

# New Mill

## Flood Investigation Report No.39



**Flood Event: 29<sup>th</sup>/30<sup>th</sup> August 2012**

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	David White	Anthony Lane		20 Nov 2013
Final Draft	Andrew Harrison	Anthony Lane		28 Feb 2014
Published	Andrew Harrison	Anthony Lane	Doug Coyle	9 <sup>th</sup> April 2014

## Contents

<b>Executive Summary</b> .....	<b>4</b>
<b>Event Background</b> .....	<b>5</b>
Flooding Incident .....	5
<b>Investigation</b> .....	<b>7</b>
Map of Flow Routes .....	7
Likely Causes of Flooding.....	8
Rainfall Event.....	9
Flooding History .....	9
<b>Recommended Actions</b> .....	<b>10</b>
<b>Next Steps</b> .....	<b>11</b>
<b>Appendices</b> .....	<b>12</b>
Appendix 1: Glossary.....	12
Appendix 2: Summary of Relevant Legislation and Flood Risk Management Authorities .....	13
Appendix 3: Useful contacts and links .....	16
Appendix 4: Effect of Pond at Ponsonby Old Hall .....	17

## Figures

Figure 1. Location Plan.....	<b>Error! Bookmark not defined.</b>
Figure 2. New Mill location plan.....	6
Figure 3. New Mill topography plan .....	6
Figure 4. Property locations.....	7
Figure 5. Flood routes.....	8
Figure 6 Ponsonby Old Hall.....	17

# Executive Summary

Cumbria County Council as Lead Local Flood Authority has prepared this report with the assistance of other Flood Risk Management Authorities as it considers necessary to do so under Section 19 of the Flood and Water Management Act 2010.

Some of the properties in the hamlet of Newmill suffered internal and external flooding during the excessive rainfall event of the 30<sup>th</sup> August 2012. The main source of the flooding was fluvial. The mechanism was insufficient capacity in the Newmill Beck and associated culverts in the hamlet.

6 actions have been identified within the report that would reduce the risk of future flooding. These include improvements in culvert capacity, encouraging landowners to maintain watercourses and investigating options for reducing flows in the Beck.

# Event Background

This section describes the location of the flood incident and identifies the properties that were flooded.

## Flooding Incident

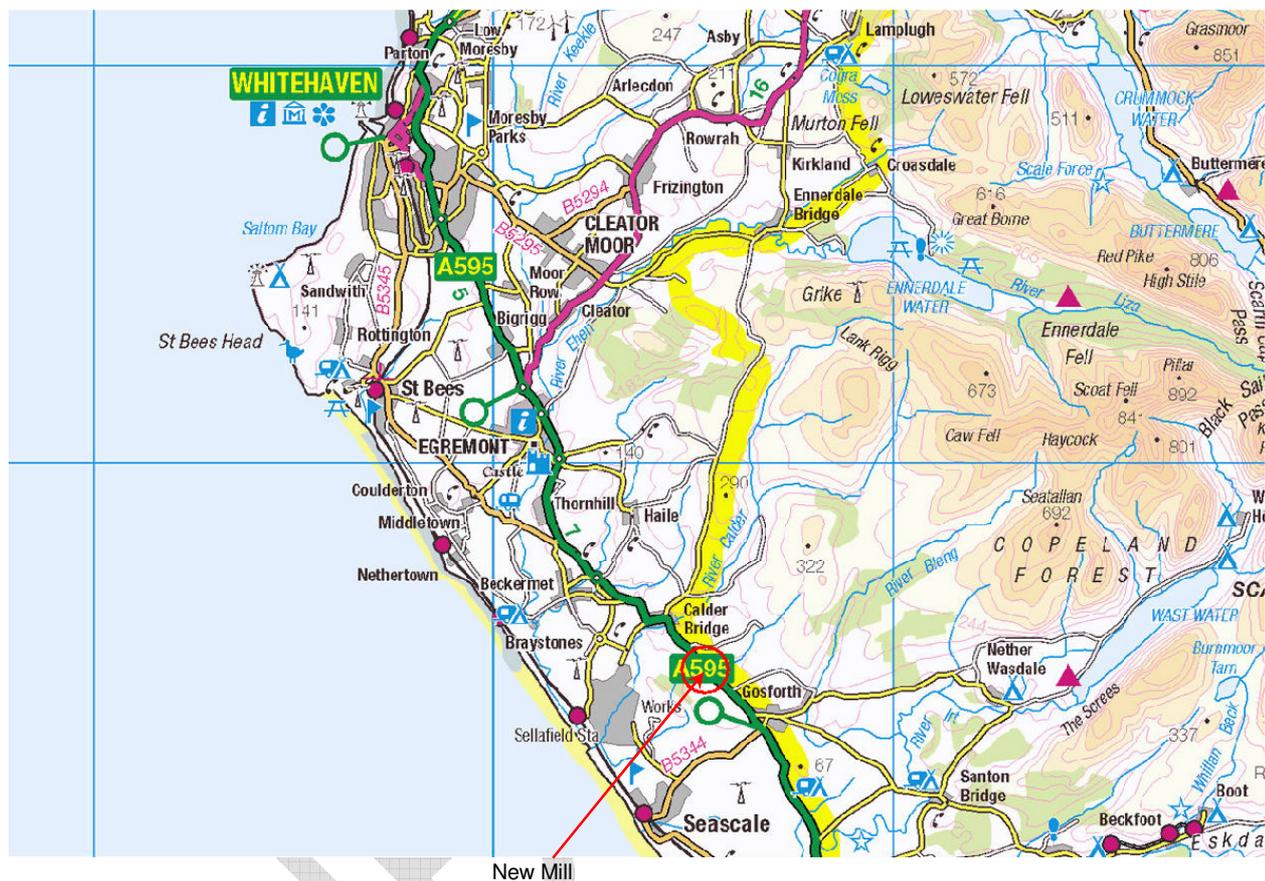


Figure 1. Location Plan.

The hamlet of New Mill is on the A595 highway (see Figure 1 “Location Plan”), which runs along the boundary of the Lake District National Park. At its centre is a culvert carrying Newmill Beck under the A595. The Beck rises at the foot of the Copeland Forest fells and upstream of the culvert has a catchment of about 550 hectares. Figure 3, “New Mill topography plan” shows that it flows down a steep valley. About 900m downstream of the bridge, the Beck discharges into the Ponsonby Tarn. The Newmill Beck then flows out of the Tarn before discharging into the sea about 3½ km southwest of New Mill.

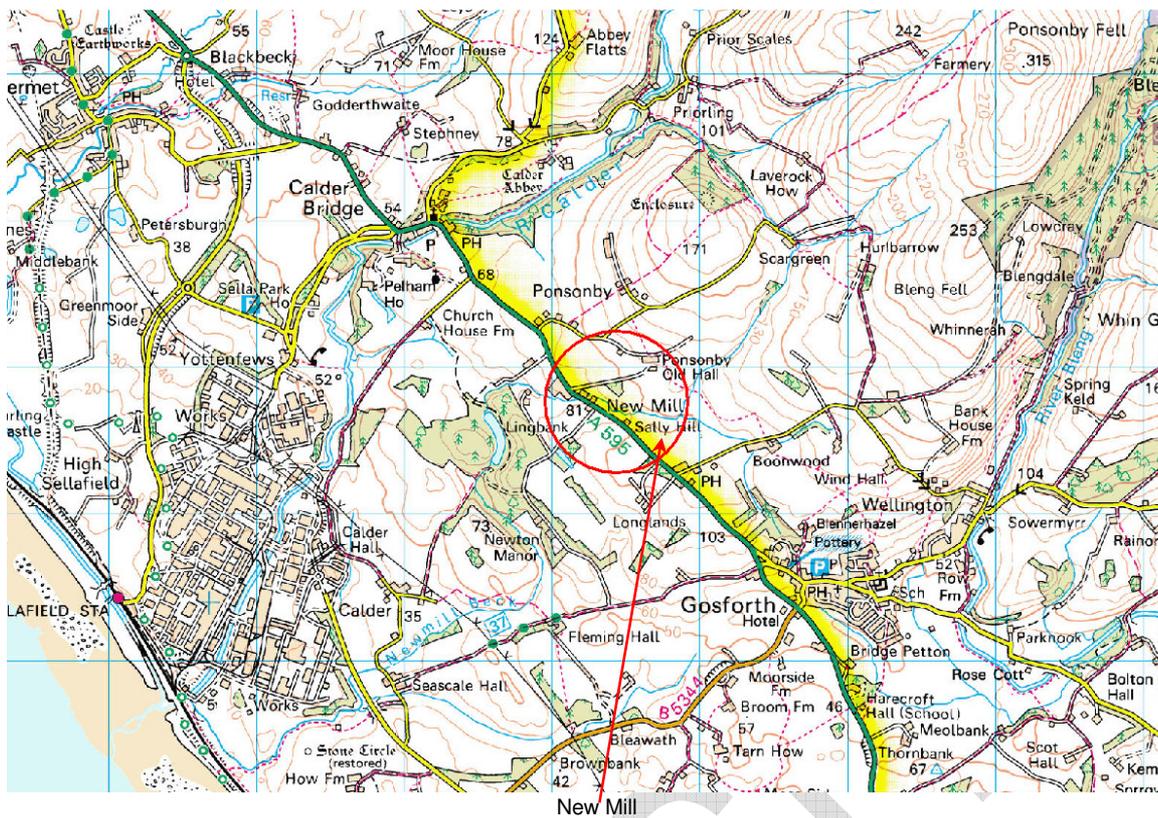


Figure 2. New Mill location plan

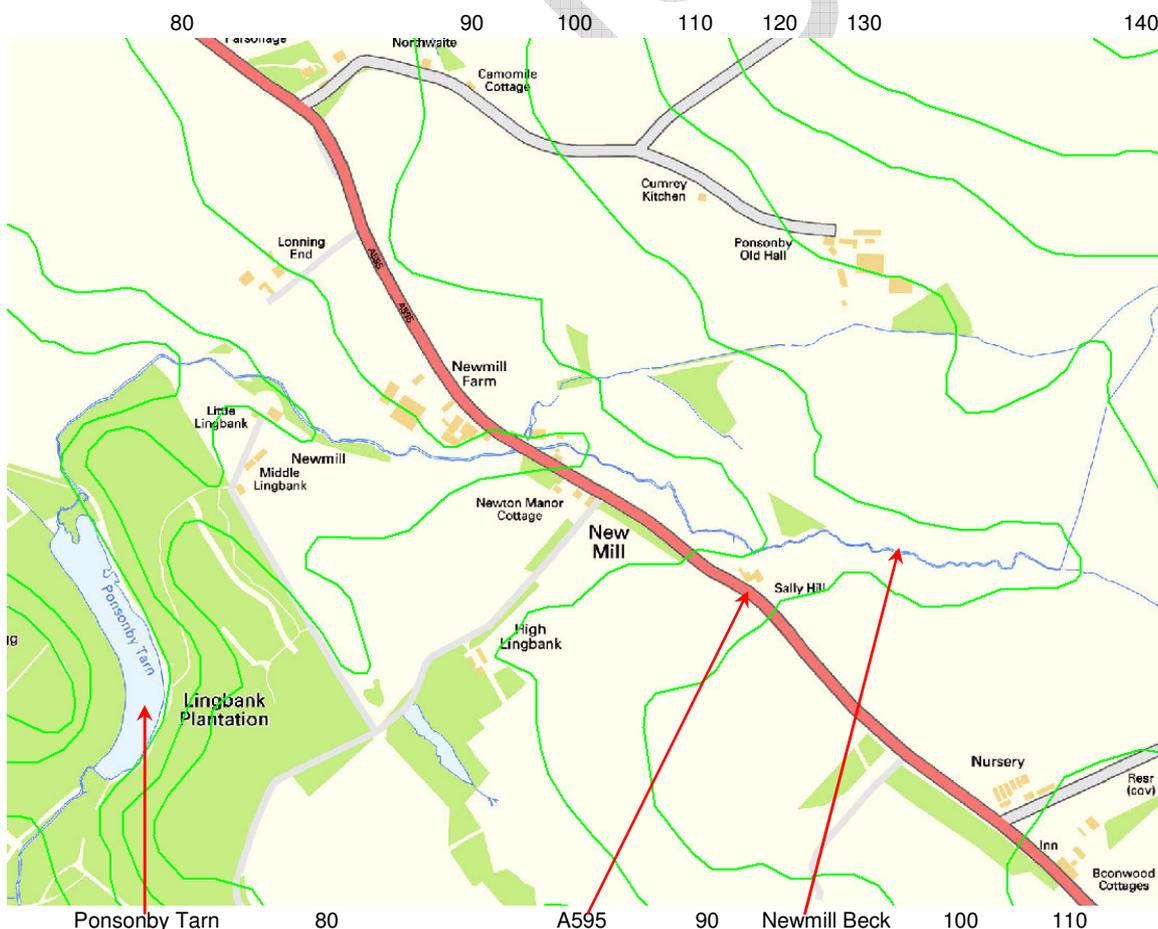


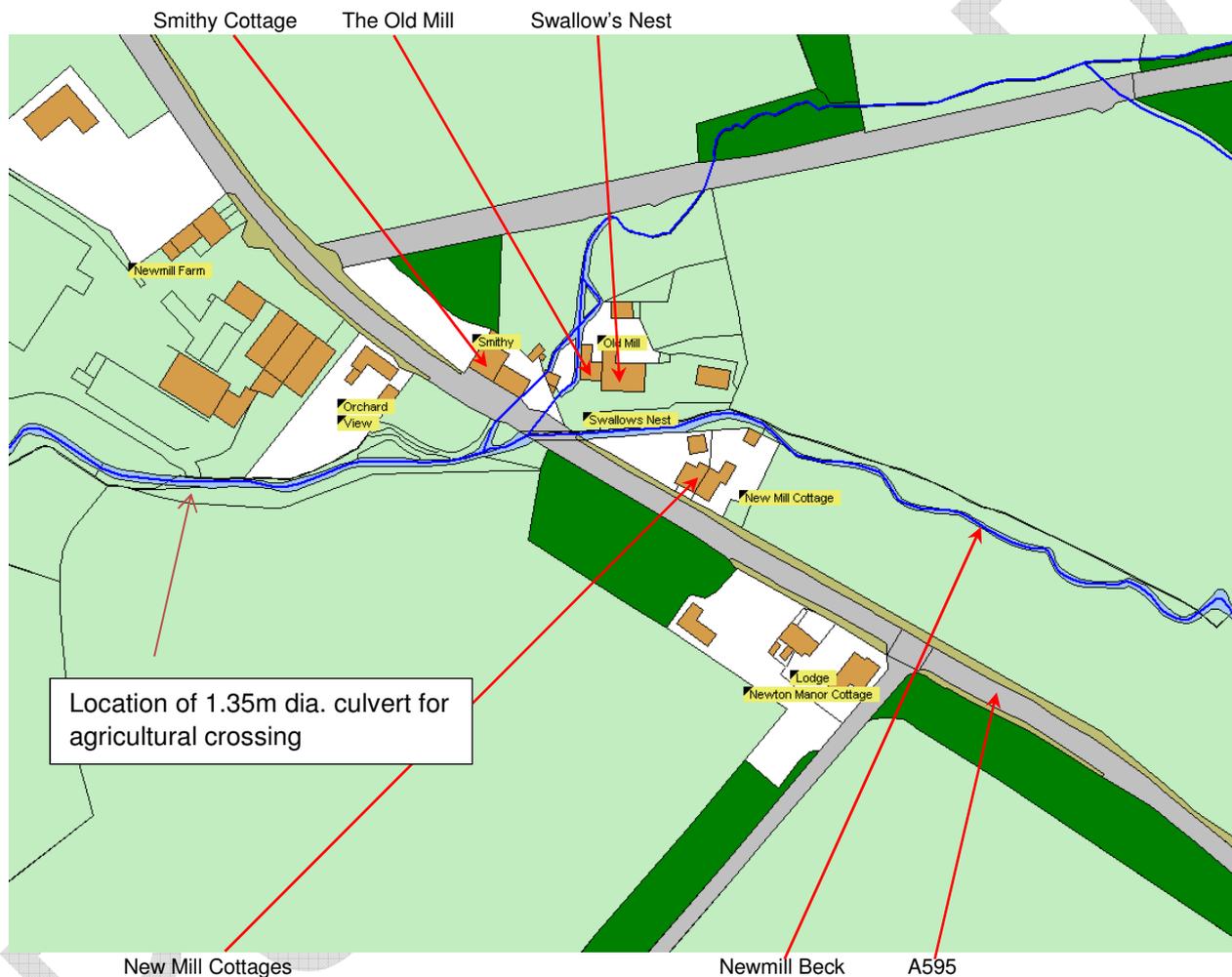
Figure 3. New Mill topography plan

# Investigation

Internal flooding of Swallow's Nest at New Mill was reported to the Environment Agency Incident Room on the 29<sup>th</sup> August 2012.

A flood incident site investigation was carried out by Copeland District Council and Cumbria County Council.

## Map of Flow Routes



**Figure 4. Property locations**

Figure 4 "Property locations" shows the properties known to have had flooding problems as Newmill Beck burst its banks. The width of the flow increased (see Figure 5 "Flood routes") flooding Swallow's Nest and New Mill Cottages. Swallows Nest flooded internally and its access drive was broken up by the flood debris. A decking platform in the garden of Fussell New Mill Cottage was lifted and there was about 1.2m of water in a workshop. The cellar in Broadbent New Mill Cottage next door was also flooded. There is a danger that the outlet to the cottages' septic tank may become blocked by debris during such flood events. Further investigations revealed that the cellar of Orchard View flooded and substantial garden damage also occurred.

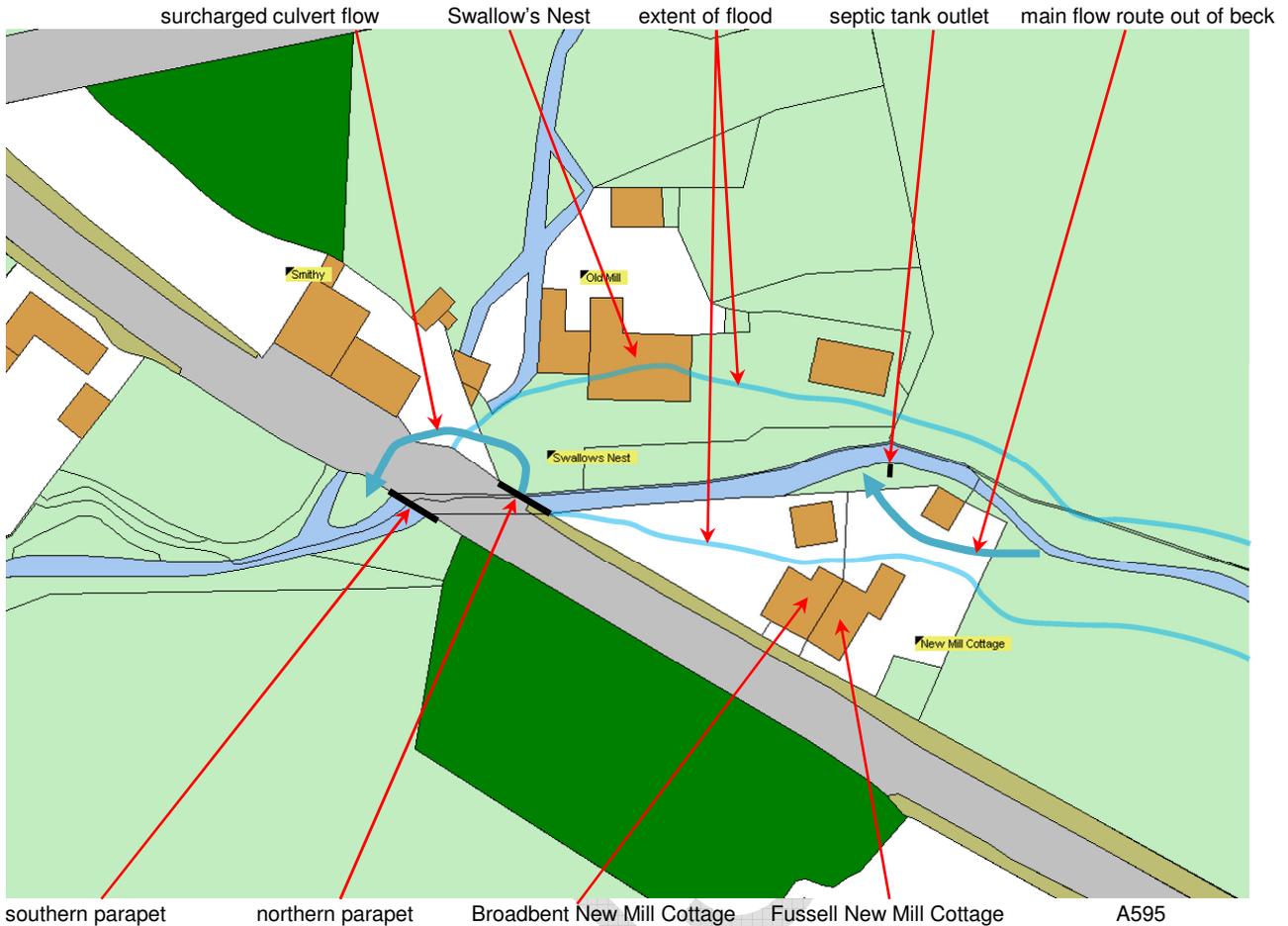


Figure 5. Flood routes

## Likely Causes of Flooding

New Mill Cottages are in fluvial Flood Zones 2 and 3. It is understood that the Newmill Beck was in need of some maintenance and it was unable to contain the excessive flow. Also the culvert running under the A595 did not have sufficient capacity for the flow causing a surcharge flow over the highway to the north-west of the crossing.

Some of the surcharged flow from the culvert re-entered the Beck through a hole in the southern stone parapet wall. The northern stone parapet wall is continuous. It has been suggested that if a similar hole is introduced through the northern parapet wall, then a route could be provided for flood waters across the highway when the Beck is in flood. This could result in litigation claims if any road traffic accidents occurred as a result of highway flooding. A proposal to build a wall at Swallow's Nest to protect the property from future flooding could also increase the risk of future flooding to other properties adjacent to the Beck. The highway culvert is  $2.2\text{m} \times 0.8\text{m} = 1.76\text{m}^2$  in size at the upstream end and is  $2.0\text{m} \times 0.8\text{m} = 1.6\text{m}^2$  at the downstream outlet. This is further reduced by the angle of the wing wall taking the outlet to  $1.6\text{m} \times 0.8\text{m} = 1.28\text{m}^2$ .

Approximately 10m further downstream of Orchard View there is a culvert that has been built from 1.35m diameter ( $1.43\text{m}^2$ ) concrete manhole rings with step irons still in situ. This has been introduced to accommodate an agricultural crossing over the Beck. It is marginally larger than

the downstream end of the A595 culvert. There is another water course entering the Beck downstream of the A595 culvert but above the agricultural crossing. Anecdotal evidence suggests a large tree stump had partially blocked the agricultural crossing. There is also a large overflow pipe approx. 450mm diameter above the agricultural culvert but this could not cope with the sheer volume of water due to the blockage.

Upstream of New Mill, the Beck has a tributary that connects it to Scargreen Beck, which is a tributary of the River Calder. Newmill Beck itself continues up to Boonwood to rise at Bleng Fell. The catchment of this watercourse system should be investigated to see if any changes have been made and to consider upstream attenuation opportunities. About 15 years ago Nirex diverted the Beck at Boonwood. There have not been any reports of flooding problems associated with the River Calder so any connections made to Newmill Beck could be severed or limited.

## Rainfall Event

There were many rainfall events during the month of August in 2012, with events lasting almost continuously up to 12 hours. The weather radar indicated that there was rain almost every day over the Gosforth area in the second half of the month. On the 29<sup>th</sup> it rained intermittently from about 1:40am until about 1:50pm. It is likely that the ground was reaching saturation point.

Rainfall radar records indicate that at approximately 9:00pm on the evening of the 29<sup>th</sup> August, it started to rain heavily and did not stop until around 3:40am on the 30<sup>th</sup> August. This rainfall event peaked at about 00:35am with an intensity of up to 50mm/hr. and then again at 1:20am. Intensities above 20mm/hr. are considered to be heavy rainfall.

## Flooding History

Flooding has occurred relatively recently in New Mill.

# Recommended Actions

Action by	Recommended Action	How
Residents	If affected by flooding, ensure that property is resilient to future flood events.	Consider whether flood protection is expedient. Seek advice from a competent flood resilience consultant.
Riparian Owners	Maintain flows in watercourses	Establish maintenance regime for clearing foliage and removing silt from sections of watercourses that fall within their area of responsibility.
LLFA	Encourage riparian owners to carry out their statutory duties in maintenance of their watercourses.	Provide advice. Liaise with the owners and process applications for Ordinary Watercourse Flood Defence Consent.
LLFA/County Highways/Landowners	Provide a route across culverts for exceedence	Review exceedence flood routes. Investigate potential for realigning the downstream wing wall of culvert under A595.
LLFA/ Landowners	Investigate attenuation or limiting flows upstream.	Investigate the catchment of the Newmill Beck upstream of the culvert at New Mill.
LLFA/ Landowner	Ensure bunding is adequate to stop overflow from Ponsonby Old Hall	Work must be carried out quickly and LLFA to ensure work is being carried out as agreed.

## Next Steps

CCC as the LLFA will continue to ensure that any actions identified within the actions table of this report are appropriately taken forward by each Risk Management Authority identified. Actions will continue to be prioritised through the Making Space for Water process and monitored through regular meetings of the group. Details of the MSfWG members and summary of related processes are detailed in Appendix 2.

PUBLISHED

# Appendices

## Appendix 1: Glossary

### Acronyms

EA	Environment Agency
CCC	Cumbria County Council
LLFA	Lead Local Flood Authority
LFRM	Local Flood Risk Management
MSfWG	Making Space for Water Group
FAG	Flood Action Group

PUBLISHED

## Appendix 2: Summary of Relevant Legislation and Flood Risk Management Authorities

The Flood Risk Regulations 1999 and the Flood and Water Management Act 2010 (the Act) have established Cumbria County Council (CCC) as the Lead Local Flood Authority (LLFA) for Cumbria. This has placed various responsibilities on CCC including Section 19 of the Act which states:

### 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.

A 'Risk Management Authority' (RMA) means:

- (a) the Environment Agency,
- (b) a lead local flood authority,
- (c) a district council for an area for which there is no unitary authority,
- (d) an internal drainage board,
- (e) a water company, and
- (f) a highway authority.

The table below summarises the relevant Risk Management Authority and details the various local source of flooding that they will take a lead on.

Flood Source	Environment Agency	Lead Local Flood Authority	District Council	Water Company	Highway Authority
<b>RIVERS</b>					
Main river					
Ordinary watercourse					
<b>SURFACE RUNOFF</b>					
Surface water					
Surface water on the highway					
<b>OTHER</b>					
Sewer flooding					
The sea					
Groundwater					
Reservoirs					

The following information provides a summary of each Risk Management Authority's roles and responsibilities in relation to flood reporting and investigation.

Government – Defra develop national policies to form the basis of the Environment Agency's and Cumbria County Council's work relating to flood risk.

Environment Agency has a strategic overview of all sources of flooding and coastal erosion as defined in the Act. As part of its role concerning flood investigations this requires providing evidence and advice to support other risk management authorities. The EA also collates and reviews assessments, maps and plans for local flood risk management (normally undertaken by LLFA).

Lead Local Flood Authorities (LLFAs) – Cumbria County Council is the LLFA for Cumbria. Part of their role requires them to investigate significant local flooding incidents and publish the results of such investigations. LLFAs have a duty to determine which risk management authority has relevant powers to investigate flood incidents to help understand how they happened, and whether those authorities have or intend to exercise their powers. LLFAs work in partnership with communities and flood risk management authorities to maximise knowledge of flood risk to all involved. This function is carried out at CCC by the Local Flood Risk Management Team.

District and Borough Councils – These organisations perform a significant amount of work relating to flood risk management including providing advice to communities and gathering information on flooding.

Water and Sewerage Companies manage the risk of flooding to water supply and sewerage facilities and the risk to others from the failure of their infrastructure. They make sure their systems have the appropriate level of resilience to flooding and where frequent and severe flooding occurs they are required to address this through their capital investment plans. It should also be noted that following the Transfer of Private Sewers Regulations 2011 water and sewerage companies are responsible for a larger number of sewers than prior to the regulation.

Highway Authorities have the lead responsibility for providing and managing highway drainage and certain roadside ditches that they have created under the Highways Act 1980. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users.

Flood risk in Cumbria is managed through the Making Space for Water process which involves the cooperation and regular meeting of the Environment Agency, United Utilities, District/Borough Councils and CCC's Highway and LFRM Teams to develop processes and schemes to minimise flood risk. The MSfWGs meet approximately 4 times per year to cooperate and work together to improve the flood risk in the vulnerable areas identified in this report by completing the recommended actions. CCC as LLFA has a responsibility to oversee the delivery of these actions.

Where minor works or quick win schemes can be identified, these will be prioritised and subject to available funding and resources will be carried out as soon as possible. Any major works requiring capital investment will be considered through the Environment Agency's Medium Term Plan or a partners own capital investment process.

Flood Action Groups are usually formed by local residents who wish to work together to resolve flooding in their area. The FAGs are often supported by either CCC or the EA and provide a useful mechanism for residents to forward information to the MSfWG.

PUBLISHED

## Appendix 3: 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:** tel. 01946 505022

[Cumbria.gov.uk/sayit](http://Cumbria.gov.uk/sayit)

**United Utilities:** tel: 0845 746 2200

**Copeland Borough Council**

[info@copeland.gov.uk](mailto:info@copeland.gov.uk), [www.copeland.gov.uk](http://www.copeland.gov.uk), tel. 0845 054 8600

**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 4: Effect of Pond at Ponsonby Old Hall

The LLFA officer from Cumbria County Council attended site following on from the delivery of the draft report during a heavy rain period and noticed water cascading from the Ponsonby Old Hall area. This water had not been recognised within the draft report.

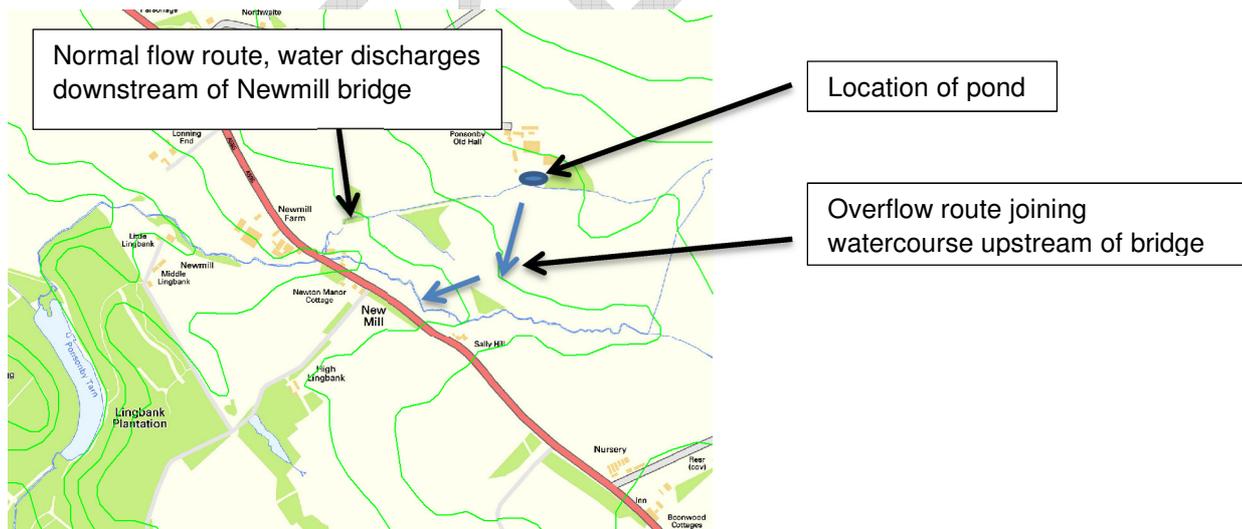
While visiting the site it was noted that a bund at the higher pond in the grounds of Ponsonby Old Hall was being breached and that this water joined the watercourse upstream of Newmill bridge as opposed to its normal course through the old mill and discharging downstream of the bridge.

This anomaly has been pointed out to the landowner who is in the process of bunding the pond further so that all water goes back through the normal route and discharges downstream of Newmill bridge.



**Figure 6 Ponsonby Old Hall**  
Flow route during heavy rain

Bund to be raised



The work required has been added to the recommended actions on page 10.

## Translation services

If you require this document in another format (e.g. CD, audio cassette, Braille or large type) or in another language, please telephone 01228 606060.

আপনি যদি এই তথ্য আপনার নিজের ভাষায় পেতে চান তাহলে অনুগ্রহ করে 01228 606060 নম্বরে টেলিফোন করুন।

如果您希望通过母语了解此信息，  
请致电 01228 606060

Jeigu norétumète gauti šią informaciją savo kalba,  
skambinkite telefonu 01228 606060

W celu uzyskania informacji w Państwa języku proszę  
zatelefonować pod numer 01228 606060

Se quiser aceder a esta informação na sua língua,  
telefone para o 01228 606060

Bu bilgiyi kendi dilinizde görmek istiyorsanız lütfen  
01228 606060 numaralı telefonu arayınız