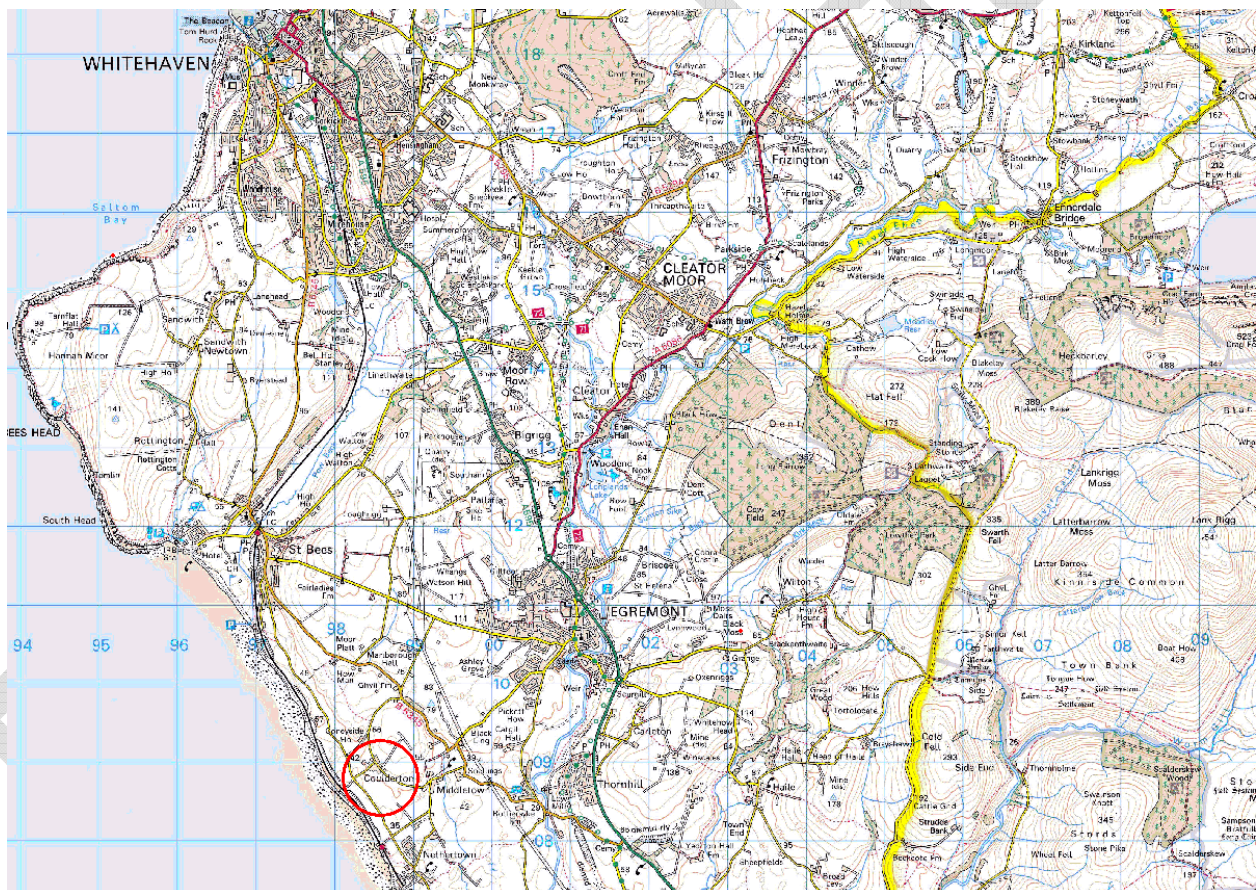


Town End Farm, Coulderton

Flood Investigation Report 33



Flood Event 30/8/2012

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	Colin Parkes	Anthony Lane		14 th Oct 2013
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Executive Summary

Cumbria County Council, (CCC) as Lead Local Flood Authority (LLFA) 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 & Water Management Act 2010.

This report examines the flooding at Coulderton on the 30th August and the 17th October 2012, showing flood routes and the flooding of Town End Farm. Highway drainage serving the hamlet was unable to accommodate the intense runoff from higher ground above Coulderton.

7 actions have been identified in the report which could reduce the risk of future flooding. The recommendations range from improvements to land management practices reducing surface water runoff to investigating ways of dealing with flood flows greater than capacity of current highway drainage system.

Event background

Flooding Incident

Coulderton is on the Cumbrian coastal slope at a distance of 600 metres from the Irish Sea and an altitude of 55m above ordnance datum. At this location the slope rises up above the village to 80m above ordnance datum, behind Croftside Farm. There are no watercourses running through or near the village so any rain water that falls above Coulderton must either soak into the ground or pass along the surface through the village on its way to the sea.

Town End Farm, Coulderton, Egremont, Cumbria, CA22 2UR.
298577, 508906



Figure 1: Location of Town End Farm.

On the night of 29th- 30th August 2012, water was running with force from the high ground on to the road and flooded Town End Farm internally to a depth of 600mm with water and mud. The contents of every room on the ground floor were destroyed. The road, which is the main access to the village, was covered deep in silt and mud.

The owners frequently clear the drains close to their home. The property flooded again on the afternoon of 17/10/2012.

Investigation

Rainfall Event

30/8/2012

There is no rain gauge data available for Coulderton but according to rainfall radar data, peak rainfall was about 18mm/hr and occurred at about 12:15am. The rain started at 9:30pm on 29th August and finished at 3:15am on 30th August resulting in 32mm in nearly 6hrs at an average intensity of over 5mm/hr.

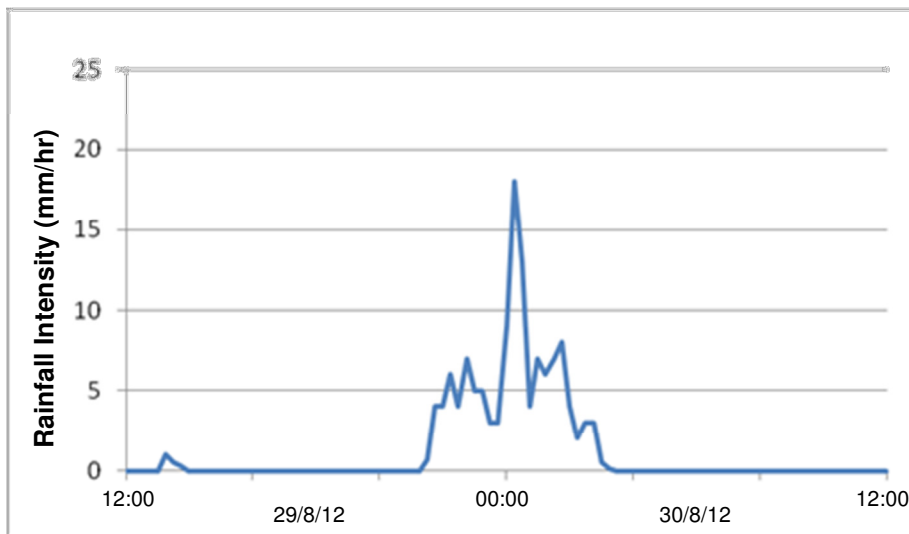


Figure 2. Storm intensity at Coulderton from 12pm on 29/8/12 to 12pm on 30/8/12

17/10/2012

Radar data shows that the rain started at about 5:15am with light showers. The main event started at about 11:30am with a peak rainfall of at least 50mm/hr at 13:05pm. There were three more peaks in the rainfall, spaced roughly two hours apart. The storm finished at about 6:30pm, with more than 45mm in just over 13 hours.

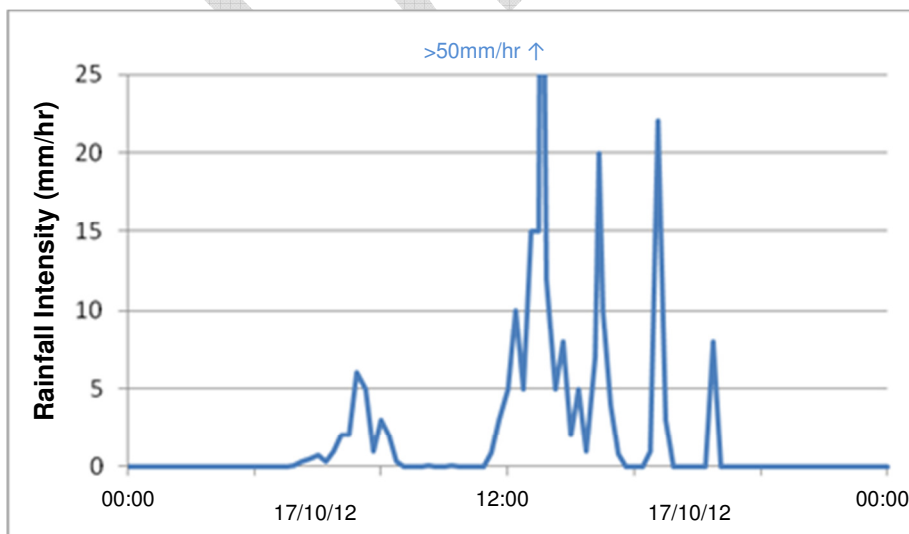


Figure 3. Storm intensity at Coulderton from midnight 17/10/12 to midnight 18/10/12

Map of Flow Routes

The water flowed down the slope of the hill, meeting the lonning connecting Croftside Farm down to the village. There was a wall/embankment on the downslope side of the lonning that contained the floodwater along this route, diverting it from continuing down the slope. The lonning guided the floodwater to the road in the village, which had a northwest to southeast gradient. The floodwater then followed this road to the low point at Town End Farm. Here the floodwater met water coming down slopes from the other direction, which was mainly surface water runoff off the fields to the southeast.

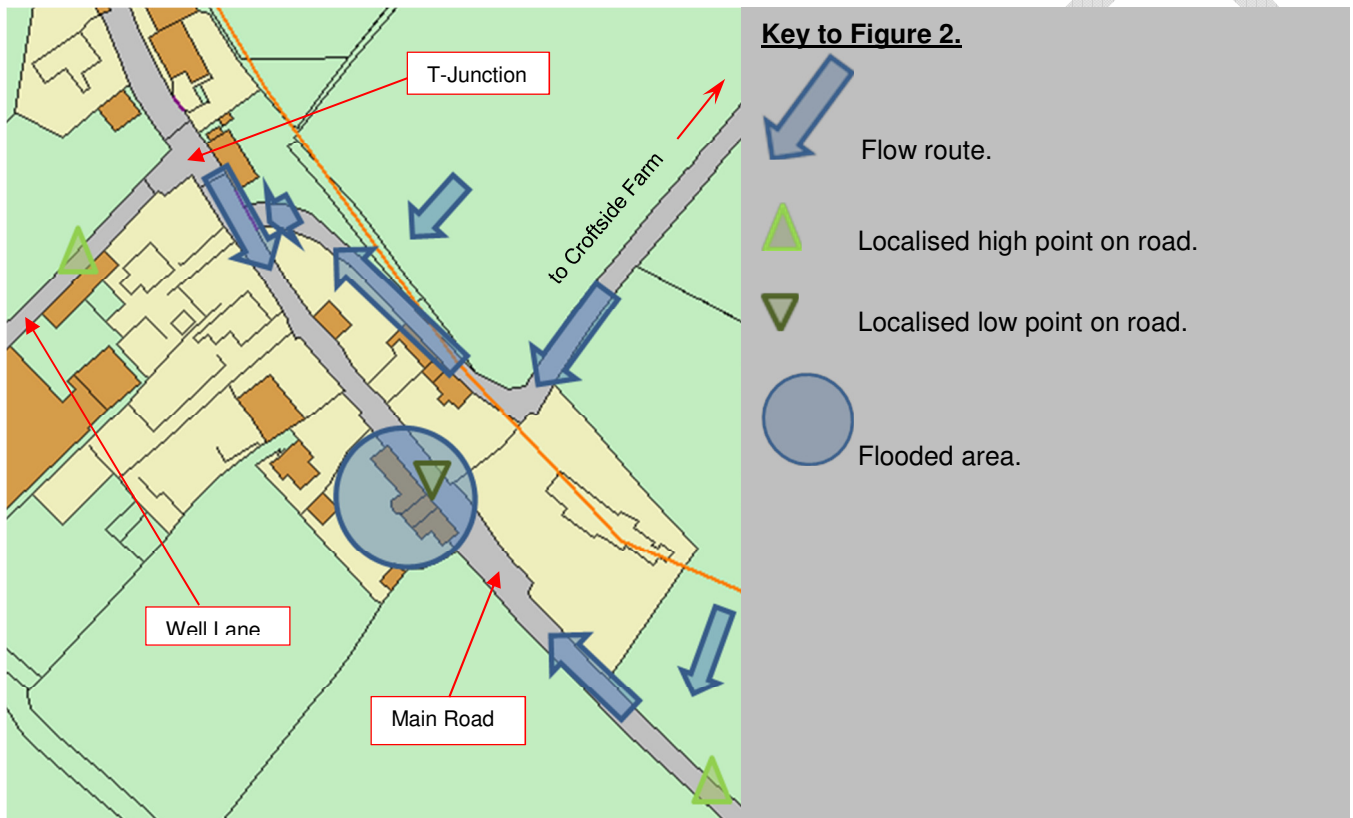


Figure 4. Flood flow routes in Couderton

Likely Causes of Flooding

Surface Water

About 20 years ago, the road drainage from the village centre was connected to existing drainage on Well Lane, which was installed in the 1980's. The remainder of the road drainage flowed to soakaways but was connected to the Well Lane system (circa 2000). Two large catchpits were also installed at the bottom of the lonning where it joins the public highway.

The LLFA began a survey of the highway drainage system on the 9th October 2012. There were found to be no problems with the drainage on the main road. At the T-Junction, the highway drainage discharges from manhole CP03 (see Figure 5) through a 225mm outlet pipe that enlarges to a 600mm pipe 20m downstream. The sump of catchpit manhole CP04 on Well Lane, next to Couderton House Farm, contained about 1m depth of silt that blocked about 95% of its 600mm inlet. This section was full of silt and other debris, requiring two days of jetting that continued down to the outfall, which was located between the slope and the railway embankment. It was thought

that this would solve the problem of flooding to any properties, however Town End Farm flooded again on 17/10/12. It must be noted that the 17/10/2012 storm was much more severe than the 30/8/2012 event.

It should also be noted that a restriction in the system was identified at the lower end of Well Lane where a silage bag or lining was impairing the pipe. This resulted in water backing up and

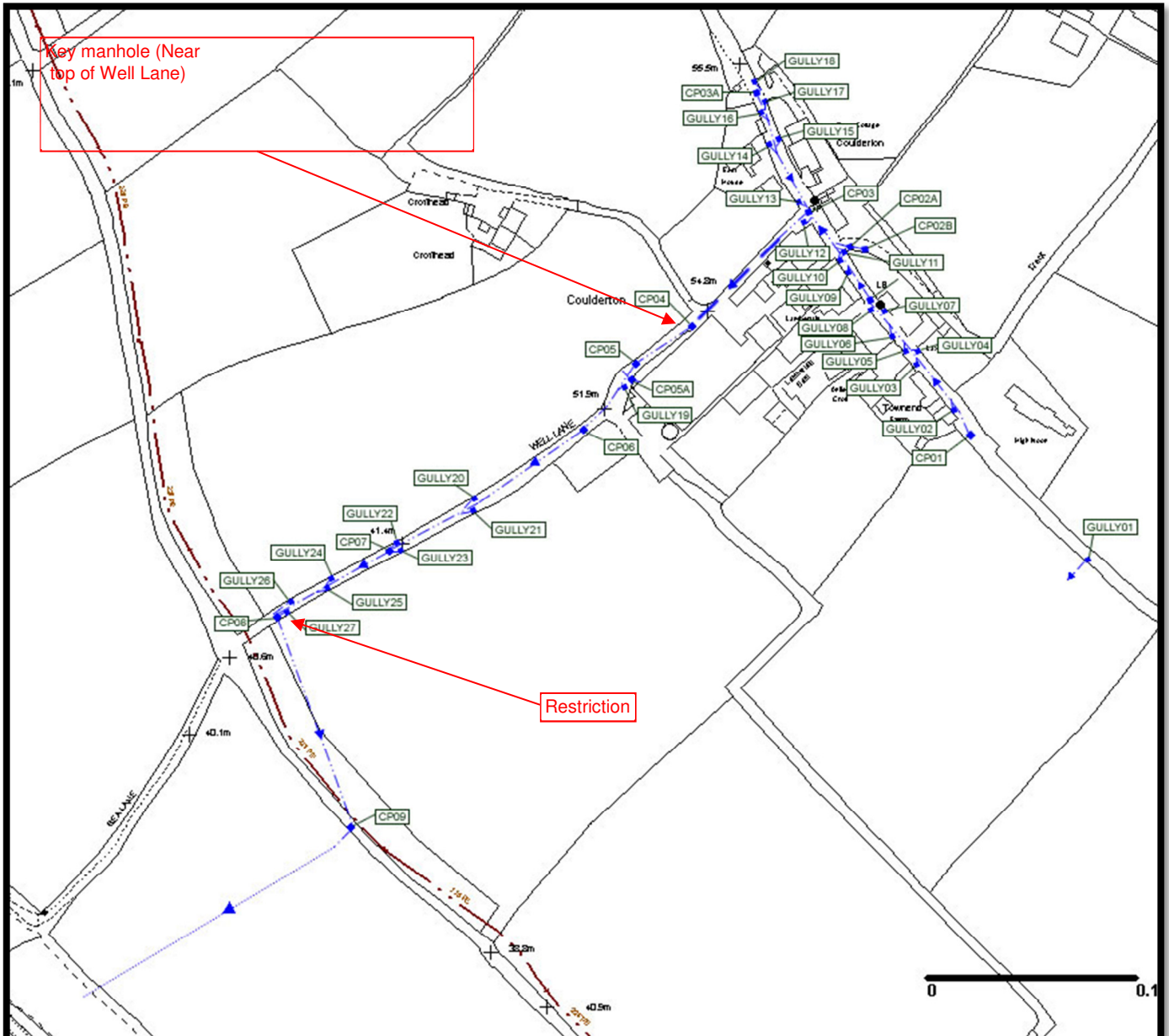


Figure 5. Drainage layout at Coulderton

surcharging out of the system at the low point in the carriageway. Although this does not affect properties the riparian owner should look into removing the blockage.

Appendix 3 provides detail of what is understood to be the primary cause of the flooding. The surface water runoff from the lanning above Croftside farm.

When the catchpit on Well Lane and the pipework upstream was found to be full of silt, it was thought that the flooding was being caused by these blockages discovered in the highway drainage

system. However the events of 17/10/12 following two days of cleaning showed that this was not the primary cause of flooding. It appears that during prolonged wet periods the surface water from the lanning to Croftside farm overwhelms the highways system, the highways drainage is not designed to cope with the excess water.

Flooding History

- Town End Farm has flooded six times in 14 years.
- The property lost everything on the ground floor on 4th September 2008 and the repairs cost £40k.
- It also flooded in 2002, 2000, 1998 as well as twice in 2012 (property owner of Town End Farm).

Recommended Actions

Action by	Recommended Action	How
LLFA/Land owner	Look at ways of improving land management practices to reduce soil erosion and run off from the fields above Coulderton.	Research with National Farmers Union, Natural England land management specialists.
LLFA/Land owner	Reduce risk of sediment blocking the drainage system.	Ensure catch pits on Croftside Farm lane are emptied regularly.
County Highways	Improve capacity of drainage.	Look at feasibility of installing a new 225mm pipe from the Croftside Farm lanning catchpit directly to CP3 on the junction of Well Lane. A further overflow pipe could then be installed to marry up with the 600mm pipe on Well Lane and amalgamated by a catch pit.
Riparian land owner / LLFA/CBC	Remove restriction in the pipe at the bottom of Well Lane.	LLFA/CBC to identify riparian land owner and inform of the blockage.
County Highways/Land owners	Investigate ways of dealing with flood flows greater than capacity of current highway system and scope for funding.	Look at options for: - <ul style="list-style-type: none"> • Attenuation; • diverting and intercepting storm water to safe flood routes;
Property owner, Town End Farm	Protect property from flooding	Continue good work with resilience measures on site.
LLFA/Landowner	Look at ways of attenuating and controlling flows from Croftside Farm Lane	LLFA to liaise with landowner/s Regarding attenuation and control measures.

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 Making Space For Water Group (MSfWG) members and a summary of related processes are detailed in Appendix 2

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Appendices

Appendix 1: Glossary

Acronyms

CBC	Copeland Borough Council
CCC	Cumbria County Council
LLFA	Lead Local Flood Authority
LFRM	Local Flood Risk Management
MSFW	Making Space for Water

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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—

- (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
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 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 EA’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 the CCC or the EA and provide a useful mechanism to residents to forward information to the MSfWG.

Appendix 3: Catchment analysis

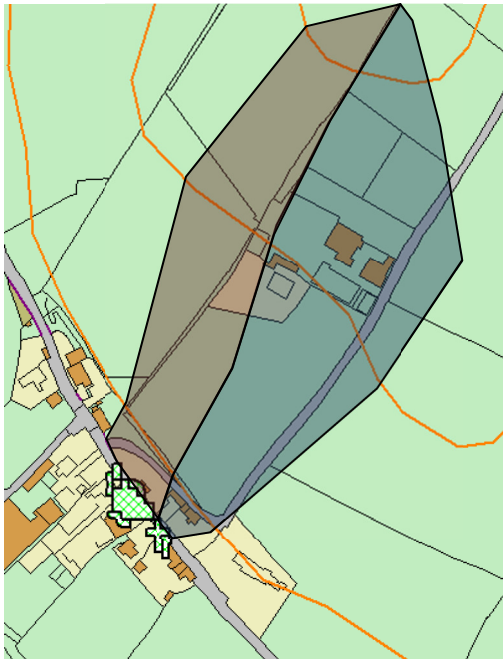


Figure 6. Surface water flood plan

It was noted after the 17/10/12 event that most of the Town End Farm flooding came from the hill above, flowing down the Croftside Farm lanning, overrunning the catchpits that had been installed at the bottom, and following the highway gradient to the depression at Town End Farm.

An extract of a surface water flood map from the EA on the left shows that Town End Farm is expected to flood to a depth of between 100mm and 300mm in the 1 in 30 year rainfall event (green hatching). This would be based on the natural catchment at this location which is shown in blue. The lanning which comes down from Croftside Farm collects water at the bend where it runs parallel to the slope. There is an embankment/wall on the down side, which prevents the floodwater escaping from the lanning, so it is all directed to the road. The fall of the road diverts the water left towards Town End Farm. This has the effect of nearly doubling the catchment from which floodwater is collected that ends at Town End Farm (extra catchment shown in brown). There are two large catchpits at the bottom of the lanning whose aim is to collect all the water coming down the lanning and redirect it into the highway system and down Well Lane.

Appendix 4: 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, www.cumbria.gov.uk, tel: 01228 221330

Cumbria County Council (Highways):

highways@cumbria.gov.uk, www.cumbria.gov.uk, tel: 0845 609 6609

United Utilities: tel: 0845 746 2200

Copeland Borough Council

info@copeland.gov.uk, www.copeland.gov.uk, tel: 0845 054 8600

Cumbria County Council Neighbourhood Forum: tel. 01946 505022

Cumbria.gov.uk/sayit

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>

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