

Kirkby Stephen

Flood Investigation Report



Flood Event 5th December 2015

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

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Executive Summary

CCC 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.

Following the weather event of Storm Desmond on 4-6th December 2015, CCC received information that 37 properties in 5 different locations in Kirkby Stephen had been affected by flooding from various sources including Main River, ordinary watercourses, surface water, surcharging drainage systems and groundwater.

This report details the findings of CCC during its investigation to identify the causes of the flooding in each location and also recommends various actions to help minimise the flood risk at the various locations. The actions identified include actions by the flood risk management authorities as well as landowners, residents and businesses.

Event Background

This section describes the location of the flood incident and identifies the general locations of properties that were flooded. This section also provides details on the rainfall event that occurred at the time.

Flooding Incident

Kirkby Stephen is a market town which lies at the head of the Eden Valley approximately 25 miles southeast of Penrith.

The geology of the area changes in the location of Kirkby Stephen from limestone in the head of the Eden Valley in Mallerstang to red sandstone which the Eden valley is well known for. It is also clear from plans that the geology of the south end of Kirkby Stephen is limestone due to the numerous springs and sink holes in the surrounding area.

There are three watercourses of significance in Kirkby Stephen which are the River Eden, Croglam Beck and the unnamed watercourse from the Bengy Hill area. The River Eden is located on the eastern edge of the town and runs in a northerly direction towards Great Musgrave. Croglam Beck originates along Croglam Lane and is culverted along much of South Road and High Street before travelling down Mellbecks where it meets the river Eden near Frank's Bridge. The unnamed watercourse from Bengy Hill flows in open watercourse towards Station Yard before entering a culverted section which crosses under the A685, and then flows along the rear of Pennine View Caravan Park to meet the River Eden at High Stenkrith Bridge.

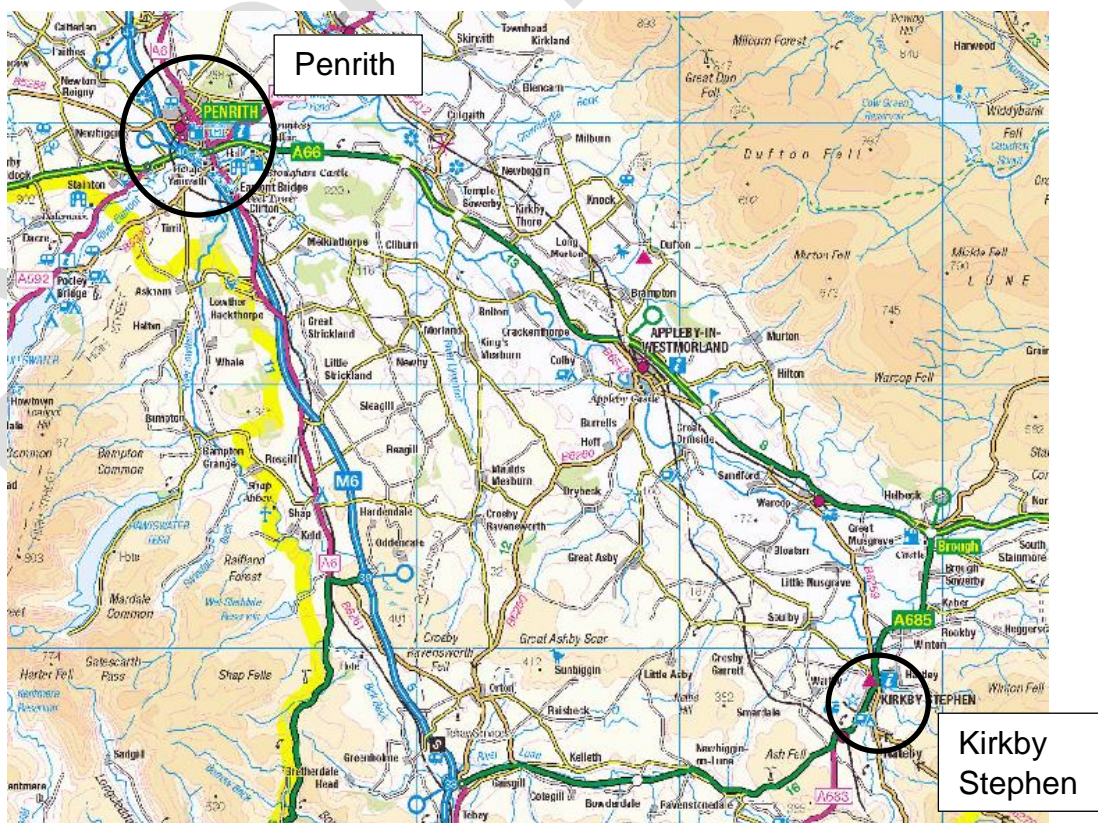


Figure 1: Location Plan.

During December 2015 many parts of Cumbria were hit by a significant storm which was named by the Met Office as Storm Desmond. This caused significant flooding to many parts of Cumbria including Kirkby Stephen.

During the event five areas of Kirkby Stephen are known to have been affected by flooding as follows:

1. Quarry Close, Birkbeck Gardens, Station Yard and South Road – 7 properties are known to have suffered from internal flooding with up to 10 other properties avoiding internal flooding by the actions that were taken.
2. High Street - 3 properties were known to have suffered internal flooding with 5 known to have been protected from flooding by either the actions of the fire service or sandbagging.
3. North Road / Hartley Road – 4 properties are known to have been affected by flooding by ground water seeping up through the floors of the properties.
4. Mill Lane area – 6 properties are understood to have been affected by the flooding.
5. Hartley Low Mill area – The flooding in this area caused a particular issue on the highway which could have led to flooding of properties if action had not been taken by the residents.

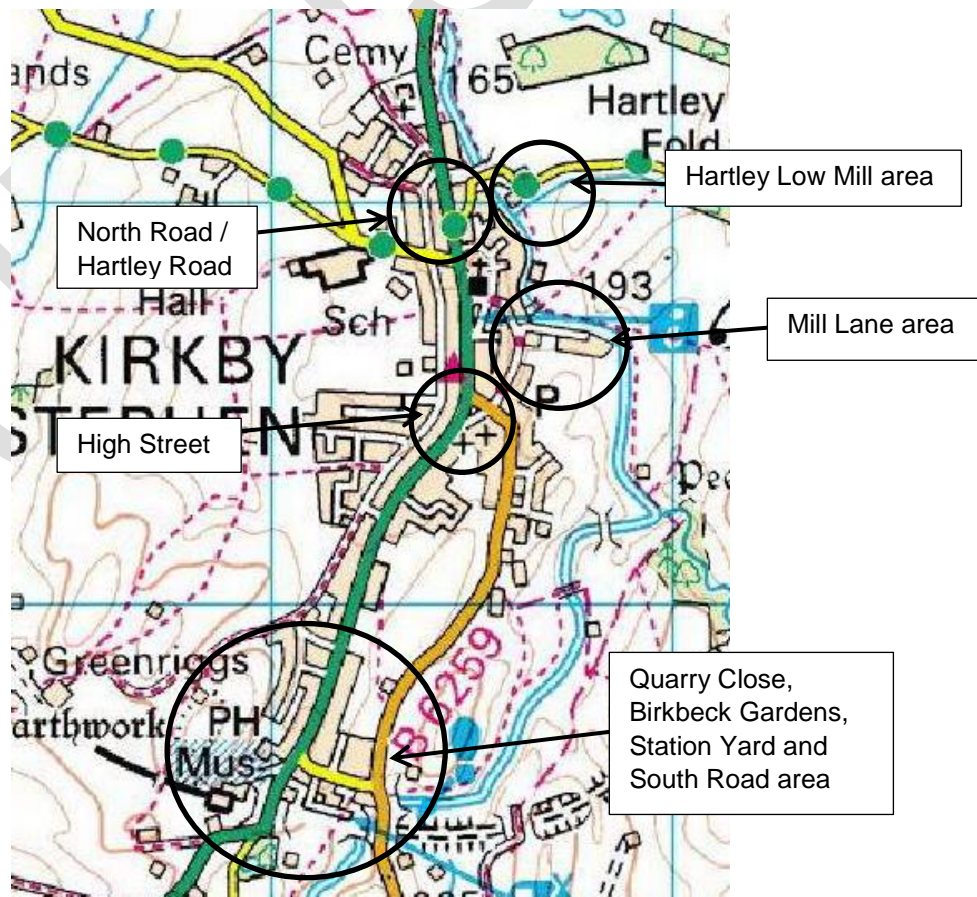


Figure 2: Location of areas affected by flooding in Kirkby Stephen

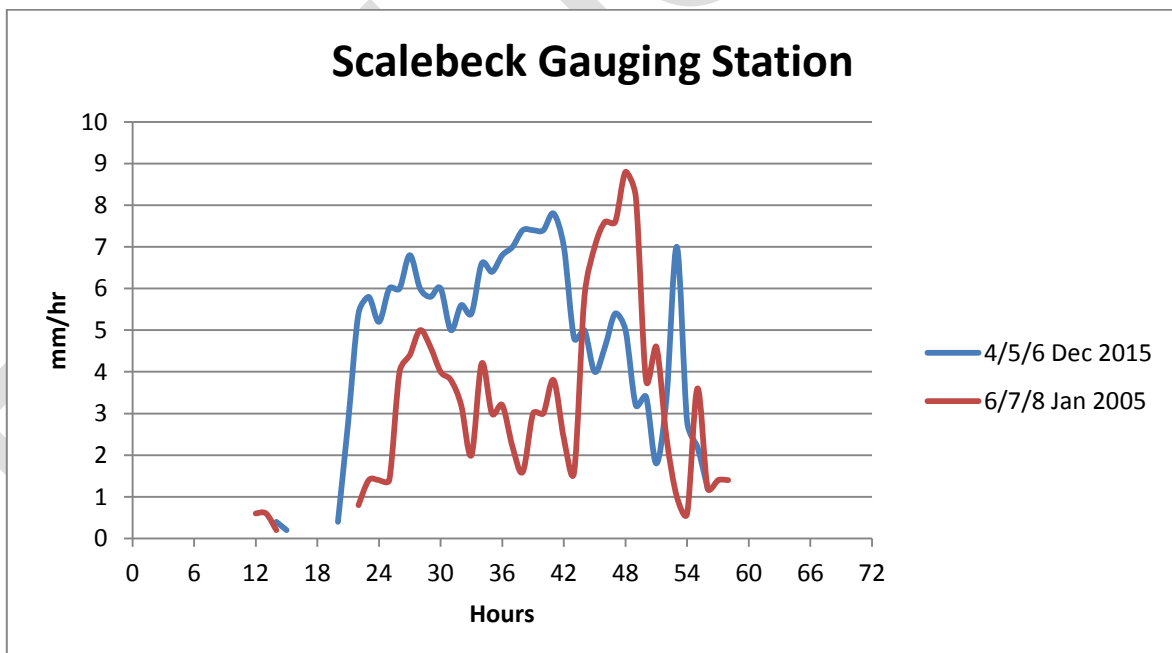
Rainfall Event

During the 4th, 5th and 6th of December 2015 much of Cumbria was affected by Storm Desmond which broke the United Kingdom’s previous 24 hour rainfall record by recording 341.4mm of rainfall at Honister Pass. The previous record was recorded at Seathwaite during 2009 when 316.4 mm of rainfall was recorded.

The Environment Agency has 3no rain gauges near to Kirkby Stephen at Scalebeck (11.5km), Barras (8km) and Aisgill (12.5km). The following total rainfall was recorded at each one during Storm Desmond. The rainfall data from the January 2005 event is also included for comparison.

Rain Gauge	24 hr		36 hr	
	5 th December 2015	7 th January 2005	5th December 2015	7th January 2005
Scalebeck	145.4 mm	89.8 mm	189.4mm	126.2 mm
Barras	44.6 mm	42.8 mm	61.2 mm	58.6 mm
Aisgill	96.9 mm	115.6 mm	139.0 mm	136.8 mm

Table 1: Rainfall totals for December 2015 and January 2005 flood events



Graph 1: Comparison of rainfall for December 2015 and January 2005 flood events

Investigation

This section provides details of the authorities who have contributed to this investigation, an analysis of flood flow routes and details of likely causes of flooding. Also included are details of the previous flooding history in the area and a list of recommended actions.

The authorities involved in producing this report included the Environment Agency, United Utilities, Eden District Council and Cumbria County Council (as Lead Local Flood Authority and Highway Authority).

Quarry Close, Birkbeck Gardens, Station Yard and South Road

Map of Flow Routes

From the Environment Agency mapping it can be seen that many of the areas that have flooded during the December 2015 event were already identified as being at risk of flooding as is demonstrated on the extract from the Surface Water Map detailed below.

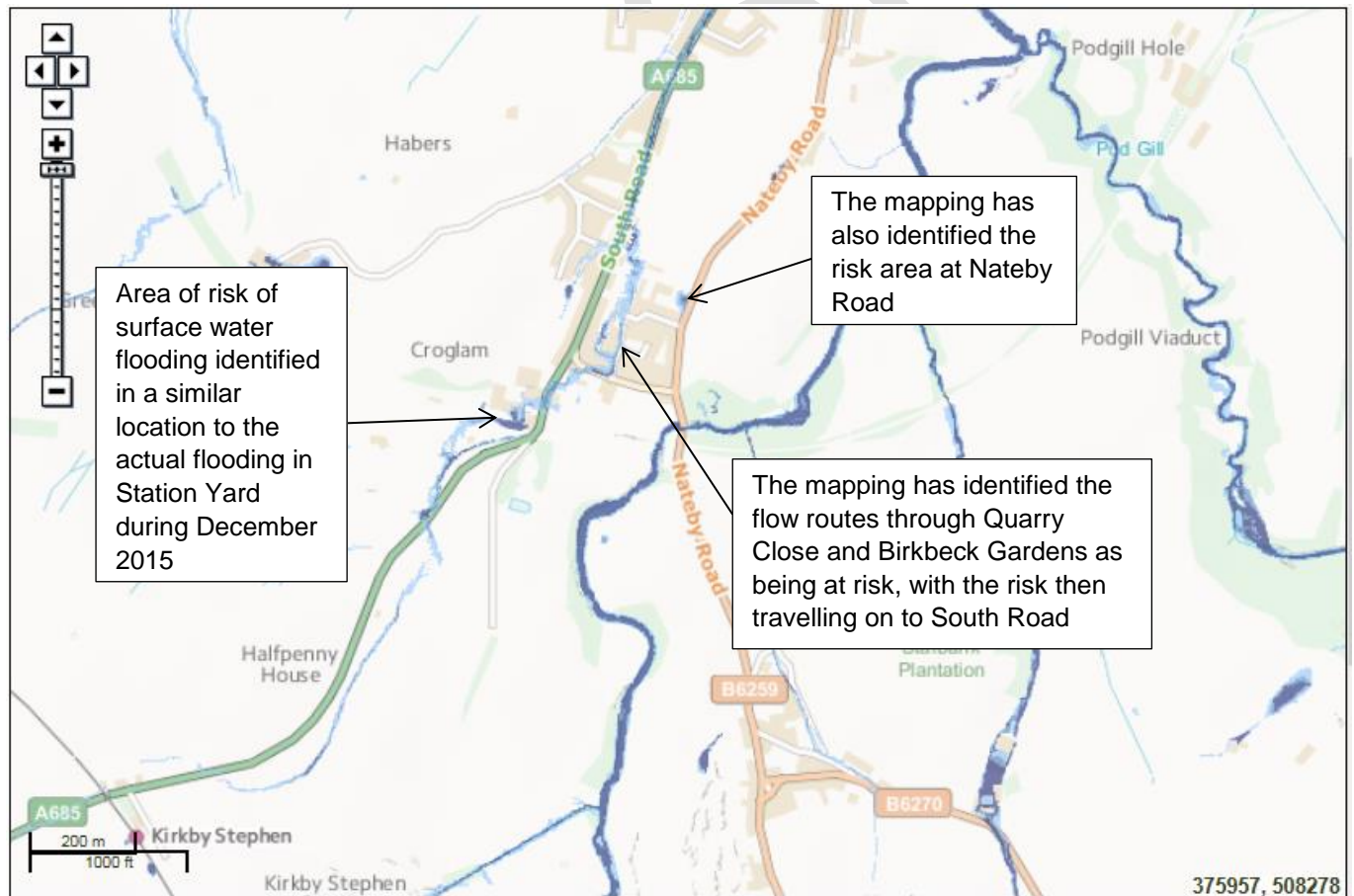


Figure 3: Extract from Environment Agency's Surface Water Mapping for the Station Yard, Quarry Close, Birkbeck Gardens and South Road area

Likely Causes of Flooding

Quarry Close and Birkbeck Gardens

Flooding in the Quarry Close and Birkbeck Gardens area was first identified in Birkbeck Gardens when the fire service was called at 05:22 on 5th December to an internally flooded property. The fire service attended at this time but during the afternoon of 5th the fire service were again called to Birkbeck Gardens as there was further intensity in the flows.

Investigations following the flood event have identified the main cause of flooding is due to the surcharge of the unnamed watercourse that flows underneath the A685 at the south end of South Road and discharges into the River Eden. The catchment for this area of approximately 35-40ha originates on Waitby Common and Rasett Hill.

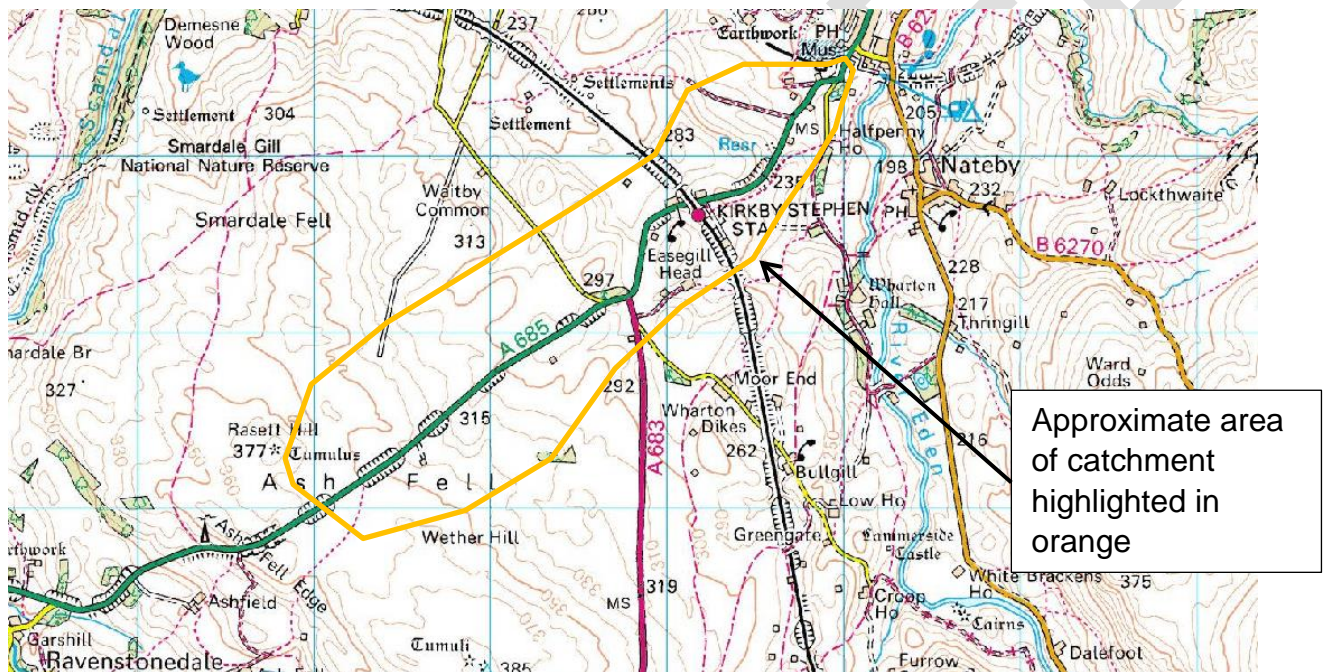


Figure 3: Catchment area of unnamed watercourse

It is also known that there are sinkholes within the area of the catchment but there is little understand of how they may interact with each other.

As the unnamed watercourse nears Kirkby Stephen it flows parallel to the A685 before entering a culvert to pass under the A685. The culvert is approximately 1m in diameter at its entrance and after passing under the A685 flows through Pennine View Caravan Park.



Photograph 1: Culvert entrance upstream of A685

The culverted sections through the caravan park are constructed of stone and discharge into the River Eden at High Stenkrith.



Photograph 2: Culvert discharge at River Eden

Attempts were made to survey the culvert in March 2015 but it was not possible to survey the full culvert due to the stone construction of the culvert which makes it difficult for the equipment to travel. There is also an open section of watercourse in the caravan park and it is this section that allows flood water to leave the watercourse and flow through the caravan park towards Quarry Close and Birkbeck Gardens. However, it is known that the culvert inlet in the caravan park is 800/1300mm and the outlet at the River Eden is 800/575mm.



Floodwaters flowing from open section of watercourse

Photograph 3: Open watercourse through Caravan Park during heavy rainfall on 27th January 2016

The following plan demonstrates the flow routes from the open watercourse through Quarry Close, Birkbeck Gardens and the rear of South Road and on to South Road.

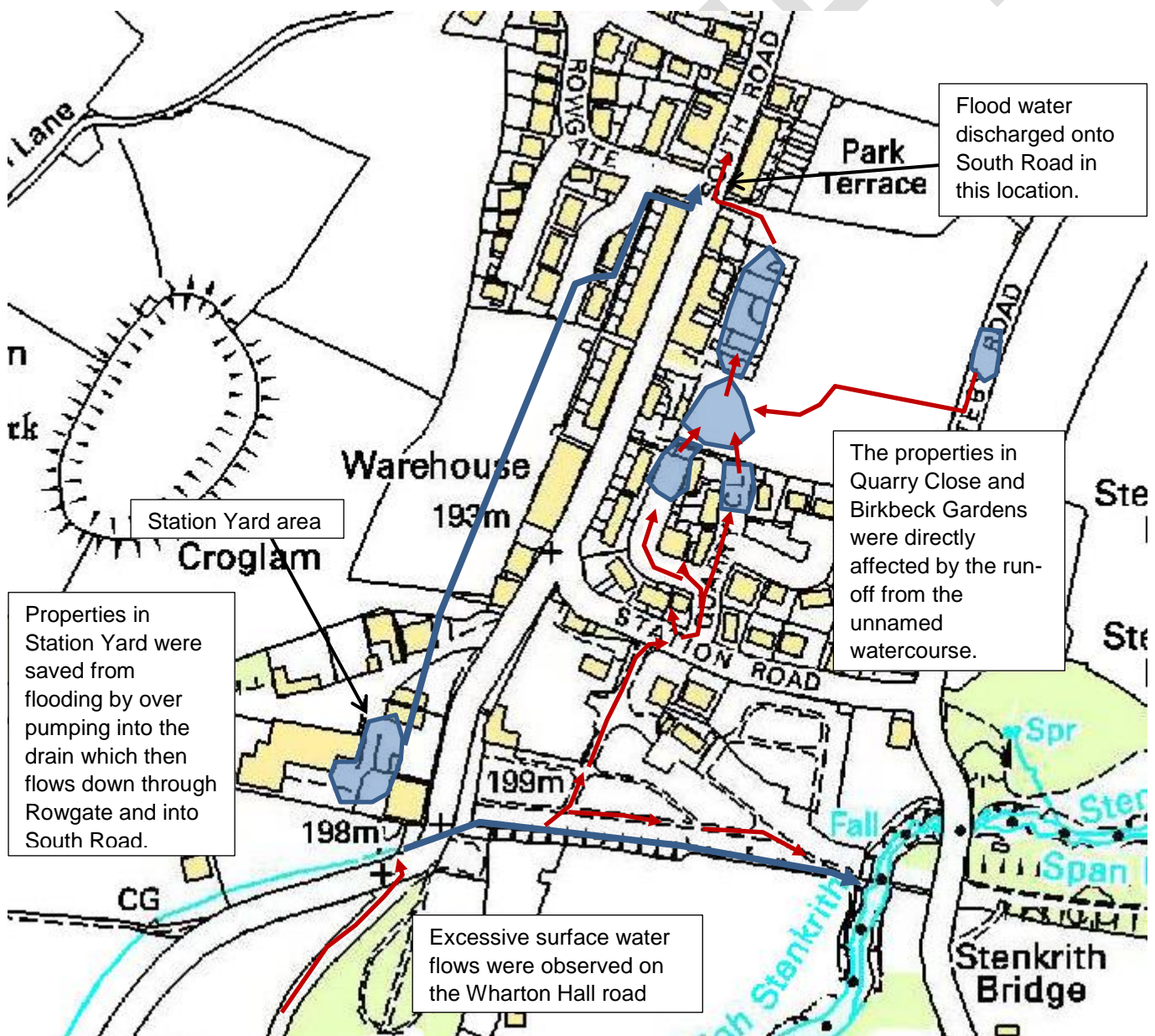


Figure 4: Plan of flow routes through Quarry Close, Birkbeck Gardens to South Road

As the flood flows left the caravan park and flowed into Quarry Close the flood water overwhelmed both the highway drainage and public sewer systems. In one property the resident reported that flood water had surcharged through the combined sewer system to cause flooding in the conservatory of the house.

During interviews with some of the residents of Quarry Close it was commented that the road drains were unable to accommodate the volume of water that flowed into the area. Highway drainage systems are designed to collect rainfall that falls onto a specific area of the highway and are not designed to collect runoff from other areas. This would be evident during the event on 5th December 2015 when the gullies would be overwhelmed by the volume of water from the unnamed watercourse which they are not designed to collect. The gullies in Quarry Close discharge to soakaways which also have an overflow pipe that runs through Birkbeck Gardens to discharge into the drainage system in South Road and eventually into Croglam Beck.

The flood water flowed through Quarry Close to gather in the ends of the cul-de-sacs where it was restricted from flowing into Birkbeck Gardens by a stone wall.



Photograph 4: Wall between Quarry Close and Birkbeck Gardens

During the event parts of the stone wall were demolished in order to allow the flood water to dissipate from the Quarry Close area, however, this caused the flood water to flow into the Birkbeck Gardens area and cause internal flooding to 4 properties. It was clear from evidence that the property owners in Birkbeck Gardens had tried to take action to prevent flooding to their properties, as demonstrated in the photograph below:



Photograph 5: Evidence of flood diversion works in Birkbeck Gardens

The flood water then flowed through the gardens of properties in South Road towards the footpath where a drainage system had been installed by the developer during the construction of Birkbeck Gardens. The drainage system was installed when during the construction of the site flood water had overwhelmed the site. A representative of the developer informed CCC that a drain had been installed following this incident to help prevent further flooding but at the

time they were not aware that the extensive amount of flood water had been from the overtopping of the unnamed watercourse. This drain caused washout of chippings at the side of the footpath as shown in the photograph below:



Photograph 6: Damage caused by overwhelming of drainage system through Birkbeck Gardens

The developer is currently working with CCC to establish a way to resolve this situation. The surface water drainage system (roof and road drainage) of Birkbeck Gardens also included a storage tank in the design to accommodate large rainfall events but again this storage system would not have been designed to accommodate the large volume of flood water that flowed into this area from the unnamed watercourse.

Station Yard

Although Station Yard is upstream of the caravan park the flooding in the Station Yard area was most apparent on the afternoon of 5th December. It has been reported by business owners that the unnamed watercourse in the location just upstream of Station Yard was able to cope with flows. In the previous event in 2013 flood flows had overtopped the watercourse bank and flooded into 1 of the businesses. Investigations by CCC following this event had identified large branches were wedged in the culvert underneath the A685. These were removed during the survey of the culvert and it appears that this has helped to reduce the risk of flooding within Station Yard. The following photograph shows the watercourse above station yard in normal flow:



Photograph 7: Unnamed watercourse upstream of Station Yard

The businesses reported that there was a build-up of surface water within Station Yard particularly in the area around the old railway station. There has not been any information from the businesses on the cause of this build-up of surface water but it is anticipated that the water is either surface water gathering from rainfall runoff from the surrounding area which is at a higher level or that the unnamed watercourse has overtopped its bank much further upstream and flowed along the flow route as indicated in the surface water mapping plan in figure 3. The businesses reported that collectively they took action to prevent internal flooding by over pumping the flood water into the drain which runs beneath some of the buildings in Station yard and then runs towards Rowgate. By doing this internal flooding was prevented but some businesses did have to close to the public during this time.

South Road

It was reported that 2 properties were flooded on South Road. The residents of the properties affected reported that they had their cellars flooded from the surcharge of the drainage systems into the properties. A survey of the surface water drainage system at the front of the flooded properties has been undertaken by CCC Highways. The survey has revealed that there is a 300mm diameter pipe through the front gardens which received both surface water from the properties and the adjacent highway. The flooding to these properties is caused when a significant rainfall event causes the drainage systems to surcharge back into the properties. It is also understood from residents that the flooding issue became a problem when the new properties on Croglam Lane were constructed as drainage was installed to reduce the runoff from the fields behind the Lane with the drainage being directed into the drainage system in South Road.

Flooding History

Quarry Close / Birkbeck Gardens

Flooding has been reported previously. There have been numerous occasions when the unnamed watercourse has surcharged to cause flooding in Quarry Close and Birkbeck Gardens although not all flooding incidence have caused internal flooding.

Station Yard

One property was affected by internal flooding in 2013 with the main cause of flooding being due to the overtopping of the unnamed watercourse which flowed at the south end of the Station Yard area. Investigations and surveys carried out by the LLFA identified several tree branches were trapped in the culvert restricting flow. These were removed at the time of the survey to ensure the culvert flowed to full capacity. CCC have not received any reports that flooding in Station Yard during December 2015 were caused by the over topping of the unnamed watercourse.

South Road

It is understood that flooding has previously occurred to some properties in South Road particularly in back gardens. Residents have reported the first flooding incident took place in 2005.

High Street

Map of Flow Routes

From the Environment Agency mapping it can be seen that many of the areas that have flooded during the December 2015 event were already identified as being at risk of flooding as is demonstrated on the extract from the Surface Water Map detailed below.

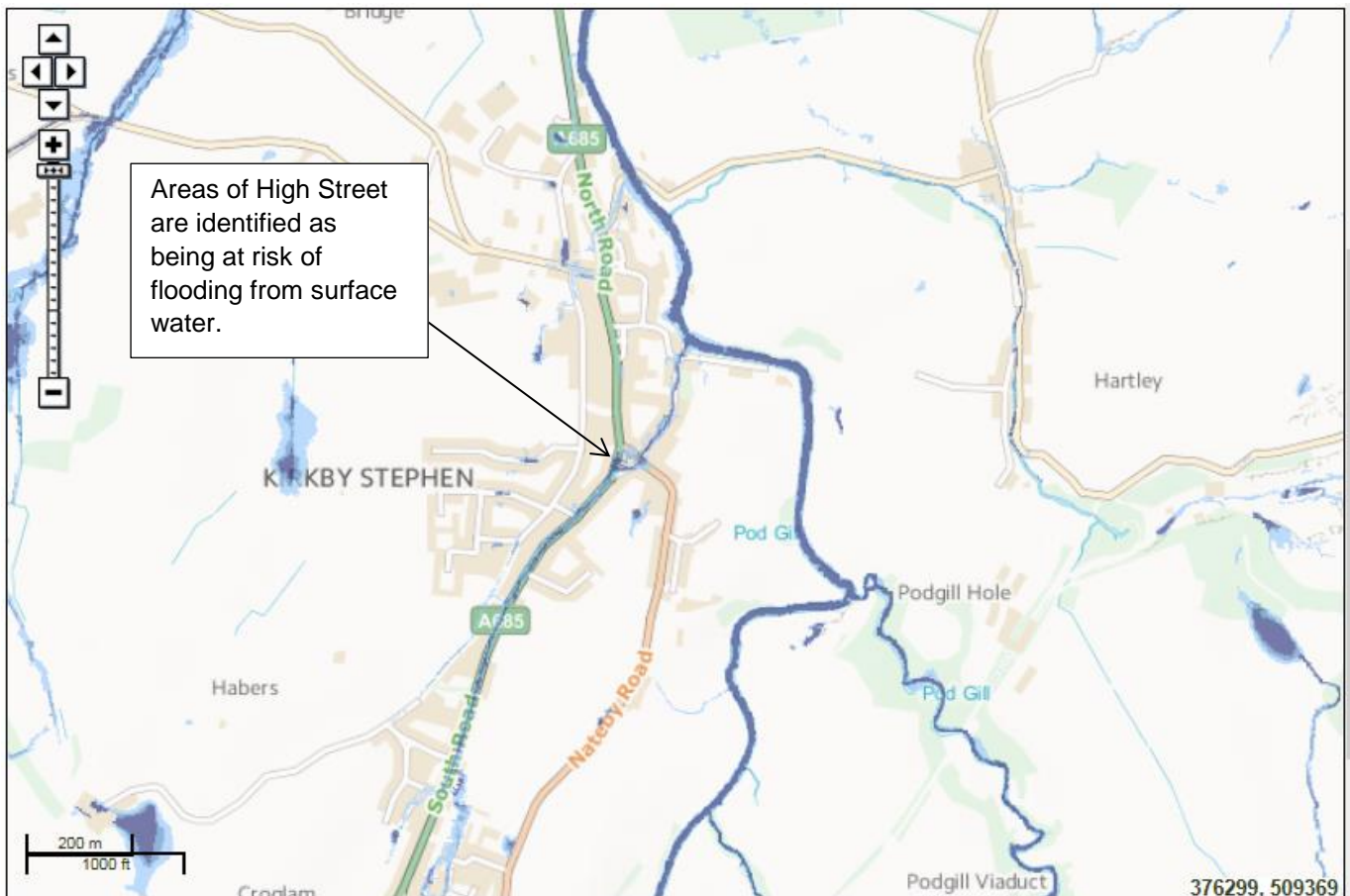


Figure 5: Extract from Environment Agency's Surface Water Mapping for the High Street area

Likely Causes of Flooding

There are two issues for consideration here, the influence of Croglam beck Culvert, and the overland flows from Quarry Close and Birkbeck Gardens.

South Road conveyed overland flows from the Quarry Close and Birkbeck Gardens area as the sub-surface drainage systems were unable to convey these additional flows on top of the local drainage. These flows progressed above ground down High Street to the Victoria Square area as they were unable to enter the already at-capacity sub-surface systems.

Croglam Beck Culvert, which drains the High Street and Victoria Square area towards the River Eden, was unable to convey the combined flows from Quarry Close, its native upstream catchment towards Croglam Castle, and the additional surface water of the immediate area.

Consequently the Victoria Square area acted as a store of water as flows eventually found their way down Mellbecks.

It is unclear at this point whether Croglam Beck Culvert itself was able to fully convey the flows from its upstream catchment in the absence of a report of overland flows from the culverts inlet at Croglam Lane.

This caused the surplus flood water to flood High Street which also led to the internal flooding of some properties in this area. The fire service was also deployed to this area and their efforts to deal with the flood water helped protect some properties from internal flooding.

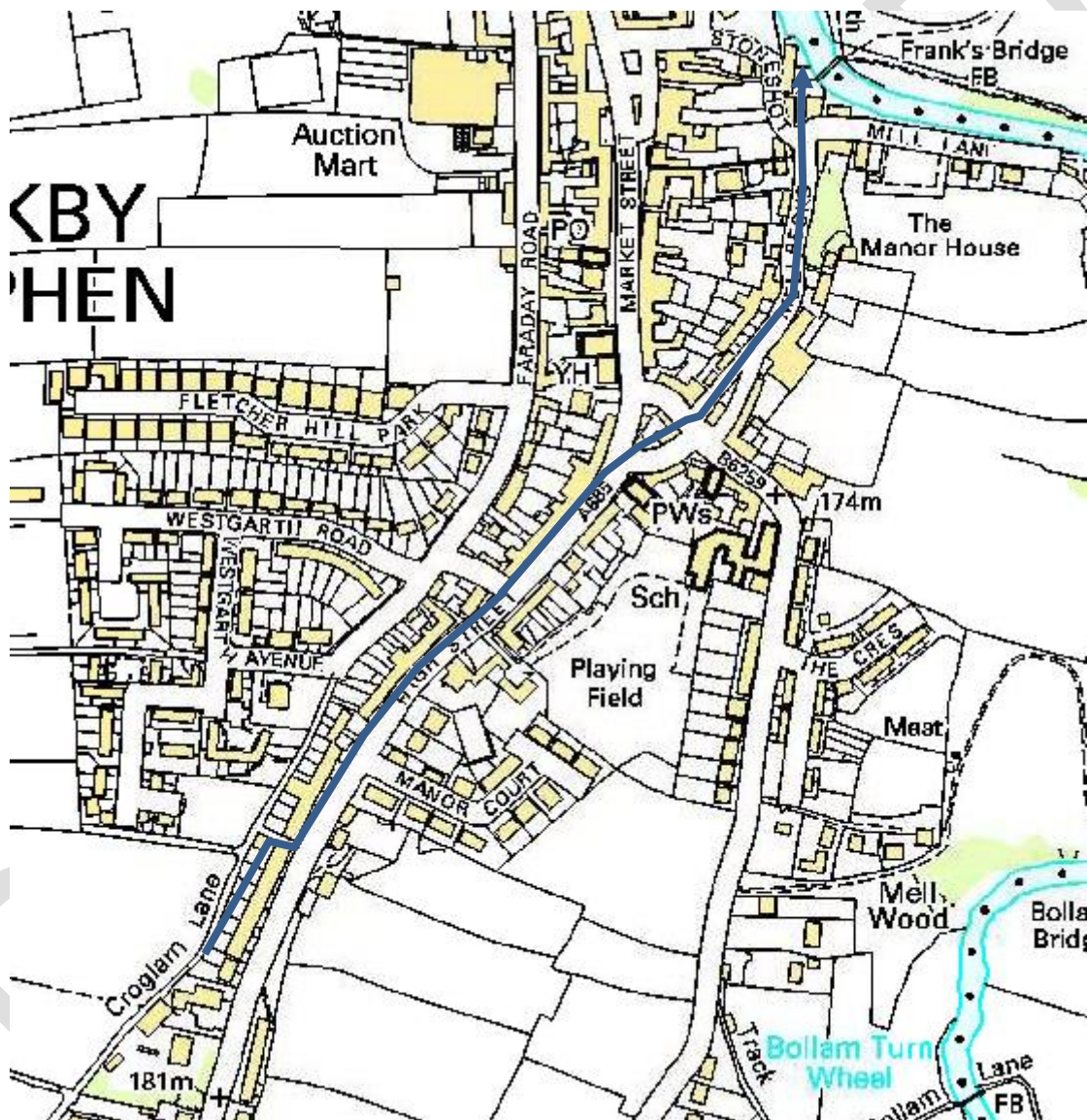


Figure 6: Approximate location of Croglam Beck culvert shown in blue

Following the flooding at Station Yard in 2013 CCC undertook a CCTV survey of the drainage systems in 2015 which included an attempt to survey Croglam Beck which is classified as 'Main River'. As Croglam Beck enters the built up area of Kirkby Stephen the watercourse becomes culverted. The beginning of the culverted section at Croglam Lane is in pipe which is easier to clean and survey but this only extends to Westbrook Terrace where the culvert becomes an arch shaped stone culvert with a natural bed. This construction makes it very difficult to survey

and clean. During the survey carried out in early 2015 it was identified that there was a significant amount of silt in the bed of the culvert. The following photograph demonstrates the depth of silt within the stone construction section of the culvert.



Photograph 8: Indication of silt build up within the Croglam Beck culvert

The MSfWG are currently investigating the capacity of the culvert as normal cleaning using high pressure jets would potentially increase the risk of damage to the stone culvert. Parts of the stone culvert are also located under houses which could make the identification of possible options difficult.

Flooding History

Information received from one of the residents who lived on High Street confirmed that flooding had previously occurred during the major flood event in November 2009. The resident informed CCC that there was internal flooding to properties in High Street but in addition to the causes of flooding in the 2015 event that surface water also flowed in to the area from Brougham Lane.

North Road / Hartley Road

Map of Flow Routes

From the Environment Agency mapping it can be seen that many of the areas that have been flooded during the December 2015 event were identified as being a low to medium risk of flooding as is demonstrated on the extract from the Surface Water Map detailed below.

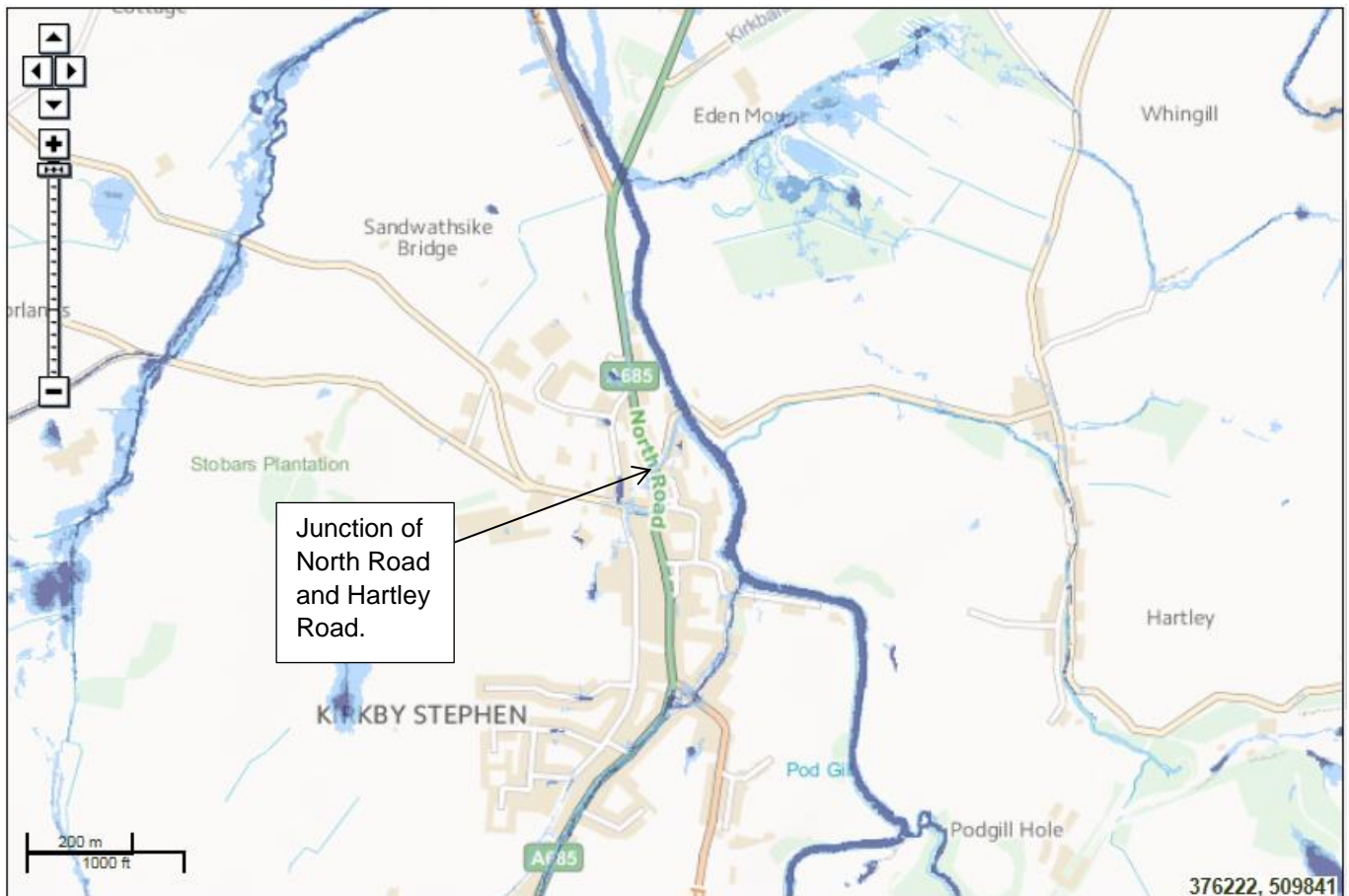


Figure 7: Extract from Environment Agency's Surface Water Mapping for the North Road and Hartley Road area

Likely Causes of Flooding

At the time of writing this report it is understood that 4 properties were affected by flooding. Information that has been provided to CCC suggests that flooding was caused by ground water seeping up through the floors and some residents have suggested that there is a high-water table in the area.

The properties that flooded are approximately 90m from the River Eden and following the flood event Environment Agency employees were informed that the River Eden did not overtop its banks at this locality. However, residents along the bank confirmed that the river wall at the Timber Yard along Hartley Road was almost over-topped.



Photograph 9: River wall that was almost over-topped.

Flooding History

Residents have suggested that a similar flooding incident occurred approximately 30 years ago but there are no further details.

Mill Lane Area

Map of Flow Routes

From the Environment Agency mapping it can be seen that the areas affected by the flooding in the December 2015 event were already identified as being at risk of flooding as is demonstrated on the extract from the Rivers and Sea flood mapping.

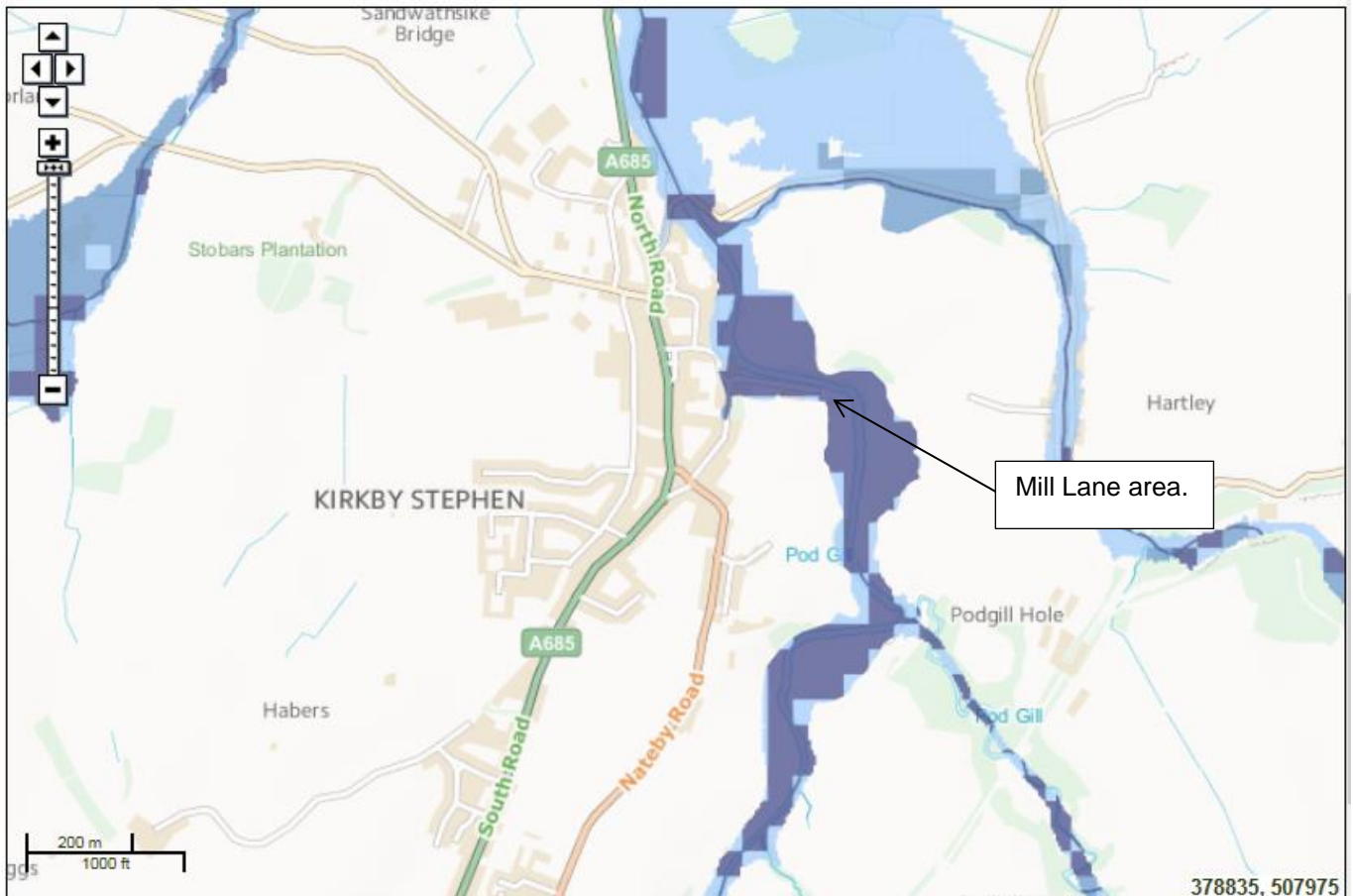


Figure 8: Extract from Environment Agency's River and Sea Flood Mapping for the Mill Lane area

Likely Causes of Flooding

The flooding to five of the properties was caused by the River Eden when it breached its banks following the heavy rainfall and then overtopped at low garden/retaining wall to affect the properties. The following plan indicates the proximity to the River Eden.

The raised water levels within the River Eden also caused the cellar of one other property to be flooded, although not flooded from a direct fluvial route; it appears to be fluvial related.

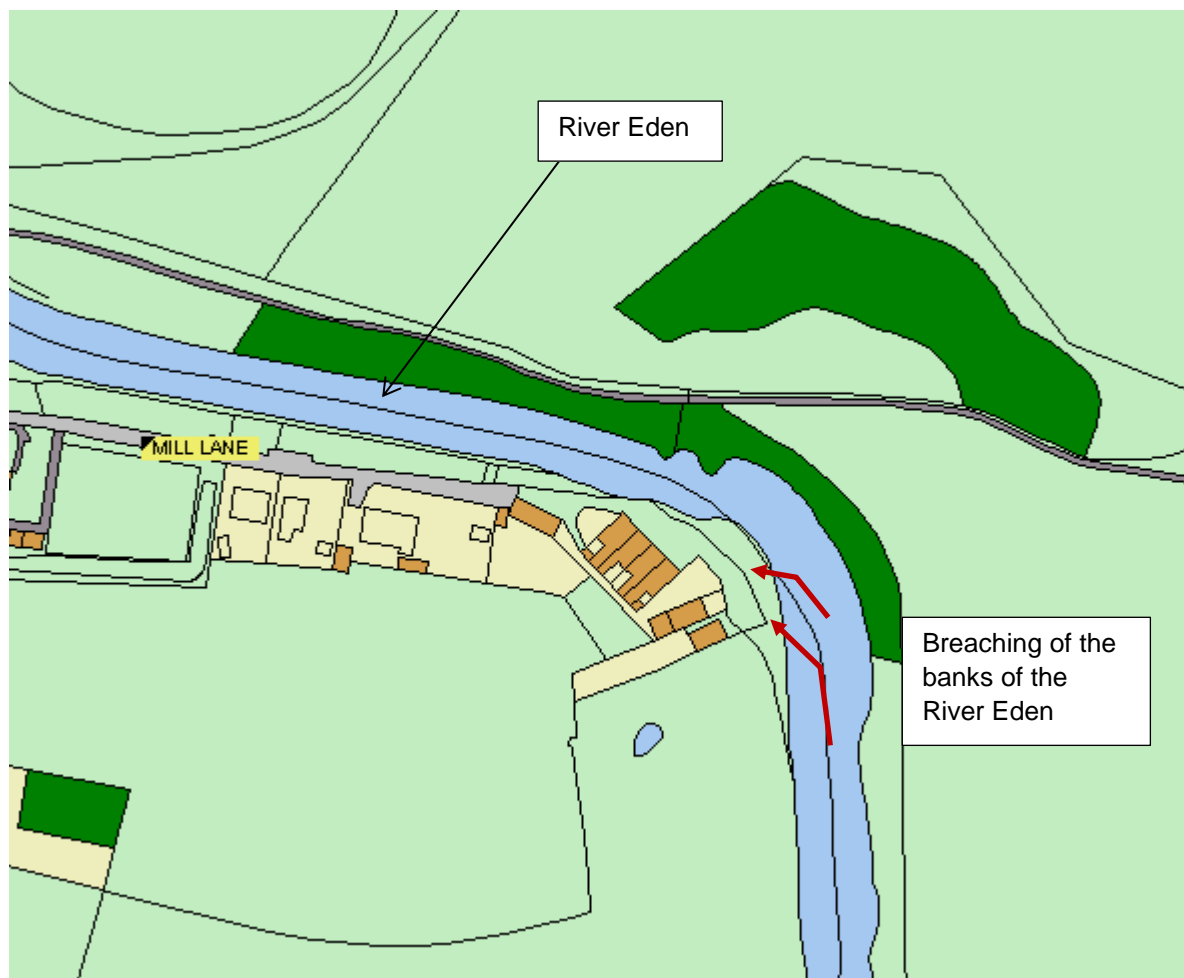


Figure 9: Plan illustrating the breaching of the banks of the River Eden

Flooding History

CCC does not hold any records on flooding to these properties but suspect that flooding has previously occurred due to the proximity to the River Eden. However, it is reported that the event on 26th December 2015 also caused some issues.

Hartley Low Mill Area

Map of Flow Routes

From the Environment Agency mapping it can be seen that the areas affected by the flooding in the December 2015 event were already identified as being at risk of flooding as is demonstrated on the extract from the Rivers and Sea flood mapping.

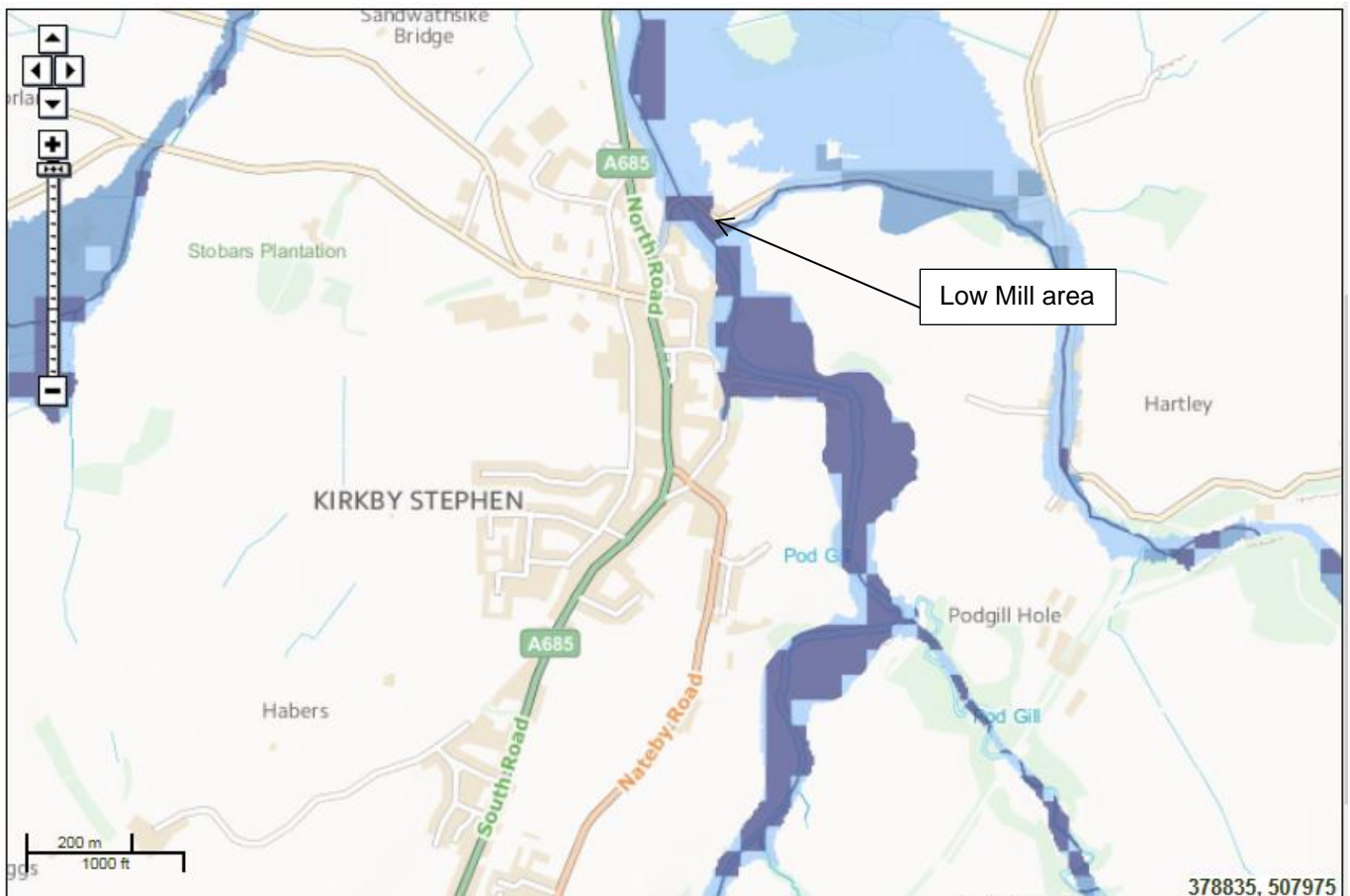


Figure 10: Extract from Environment Agency’s River and Sea Flood Mapping for the Mill Lane area

Likely Causes of Flooding

Reports from residents in the area have confirmed that Coffin Bridge caused a restriction to the flow of Hartley Beck. This caused flood water to flow onto Hartley Road at this location which then travelled along the road towards Kirkby Stephen. Locals also confirmed that someone had dug out gravel within the water course around the bridge to try to keep the flow in the watercourse (see photograph 11). Residents in two properties erected a temporary flood defence to divert the flood water flowing towards their properties, saving their properties from flooding. The following plan demonstrates the flow routes from Hartley Beck.

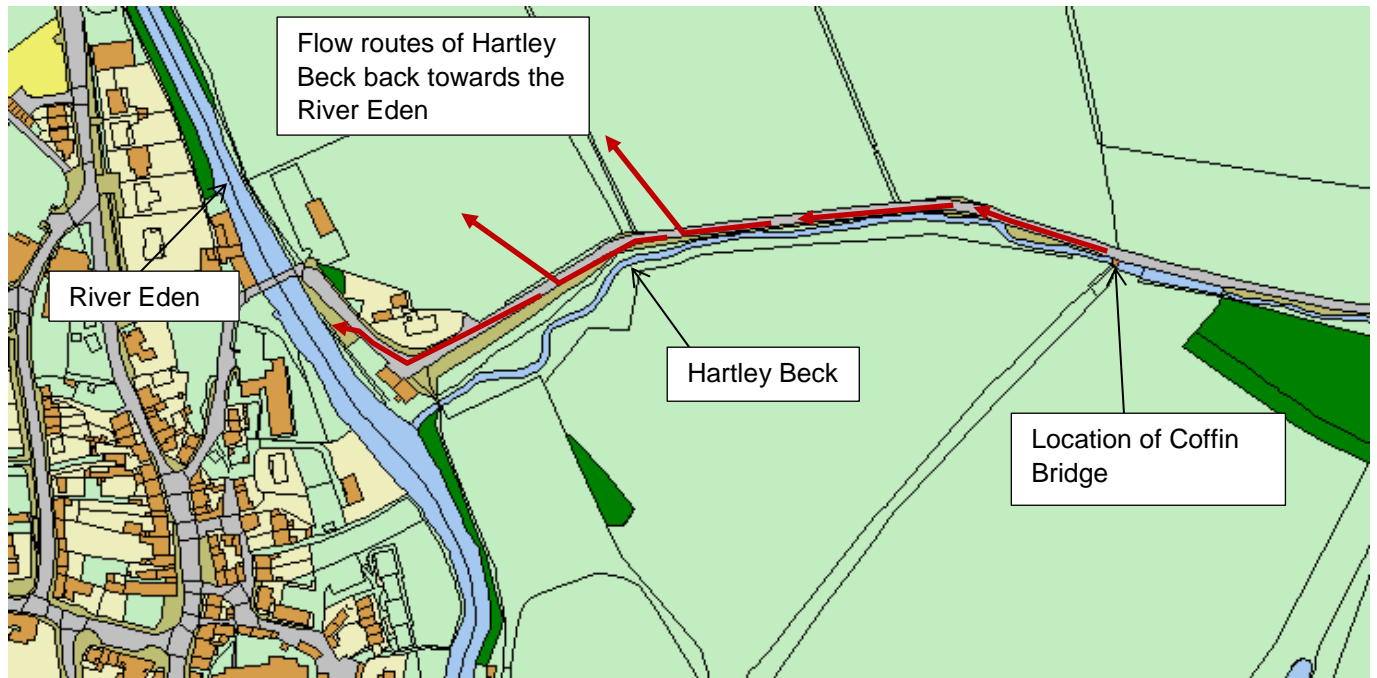


Figure 11: Flow Routes from Hartley Beck towards Low Mill



Photographs 10 & 11: Coffin Bridge and gravel that has been removed from Hartley Beck (taken on 10/12/2015).

Flooding History

It is understood from the Environment Agency that flood events occurred in the Hartley Low Mill area on 7/8 January 2005 and 20th June 2007.

Recommended Actions

The following table details recommended actions for various organisations and members of the public to consider using the Cumbria Floods Partnerships 5 Themes: Community Resilience, Upstream Management, Strengthening Defences, Maintenance, and Internal Drainage Boards (IDB's). Some of these recommendations may have already been carried out and or are ongoing.

Cumbria Flood Partnership Theme	Action by	Recommended Action	Timescale
Maintenance	CCC (Highways)	(South Road area) Survey highway drainage outside 3 and 5 South Road to identify any defects that may be contributing to the flooding. Liaise with relevant landowner(s) to repair defect.	Survey complete. Liaison with landowner to take place winter 2016
	CCC (Highways)	(Birkbeck Gardens area) Investigate cause of standing water on Nateby Road	Survey complete Improvement works to be carried out by March 2017
	Story Homes	(Birkbeck Gardens area) Connect 'overflow' pipe to highway drain in Birkbeck Gardens to prevent discharge of water on to South Road	Survey and works completed
	LLFA / Owners of properties in Station Yard	(Station Yard area) Identify options to prevent build-up of standing water within Station Yard	2017
	MSfWG	Cleaning and surveying of Croglam Beck	Initial bid via EA has been unsuccessful – to consider alternative funding streams

Strengthening Defences	CCC (LLFA)	(Quarry Close area) Assessment of catchment area and capacity of unnamed culverted watercourse	2017
	CCC (LLFA)	(Quarry Close area) Identify possible options to prevent unnamed watercourse flowing through caravan park towards Quarry Close and Birkbeck Gardens	Winter 2016 Level Survey complete. Some options costing complete.
	Property Owners	(Mill Lane area) Apply for Property Resilience Grant via EDC to strength defence along river bank	Completed
	EA, CCC (PROW officers) and relevant landowners	(Hartley Low Mill area) Investigate possible options to improve and maintain flows within Hartley Beck without damaging the accessibility for the footpath users	Discussions to take place winter 2016. Any scheme will be dependent on securing funding

Upstream Management	Cumbria Strategic Partnership	(Quarry Close area) Investigate opportunities for 'Upstream management' on the unnamed watercourse upstream of Kirkby Stephen	Ongoing
	Cumbria Strategic Partnership	(South Road/High Street areas) Investigate opportunities for 'Upstream management' on land above Croglam Lane	Ongoing
Community Resilience	Residential and Business owners that have experienced internal flooding	(All flooded properties) Consider applying for Property Level Flood Resilience Grant Scheme through Eden District Council	Contact Eden District Council on either 01768 817817 or customer.services@eden.gov.uk for further advise. Closing dates for applications – March 2017
	Community / affected residents / Parish Council	(All areas) Prepare community flood action plan for use during flood events	Winter 2016

* The Cumbria Local Resilience Forum includes emergency services, Local Authorities, Cumbria County Council, Environment Agency, Maritime Coastguard Agency and health agencies along with voluntary and private agencies. Under the Civil Contingencies Act (2004) every part of the United Kingdom is required to establish a resilience forum.

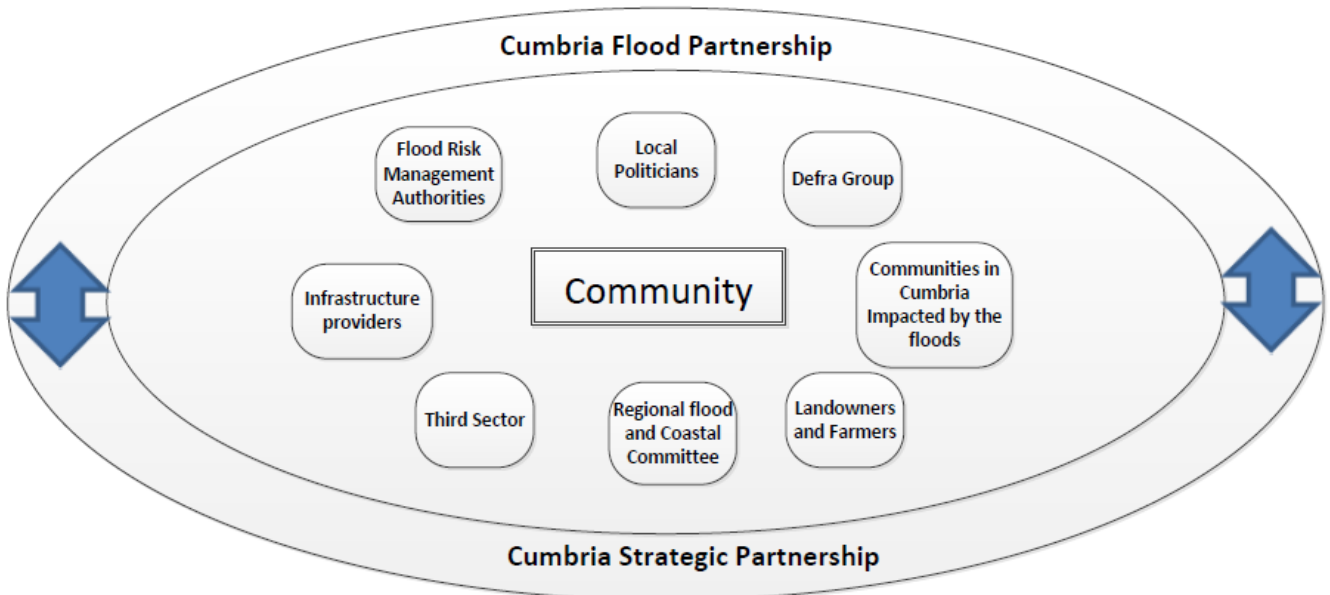
Residents and property owners who are aware that they are at risk of flooding should take action to ensure that they and their properties are protected. Community resilience is important in providing information and support to each other if flooding is anticipated. Actions taken can include laying sandbags 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.

Next Steps

The Cumbria Floods Partnership has brought together a wide range of community representatives and stakeholders from a variety of sectors to plan and take action to reduce flood risk. The Cumbria Floods Partnership, led by the Environment Agency, is producing a 25 year flood action plan for the Cumbrian catchments worst affected by the December 2015 flooding, including Carlisle. The plan will consider options to reduce flood risk across the whole length of a river catchment including upstream land management, strengthening flood defenses, reviewing maintenance of banks and channels, considering water level management boards and increasing property resilience. The Cumbria Floods Partnership structure below details how these 5 themes are being delivered in the Flood Action plans which will be completed in July.

The 'Cumbria Floods Partnership' was set up by Flood Minister Rory Stewart following December's floods and includes all of Cumbria's Flood Risk Management Authorities. They are working alongside the existing 'Cumbria Strategic Partnership', which was formed as part of the Flood and Water Management Act and comprises of the county's Flood Risk Management Authorities (RMAs) including the Environment Agency, Cumbria County Council, Local Authorities and United Utilities. Both partnerships are working with communities, businesses and relevant stakeholders to understand and reduce flood risk across Cumbria.

This diagram below helps demonstrate how the two partnerships are working together:



Appendices

Appendix 1: Glossary

Acronyms

EA	Environment Agency
CCC	Cumbria County Council
UU	United Utilities
LLFA	Lead Local Flood Authority
LFRM	Local Flood Risk Management
MSfWG	Making Space for Water Group
FAG	Flood Action Group
FWMA	Flood and Water Management Act 2010
LDA	Land Drainage Act 1991
WRA	Water Resources Act 1991

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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—
- which risk management authorities have relevant flood risk management functions, and
 - 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—
- publish the results of its investigation, and
 - notify any relevant risk management authorities.

A 'Risk Management Authority' (RMA) means:

- the Environment Agency,
- a lead local flood authority,
- a district council for an area for which there is no unitary authority,
- an internal drainage board,
- a water company, and
- 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
RIVERS					
Main river					
Ordinary watercourse					
SURFACE RUNOFF					
Surface water					
Surface water on the highway					
OTHER					
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.

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Appendix 3: Useful contacts and links

Cumbria County Council (Local Flood Risk Management):
lfrm@cumbria.gov.uk, www.cumbria.gov.uk, tel: 01228 221330

Cumbria County Council (Highways):
highways@cumbria.gov.uk, www.cumbria.gov.uk, tel: 0845 609 6609
Out of hours emergencies should be reported via the Police on 101

Cumbria County Council (Community Development Team)
rhian.davies@cumbria.gov.uk, www.cumbria.gov.uk, tel: 01768 812661

United Utilities: www.unitedutilities.com, tel: 0845 746 2200

Eden District Council
Customer.services@eden.gov.uk, www.eden.gov.uk, tel: 01768 817817

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>

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