ceased claimed rights with effect from 31<sup>st</sup> March 2013 leading to the transfer of responsibility to Cumbria County Council.

### 4.2.2 Carlisle City Council Planning

Carlisle City Council also has a duty to assess planning applications. Many of the residents affected by the flooding have expressed concern that the flooding issues have been affected by the amount of development that has been allowed to take place over the years which has contributed to the flow in the public sewer.

Carlisle City Council bases its decision to grant planning permission on advice provided from various sources including United Utilities, Environment Agency and Council drainage engineers. The information available on the Carlisle City Council website referring to planning applications has not provided any information suggesting that the public sewer was at its capacity until recently. United Utilities are now requesting that applicants of new planning applications provide a flow and load impact assessment so that United Utilities can determine that applicants ensure their developments provide a non-increase or even volumetric betterment in flows from the development to the public sewer. This is evaluated on a combined foul and surface water flow basis.

### 4.3 Landowners/Residents

Whether residents who are aware that they are at risk of flooding should take action to ensure that they and their properties are protected.

Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include laying sandbags and moving valuable items to higher ground, to more permanent measures such as installing floodgates, raising electrical sockets and fitting non-return valves on pipes. Anyone affected by flooding should try to document as much information about the incident as possible.

Prior to the installation of the non-return valves by United Utilities, the gully in the courtyard may have provided an access route for the public sewer to surcharge through which may have increased the risk of foul flooding. It may be that this gully would be better removed. Following the installation of the non-return valves on the public sewer this should be monitored by residents and any surcharging from the gully reported to United Utilities and Cumbria County Council's Local Flood Risk Management team.

Residents have expressed particular concern at the continued development in Wetheral and have requested that development does not take place until there are improvements in the public sewer system.

## 4.4 United Utilities

United Utilities has been limited in their powers to provide practical assistance to address flooding problems. But recent new legislation increases the responsibilities held by United Utilities.

The Water Industry (Schemes for Adoption of Private Sewers) 2011, means that United Utilities are now responsible for the maintenance of shared drainage on private land. Up to 30 September 2011, a system serving more than one property on private land was the collective responsibility of the owners of the properties it served. We understand that a shared drain serves 'South View Lodge', 'The Mews' and 'The Arches' and it is this one which surcharges contributing to the flooding in the courtyard outside 'The Mews' and 'The Arches'.

United Utilities have informed Carlisle City Council's Planning Department that the wastewater treatment works at Wetheral are no longer able to take any further connections or developments until improvement works are carried out. Improvement works are likely to be part of United Utilities review in 2020. However, development may still go ahead if a developer can provide betterment for their discharges to the public sewer. This is normally achieved by the removal of surface water to the public sewer system to allow foul connections from new developments. Any new proposed development would be assessed by United Utilities on a case by case basis.

## 5. Response of organisations to relevant functions

Since the meeting on-site in September 2011, Risk Management Authorities have responded as follows: -

CCC has written to all residents known to be affected by flooding asking for their assistance in carrying out this flood investigation. By May 2012 three of the six households had responded to this request all responses were positive. A reminder was sent to the 3 households who did not respond to the Council's request.

UU have focussed on sewer connections being fitted with non-return valves and pumping arrangements to minimise the flooding and prevent the sewer system backing up and overflowing into the courtyard.

UU have carried out works in the courtyard manhole to prevent the manhole and gully surcharging with sewage. The effluent in the sewer connection cannot discharge to the sewer in the road as it reaches capacity in rainfall events. UU have inserted a non-return valve and pump to ensure that during surcharge the effluent is pumped out of the manhole and into the sewage flow in the sewer in the road (Steele's Bank). This will further minimise the risk of flooding in the courtyard. Similar non-return valves have been installed at "Green Farm" and "Greystones".

United Utilities have also carried out temporary work to improve surface water drainage by inserting a slot drain and bund across the entrance to the courtyard in order to divert surface water run-off from Steele's Bank road before it enters the courtyard. This discharges to the road channel on the lower side of the courtyard entrance.

It is noted that since the installation of the pumped non-return valves and the slot drain and bund that there have not been any incidents of flooding in the courtyard.

**Figure 5** Location of works



## 6. Recommendations

United Utilities have carried out works to lessen the flood risk to the properties involved in the flooding; however, the residents should continue to monitor future flooding incidents.

Residents should continue to gather information when flooding occurs such as photographing the flooding (e.g. surcharging manholes, runoff from road into courtyard).

The residents should continue to report any flooding issues to United Utilities, and both LFRM and Highways at Cumbria County Council. Contact details are enclosed below. This will enable United Utilities and Cumbria County Council to monitor the need for works and prioritise them accordingly.

United Utilities should make improvements to their assets in line with their asset management reviews. This is likely to involve hydraulic modelling of the public sewer system and possibly upsizing the sewers and treatment works to accommodate anticipated future volumes.

Cumbria County Council should consider re-profiling the carriageway along Steele's Bank to distribute surface water equally to the gullies on either side of the road.

Carlisle City Council Planners should assess any new planning applications carefully to ensure the risk of flooding does not increase. This will require Carlisle City Council Planners to work closely with organisations particularly United Utilities to ensure flows in the sewers and to the wastewater treatment works do not increase. In areas where sewer systems are at capacity development will only be allowed to take place where the developer can prove betterment on the sewer system. This can often be accomplished by removing surface water, such as highway drainage to discharge into other systems where possible, thus freeing up capacity in the foul or combined sewer system.

## 7. Conclusions

All risk management authorities must continue to work together, sharing information about the actions being taken.

Property owners should be made aware of the flood resistance and resilience measures available, and these should be made accessible through Carlisle City Council where possible.

A full record of the characteristics and consequences of future flood incidents at the above location must be kept. This information will help support any case and ensure that CCC, UU and Carlisle City Council have the best possible evidence should future funding opportunities become available.

## 8. Acronyms

EA Environment Agency

CCC Cumbria County Council

UU United Utilities

FWMA Flood and Water Management Act 2010

LDA Land Drainage Act 1991

LLFA Lead Local Flood Authority

WRA Water Resources Act 1991

## 9. Useful Contacts and Links

**To report flooding: Incident hotline** tel: 0800 80 70 60 (24hrs)

**Floodline:** tel. 0845 988 1188

**Cumbria County Council (Local Flood Risk Management):**

[lfrm@cumbria.gov.uk](mailto:lfrm@cumbria.gov.uk), [www.cumbria.gov.uk](http://www.cumbria.gov.uk), tel: 01228 221330

**Cumbria County Council (Highways):**

[highways@cumbria.gov.uk](mailto:highways@cumbria.gov.uk), [www.cumbria.gov.uk](http://www.cumbria.gov.uk), tel: 0845 609 6609

**Cumbria County Council (Neighbourhood Forum):**

[niall.mculty@cumbria.gov.uk](mailto:niall.mculty@cumbria.gov.uk), [www.cumbria.gov.uk](http://www.cumbria.gov.uk), tel: 01228 226570

**United Utilities:** [www.unitedutilities.com](http://www.unitedutilities.com) tel: 0845 746 2200

**Carlisle City Council:** [www.carlisle.gov.uk](http://www.carlisle.gov.uk) tel: 01228 817200

**Environment Agency:**

[enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk), [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

tel: 03708 506 506

**Flood and Water Management Act 2010:**

<http://www.legislation.gov.uk/ukpga/2010/29/contents>

**Water Resources Act 1991:**

<http://www.legislation.gov.uk/all?title=water%20resources%20act>

**Land Drainage Act:**

<http://www.legislation.gov.uk/all?title=land%20drainage%20act>

**Highways Act 1980:**

<http://www.legislation.gov.uk/all?title=highways%20act>

**EA – ‘Living on the Edge’** a guide to the rights and responsibilities of riverside occupation:

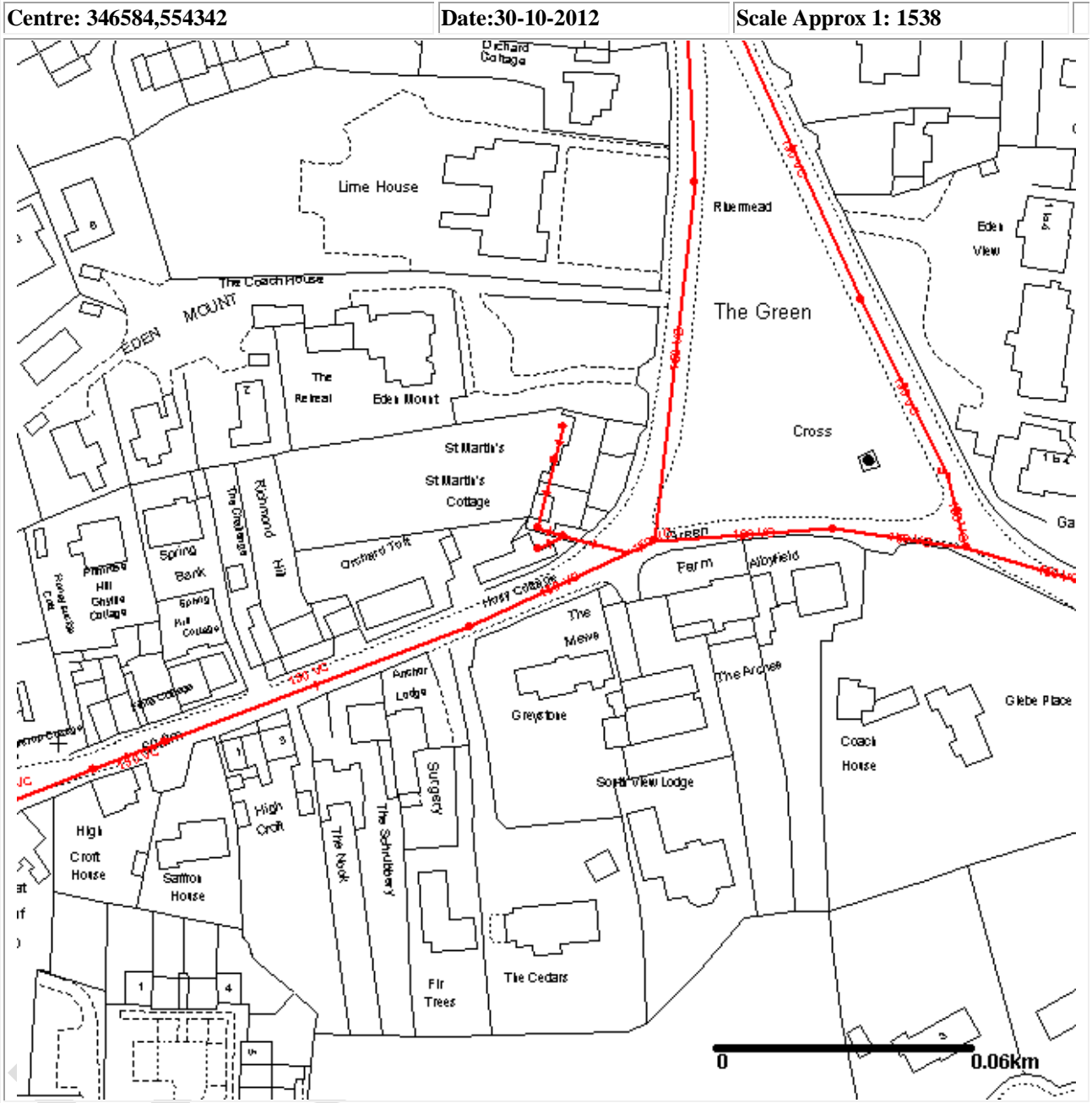
<http://www.environment-agency.gov.uk/homeandleisure/floods/31626.aspx>

**EA – ‘Prepare your property for flooding’** how to reduce flood damage including flood protection products and services:

<http://www.environment-agency.gov.uk/homeandleisure/floods/31644.aspx>

# Appendix 1

Issued to CUMBRIA of Cumbria CC on 30-Oct-12 **NOT FOR RESALE OR NON-APPROVED USE**



## Extract from Map of Public Sewers

**Do not Scale**

**Red or Brown - Foul Sewers**  
**Blue - Surface Water Sewers**

—— Public Sewer  
 - - - - Highway Drain  
 - - - - Private Sewer  
 - - - - Pumping Main

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities will not accept any liability for any damage caused by the actual positions being different from those shown

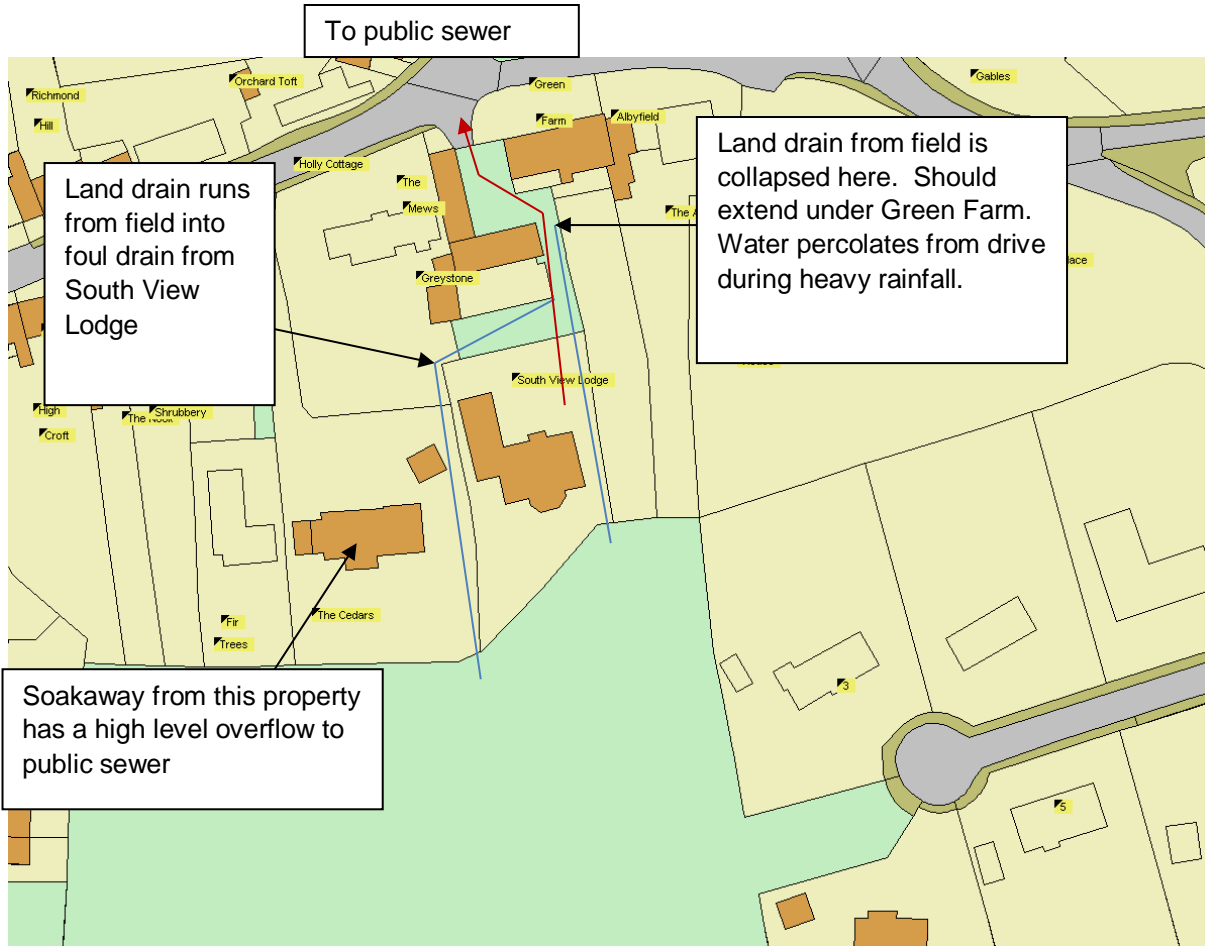
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## Appendix 2

Details of the known land drains flowing towards the courtyard.



## Translation services

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如果您希望通过母语了解此信息，  
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Jeigu norétumète gauti šią informaciją savo kalba,  
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