

Working with the
Calderdale Flood Partnership



how we're reducing the risk of flooding for Calderdale



Calderdale flood action plan

Full action plan
December 2019

The 2015 Boxing Day floods had a devastating impact on the communities in Calderdale with over 3,500 homes and businesses affected. This plan contains the actions that communities and partners feel are essential to help Calderdale improve resilience and reduce the risk of flooding, and complete outstanding recovery work.

Calderdale is a special place and will always need to prepare, respond and adapt to floods. This action plan outlines how this will be achieved and we will continue to identify and deliver actions to reduce flood risk and protect and improve the environment.¹

This document is the third review of progress and new activity up to December 2019. The action plan is a 'living document' that is discussed, monitored and updated by the Calderdale Flood Partnership. The majority of the original actions were gathered through workshops, drop-in sessions and meetings. Lead delivery organisations and members of the Calderdale Flood Partnership were asked to update their actions to reflect the progress they had made, new information now available to them, and any follow-up or new actions resulting from work which has been completed. Operations Groups commented on the proposed revised draft plan and the document was approved by the Calderdale Flood Partnership Board. All changes made to the plan since September 2018 can be seen in Appendix 1.

Many of the actions are ongoing and form part of other plans and programmes, including the Calderdale Local Flood Risk Management Strategy, the 6-year investment programme and recommendations from the Calderdale Flood Commission Report. Actions which are considered ongoing or 'business as usual actions' with no set deadline for completion have now been placed in Appendix 2. The delivery of these actions will continue to be monitored by relevant Operations Groups and the Calderdale Flood Partnership.


All members of the partnership continue to be committed to its delivery and want an action plan that is available to everyone and which sets out a clear vision to inspire and encourage communities and organisations to work together to reduce the impact of future flooding.

A summary document of the original 2016 action plan can be found on www.gov.uk. Quarterly reports on how we are progressing on this plan are published on the 'Eye on Calderdale' website. For further information and if you have any comments on the Calderdale flood action plan please email enquiries@environment-agency.gov.uk.

Please note: All appendices are available online at 'Eye on Calderdale'. The original number of the action in the plan is shown alongside the number in this version of the plan.

✓ means that an action has been completed since September 2018. Actions completed before September 2018 are shown in Appendix 3.

¹ The Environmental Assessment of Plans and Programmes Regulations 2004 (SEA) regulations do not apply to this plan, as it does not fall under the definition of 'plans and programmes'. However, we will ensure an appropriate level of environmental assessment will be undertaken for any actions where there is potential to damage the environment. Some actions will require further investigation and assessment under specific legislation, for example Habitats Regulations Assessment (HRA). The need for HRAs will be determined on a project by project basis.

Where you see this icon  it means that the action will deliver wider benefits for people and wildlife in addition to reducing the risk of flooding. The following partnerships are delivering work to support this action plan:

Calder Catchment Partnership: a wide range of partners representing this large and varied catchment including local authorities, Environment Agency, Yorkshire Water and other statutory organisations, in addition to Yorkshire Wildlife Trust, Groundwork and other Non-Governmental Organisations.

Clough Woodland Project Partners: Environment Agency, Forestry Commission, Natural England, National Trust, Peak District National Park Authority, RSPB, Severn Trent Water, Woodland Trust, National Farmers Union.

Moors for the Future/ MoorLIFE: a partnership between the National Trust, Peak District National Park Authority, RSPB, Natural England, Yorkshire Water, Environment Agency, Forestry Commission, National Farmers Union.

SOURCE Partnership: a partnership between Treesresponsibility, Calder and Colne Rivers Trust, Upper Calderdale Wildlife Group, Calder Future, Slow the Flow Calderdale, Sticks and Stones, Facilitation Fund, Calderdale Metropolitan Borough Council, Environment Agency, Pennine Prospects, National Trust, Yorkshire Water and the White Rose Forest.

South Pennines Local Nature Partnership: Pennine Prospects achieved Local Nature Partnership status for the South Pennines in 2012. For more information, visit: www.pennineprospects.co.uk/local/what-is-a-local-nature-partnership.

West Yorkshire Local Resilience Forum: The aim of the West Yorkshire Resilience Forum is to co-ordinate the actions and arrangements between responding services in the area to provide the most effective and efficient response to civil emergencies when they occur. The forum includes: Bradford Metropolitan Council, Calderdale Council, Dept. of Communities and Local Government, Environment Agency, Kirklees Council, Leeds City Council, The Highways Agency, the Met Office, NHS England, Northern Powergrid, Public Health England, Wakefield Metropolitan District Council, West Yorkshire Fire and Rescue Service, West Yorkshire Police, Yorkshire Ambulance Service, Yorkshire Water, The Military, Representatives of Voluntary Organisations.

White Rose Forest Partnership: A Leeds City region-wide urban forestry and green infrastructure partnership. Kirklees Council (Accountable body), The National Trust, Trees for Cities, Treesresponsibility, Community Forest Trust, the Aire Rivers Trust, Colne Valley Tree Society, Barnsley Metropolitan Council, Groundwork North Yorkshire, Harrogate Borough Council, Craven District Council, Calderdale Council, Bradford Council, Bradford Environmental Action Trust, British Trust for Conservation Volunteers, Natural England, Leeds City Council, Groundwork – Leeds, Woodland Trust, Forestry Commission, Wakefield Council, RSPB, Sustrans, Yorkshire Wildlife Trust.

Yorkshire West Local Nature Partnership: takes the strategic lead on natural environmental issues across West Yorkshire and the Leeds City Region and includes the five West Yorkshire local authorities.



Strengthening defences

Actions in this theme are about understanding the issues and developing programmes of work to reduce flooding from rivers and surface water.

Work is underway to plan and construct flood alleviation schemes in locations including Mytholmroyd, Hebden Bridge and Brighouse.







The Environment Agency and Yorkshire Water are working together to develop proposals to utilise reservoirs to help reduce the risk of flooding. The Canal & River Trust is studying how the canal can be used to store flood water, and also to identify where towpaths need to be raised to prevent flooding.



Yorkshire Water is reviewing and improving their sewer network where flooding has occurred in the past. Several investigations have been completed and work is ongoing to secure funding. Calderdale Metropolitan Borough Council is investigating and reducing the risk of flooding from smaller watercourses, investigating new sites for further flood risk reduction schemes, encouraging the implementation of more sustainable drainage and producing surface water management plans.

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
Understanding the issues and developing responses					
1	51/2016	Introduce the Community Infrastructure Levy in Calderdale, which will allow for potential use on flood risk mitigation schemes.	End of 2020	Calderdale Metropolitan Borough Council	
2	9/2016	Compile a detailed register of all flood risk assets, including all potential flood defences, high risk culverts, watercourses, highway drains and other drainage assets, structures and locations. (Links to action 49 [64/2016])	Complete since September 2018 and ongoing ✓	Calderdale Metropolitan Borough Council	Yorkshire Water Environment Agency




2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
3	10/2016	Carry out further investigations into the level of risk of flooding from groundwater, ordinary watercourses and surface water across Calderdale.	End of 2021	Calderdale Metropolitan Borough Council	Environment Agency
4	5/2018	Investigate, develop and deliver flood risk reduction schemes, in addition to those in FRRS 1 and FRRS 2 programmes, identified through a review in 2018 of flood investigations at sites across Calderdale.	2021 onwards	Calderdale Metropolitan Borough Council	Environment Agency Yorkshire Water
5	19/2016	Carry out a study to upgrade the existing culvert and reduce the risk of flooding to downstream properties at Stoodley Grange/Lee Bottom Road.	End of 2020	Calderdale Metropolitan Borough Council	Environment Agency
6	20/2016	Carry out a study of and improvements to the Swineshead Clough reservoir to reduce the risk of flooding from the nearby watercourse.	End of 2023	Calderdale Metropolitan Borough Council	Environment Agency
7	21/2016	Investigate the condition, location and capacity of the culverted watercourse on the steep hillside at Willowfield Estate to reduce the risk of flooding to nearby houses.	2021 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
8	22/2016	Update existing surface water management plans using information from studies on the existing drainage system to identify where there is not enough capacity.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	Yorkshire Water
9	23/2016	Identify joint schemes to reduce the risk of flooding by better understanding the links between surface water and sewer networks.	Complete since September 2018 ✓	Calderdale Metropolitan Borough Council	Environment Agency Yorkshire Water Network Rail

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
10	30/2016	Investigate feasibility of measures to solve flooding in properties on Oldham Road, Ripponden.	Complete since September 2018 ✓	Yorkshire Water	
11	70/2016	Identify and review historical water infrastructure such as old mill ponds, water tanks, dams, land drains, to understand whether they can be reused to reduce flood risk.	Ongoing to March 2021	Environment Agency	Yorkshire Water Calderdale Metropolitan Borough Council
12	158/2016	Evaluate the options, costs and benefits of works required at the Hebden group of reservoirs in order to utilise them to reduce the risk of flooding.	Ongoing to Spring 2020	Environment Agency	Yorkshire Water
13	158/2016	If cost beneficial and practicable, seek to agree operational principles for using the Hebden group of reservoirs to reduce the risk of flooding. If agreeable secure funding and develop a programme for implementation of works.	To be confirmed	Yorkshire Water	Environment Agency
14	164/2016	Investigate the lowering of canal pounds, and determine if they could be used to store flood water.	Ongoing to end of 2020	Canal & River Trust	
15	165/2016	Study the impact and possibility of using canals to protect against flooding, considering navigational safety (boating customers), water resource losses, damage to canal infrastructure, and the wider network.	Ongoing to end of 2020	Canal & River Trust	

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Delivering flood alleviation schemes					
16	5/2016 	Develop and deliver a flood alleviation scheme for Brighouse	Ongoing to July 2023	Environment Agency	Calderdale Metropolitan Borough Council Yorkshire Water
17	1/2016 	Develop and deliver a flood alleviation scheme for Mytholmroyd.	Ongoing to Summer 2020	Environment Agency	Calderdale Metropolitan Borough Council
18	2/2016 	Develop and deliver a flood alleviation scheme for Hebden Bridge.	Ongoing to March 2023	Environment Agency	Calderdale Metropolitan Borough Council
19	3/2016 	Develop and deliver, where feasible, flood risk management work as part of the first phase of the flood risk reduction schemes at: Pin Hill Lane, Midgley Burnt Acres Wood, Callis Bridge Park Road, Elland Woodland View, Eastwood Shop Lock, Todmorden Nutclough, Hebden Bridge Bacup Rd., Todmorden	Complete since September 2018 	Environment Agency	Calderdale Metropolitan Borough Council
20	6/2016	Carry out improvements to access and telemetry at Hebble Brook screen to prevent blockage of screen and potential flooding.	Complete since September 2018 	Calderdale Metropolitan Borough Council	Environment Agency
21	11/2016	Work with partners to inspect and carry out work to address any structural defects in the Hebble Brook culvert.	Ongoing to March 2022	Environment Agency	

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
22	12/2016	Assess, design and carry out improvements to Cragg Road culvert.	2021 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
23	13/2016	Repair the Harley Wood bypass channel that is currently in a poor condition.	2022 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
24	15/2016	Carry out a feasibility study to remove or raise the Kingfisher Chase, Sowerby footbridge that prevents water flowing in times of high floods.	2022 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
25	4/2016 	Develop and deliver (if feasible) flood risk management works at the following locations, as part of the Flood Risk Reduction Schemes Phase 2 (Group A): 1. Shaw Wood Rd., Todmorden 2. Calderside, Hebden Bridge 3. Machpelah screen, Hebden Bridge 4. Copley Village	Ongoing to March 2021	Environment Agency	Calderdale Metropolitan Borough Council Yorkshire Water Network Rail Canal and River Trust
26	4/2016 	Develop and deliver (if feasible) flood risk management works at the following locations, as part of the Flood Risk Reduction Schemes Phase 2 (Group A): 1. Rossendale View/Harvelin Park 2. Railes Close, Midgely 3. Cottonstones	Ongoing to April 2020	Calderdale Metropolitan Borough Council	Environment Agency Yorkshire Water Canal and River Trust

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
27	4/2016 	Develop and deliver (if feasible) flood risk management works at the following locations, as part of the Flood Risk Reduction Schemes Phase 2 (Group B): 1. Walsden 2. Cross Stone Rd, Todmorden 3. Oak Hill Clough, Todmorden 4. Commercial St., Todmorden 5. Calder-Ryburn, Sowerby Bridge 6. Lower Bank House, Barkisland 7. Dean Clough, Halifax 8. Luddenden Brook	Ongoing to March 2024	Environment Agency	Calderdale Metropolitan Borough Council Yorkshire Water Network Rail Canal and River Trust
28	16/2016 	Remove the weir at Lobb Mill to reduce flood levels to reduce the risk of flooding in Todmorden.	2024 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
29	17/2016	Carry out a study of and improvements to the Shoebroad Clough reservoir to reduce the risk of flooding from the nearby watercourse.	2021 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
30	18/2016	Improve the culvert to reduce the risk of flooding at Smithy Lane, Colden.	2021 - onwards	Calderdale Metropolitan Borough Council	Environment Agency
31	44/2016	Investigate the feasibility of using low risk areas to manage highway flooding from overland flows in a sustainable manner.	End of 2020	Calderdale Metropolitan Borough Council	Environment Agency

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
32	45/2016 	Develop further planning guidance that encourages sustainable drainage systems in areas with critical drainage problems, and reduces run-off in line with greenfield sites.	Complete since September 2018 	Calderdale Metropolitan Borough Council	Yorkshire Water
33	50/2017 	Encourage physical demonstration interventions in high profile locations, to showcase and encourage uptake of the principles detailed in the 'You Can Slow The Flow' project. Opportunities to be investigated and developed in 2020-21 include: Further promotion using Opportunity Mapping, documented through the online resource; Further promotion using case studies documented through the online resource, including Hebden Bridge Town Hall and Mytholmroyd Flood Wardens demonstrations; Working with Neighbourhood Development Plans to promote SuDS; Supporting ideas for new urban SUDS sites as they arise and promoting as 'You Can Slow The Flow' case studies on completion - expressions of interest include Gibson Mill, further Flood Wardens' stores, central Mytholmroyd housing redevelopment.	Ongoing to end of 2021	Slow The Flow: Calderdale (SOURCE Partnership)	SOURCE Partners
34	51/2017	Develop clear online information to enable anyone to identify highway issues (in particular around drainage) which affect flooding.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	
35	52/2017	Change management of drainage gullies to minimise blockage and silting issues; including improved data on condition of drainage gullies to enable smarter, tailored management based on silting levels.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
36	54/2017	Work to enable reporting on online maps regarding location of drainage gulley issues.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	
37	56/2018	Following on from investigations to reduce sewer flooding, and depending on PR19 Final Determination, work to secure funding to deliver identified options, in Todmorden, Brighouse and Ripponden.	Ongoing to March 2025	Yorkshire Water	Calderdale Metropolitan Borough Council Environment Agency



Natural flood management

Actions in this theme are divided into four main areas of activity with the aim of managing the landscape to slow the flow of water.

- *Understanding the relationships between catchment management and flooding.*
- *Promoting and delivering Natural Flood Management (NFM) techniques which can contribute to flood mitigation and alleviation in the valley bottom.*
- *Engaging with catchment landowners and land managers to contribute to Natural Flood Management solutions.*
- *Influencing government policy (related to NFM and catchment management) and regulation to secure necessary flood related interventions.*

Actions include temporarily storing water, planting trees or changing the way farmland and moorland is managed so that it absorbs more water. An Environment Agency guide has been created by Moors for the Future for landowners to help them design and implement natural flood management measures such as leaky dams, tree planting or alternative stock management.



Agri-environment schemes will help support flood management, and SOURCE partners have developed a grant scheme which was launched by Calderdale Metropolitan Council and the Environment Agency in 2018 to help more farmers and land managers undertake natural flood management projects. Third sector partners – the National Trust, Treesponsibility and Slow the Flow continue to lead the delivery of NFM interventions in the Upper Calder Valley. Yorkshire Water has also secured funding for a high- profile project at Gorpley reservoir. Local and regional groups such as Calder Future continue to support statutory organisations with river stewardship and combatting invasive plants.







Calderdale Metropolitan Borough Council and the Environment Agency are reviewing all our NFM modelling work and have developed proposals with university partners to support our understanding of current catchment management in Calderdale. The Environment Agency have also launched a national evidence base – ‘Working with Natural Processes’ including maps identifying opportunities for NFM across the catchment.



2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
Understanding catchment management and flood relationships					
38	61/2017	Collate and evaluate what is known about the connections between land management and flooding in general, and specifically in relation to the Calder catchment, including a gap analysis to advise further research where appropriate, to help inform strategic priorities for Natural Flood Management and ensure affected communities can better understand that relationship.	Ongoing to October 2020	Calderdale Metropolitan Borough Council	Leeds University - iCASP Environment Agency
39	63/2016 	Coordinate the production of natural flood management opportunity maps to show places where the risk of flooding could potentially be reduced through NFM techniques, and multiple benefits to people and the environment realised.	Ongoing to October 2020	Calderdale Metropolitan Borough Council	Leeds University – iCASP Environment Agency
40	68/2016 	Carry out modelling to identify communities and properties where natural flood management measures could potentially reduce the risk of flooding.	End of 2020	Environment Agency	Calderdale Metropolitan Borough Council, Leeds University - iCASP
41	71/2016	Model the risk of rural highway flooding and resulting impacts. Identify ways of using NFM solutions where practical, for modelled critical flood risk areas (rural highways).	Ongoing to May 2020	Calderdale Metropolitan Borough Council	
42	72/2016	Investigate/model the impacts of boundary features to manage water flow pathways and attenuating flows to identify and understand any opportunities to reduce flood risk. Specifically looking at: blocking features in water channels; hedges/walls/gates on the land.	Ongoing Spring 2020	Calderdale Metropolitan Borough Council	Leeds University - iCASP Environment Agency
43	63/2018	Set up an open source to encourage partners to share NFM data and reports.	March 2020 then ongoing	Calderdale Metropolitan Borough Council	

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
44	64/2018	Collate and analyse NFM monitoring data collected through various modelling and partner projects. Identify effective NFM interventions and gaps in data monitoring.	End of 2020	Environment Agency	
45	65/2018	Research the connection between NFM measures delivering overland flow interception on steep slopes and landslides.	Autumn 2020	Calderdale Metropolitan Borough Council	Environment Agency Leeds University
46	New	To assist with providing evidence for NFM interventions, install river level monitoring sensors to enable river flows to be measured at a local scale	End of 2020	Slow the Flow	Environment Agency
47	New	Share learning from the developing DEFRA England Peat Strategy and current national moorland pilots to improve understanding of baseline function and input to development of a new programme of Pennine moorland restoration post 2020 where relevant to support Calderdale NFM. Investigate opportunities to produce a summary report on current condition of Calderdale moorland.	Ongoing to December 2020	Environment Agency	Moors for the Future

Promotion and delivery of NFM techniques





48	50/2016 	Develop a funding strategy for the Calderdale Natural Flood Management programme, ensuring linkages are made to the Leeds City Region Green Infrastructure Investment Plan and other local, regional and national funding strategies.	Complete since September 2018 and ongoing 	Calderdale Metropolitan Borough Council Environment Agency	Natural Flood Management Operational Group
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2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
49	64/2016 	List natural flood management structures on an asset register and produce a natural flood management asset map of the catchment. (Links to action 2 [9/2016]).	Ongoing to February 2020	Natural Flood Management Operational Group	Calderdale Metropolitan Borough Council Environment Agency Slow the Flow
50	48/2016 	Produce a tree and woodland management strategy for Calderdale which will include strategic actions for the creation and management of woodlands (created by all relevant partners) for natural flood management.	Complete since September 2018 	Calderdale Metropolitan Borough Council	The National Trust, Forestry Commission Woodland Trust Treesresponsibility Pennine Prospects Yorkshire Water Slow the Flow South Pennine Facilitation Fund White Rose Forest
51	74/2016 	Secure GIS data and license to establish existing tree canopy cover in Calderdale as base line to help set targets for tree planting as part of the Leeds City Region wide White Rose Forest Plan.	Complete since September 2018 	White Rose Forest Partnership	
52	New	Enhance the resilience of habitats in the catchment against future risks such as climate change and wildfire – considering likelihood and severity of the risks; protecting all associated outcomes, NFM, clean water provision and storage, carbon capture, biodiversity, local economy and community.	To be confirmed	Moors for the Future	Calderdale Metropolitan Borough Council Environment Agency National Trust Yorkshire Water
53	77/2017 	Complete tree planting at Hardcastle Craggs and plant 50,000 trees in Upper Calder catchment by March 2020.	Ongoing to March 2020	Treesresponsibility	Woodland Trust White Rose Forest Moors for the Future

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
54	49/2016 	<p>Production of revised Clough Woodland Project Guiding Principles to support the following activities across the South Pennine Moors National Character Area:</p> <ul style="list-style-type: none"> • Appropriate (careful and considered) design of landscape scale native broadleaved woodland creation schemes, to deliver benefits to reduce downstream flood risk, stabilise eroding soils, improve water quality and enhance biodiversity. • Gaining consent from Natural England under the Habitat Regulations, to ensure woodland creation does not have a detrimental impact on the interest features of designated/protected areas. 	Complete since September 2018 	Moors for the Future Partnership	Clough Woodland Project Partners Calderdale Metropolitan Borough Council SOURCE Partnership White Rose Forest South Pennines Local Nature Partners
55	76/2016 	Work to address soil erosion and landslide stabilisation in Upper Calder Catchment: Treating landslips with fascines; Removing Himalayan balsam; Removing/thinning shallow rooted beech trees to encourage woodland understorey.	Ongoing to end of 2020	Treesponsibility (SOURCE Partnership)	National Trust Facilitation Fund Sticks and Stones Calder Future Calderdale Metropolitan Borough Council
56	81/2017 	Deliver physical NFM interventions to slow the flow and contribute to reducing downstream flood risk in high priority sub catchments, particularly at Hebden Water, Walsden, Calder from Source, Cragg Vale. Develop demonstration sites at multiple locations including Hardcastle Craggs and Gorpley.	Ongoing to end of 2020	Treesponsibility (SOURCE Partnership)	Environment Agency Calderdale Metropolitan Borough Council Slow the Flow National Trust EGG Consultants Cragg Vale Business Park

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
57	78/2016 	Carry out a project to create plate weirs, woody debris and leaky dams on sites within and adjacent to Crimsworth Dean Beck, Hardcastle Craggs and Hebden Water to reduce flood water and flood peak.	Ongoing to end of 2021	National Trust	Slow the Flow Natural England Environment Agency Calderdale Metropolitan Borough Council Yorkshire Water Private landowners
58	52/2016 	Investigate how heather cutting, as a preferred management technique, could be introduced into future land management agreements. Produce clear guidance for partners on basis of best practice.	Ongoing to June 2020	Natural England	
59	79/2016 	Through the support of MoorLIFE 2020, identify priority blanket bog restoration areas and appropriate techniques within the South Pennine Moors Special Area of Conservation located in the Upper Calder Valley.	Ongoing to February 2022	Moors For The Future	Pennine Prospects Yorkshire Wildlife Trust Natural England Environment Agency Yorkshire Water Moorland Association National Trust
60	83/2016 	Improve Clifton Beck as part of the Clifton Beck Diffuse Pollution Project to also reduce the risk of flooding through: Creating buffer zone strips, planting trees and plants on river banks, restricting livestock access to the beck and removing invasive non-native plants.	Ongoing to January 2022	Yorkshire Wildlife Trust	Environment Agency Calder & Colne Rivers Trust Riverfly Landowners
61	80/2016 	Create wetland habitat and wet woodland, linked to environmental education work at Brearley Fields, Mytholmroyd.	2021	Calderdale Metropolitan Borough Council	Canal and Rivers Trust Environment Agency Calder & Colne Rivers Trust Yorkshire Wildlife Trust

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
62	84/2016 	Develop a long-term, evidence based strategy for managing invasive plant species. The strategy will identify the damage caused, ways of managing both invasive species and the soil, and how we will fund and carry out this work.	Complete since September 2018, also ongoing 	Yorkshire Wildlife Trust and Yorkshire Invasive Species Forum	Calderdale Metropolitan Borough Council Environment Agency Riparian owners Calder Future Calder Valley Clean-up Team Treesponsibility River Stewardship Company Yorkshire Water Canal & River Trust
63	New	Develop new initiatives for sustainable control and management of invasive species (follow- up to action 62; 84/2016)	Ongoing to December 2021	Calderdale Metropolitan Borough Council	Environment Agency Calder Future Calder Valley Clean-up Team River Stewardship Company Yorkshire Wildlife Trust
64	85/2016 	Prepare an evidence based channel maintenance programme (to include vegetation, gravel, silt and debris) that has been developed with the community and which allocates activity between the Environment Agency and other (including voluntary sector) providers.	Complete since September 2018 	Environment Agency	Riparian owners Community organisations Calder Future Calder Valley Clean-up Team Calderdale Metropolitan Borough Council Treesponsibility

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
65	84/2018	Promotion of monitoring protocol for all new projects: iCASP development of monitoring protocol building on existing DEFRA NFM protocol.	Ongoing to March 2020	Calderdale Metropolitan Borough Council	Environment Agency Leeds University -iCASP
66	85/2018 	Scope a clough woodland project to increase the extent of woodland at Hardcastle Craggs to several Yorkshire Water sites in the Calder Valley. To be achieved by working with a range of partner organisations and private landowners.	Ongoing to end of 2020	National Trust	Woodland Trust, Treesponsibility, White Rose Forest, Yorkshire Water, South Pennines Facilitation Group, Pennine Prospects
Engagement of landowners and land managers					
67	54/2016 	The Calderdale Catchment plan will draw from the research projects into the learning identified across the 4 Pioneer projects. These should identify insights in terms of working with natural capital and partnership working, recognising the intrinsic value of the environment across the health and economy agendas and helping to achieve environmental outcomes for local communities through broader collaboration.	Ongoing to 2020	Environment Agency	
68	57/2016 	Develop a plan to coordinate the engagement of landowners and land managers, (across the Calderdale Flood Partnership), to support landowners and land managers in identifying and implementing a range of natural flood management measures; and publicise the extent of engagement.	Complete since September 2018, also ongoing 	Calderdale Metropolitan Borough Council	South Pennines Facilitation Fund, Moors for the Future Yorkshire Wildlife Trust Treesponsibility Slow the Flow Natural England Pennine Prospects Environment Agency Canal & Rivers Trust

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
69	59/2016 	Through the Countryside Stewardship Scheme and the South Pennine Facilitation Fund, encourage more farmers in specific areas to carry out and maintain natural flood management for the 2018 application year.	Complete since September 2018 	Natural England	Yorkshire landowners Environment Agency Calderdale Metropolitan Borough Council
70	62/2016 	Work with landowners/occupiers to progressively review the three existing burning consents and agreements as part of the consideration for the long-term management requirements for the restoration of blanket bog.	2019 onwards	Natural England	Yorkshire Water Private Landowners
Policy and adequate regulation					
71	92/2018 	Seek funding for and produce ecological RAG mapping for target NFM catchments to enable the identification of land for which landowners should be approached and ecological assessments undertaken. Seek funding for and implement a prioritised programme of ecological surveys of land prioritised by the ecological RAG mapping.	Ongoing to January 2020 Ongoing to October 2020	Calderdale Metropolitan Borough Council	



Resilient Infrastructure

This plan details actions to increase the resilience of infrastructure, such as sewer systems, electricity substations and transport routes, to flooding.

Following the Boxing Day 2015 floods, action was taken by the Environment Agency, Calderdale Metropolitan Borough Council, Yorkshire Water, Northern Power Grid and Canal & River Trust to repair and strengthen infrastructure to ensure it is operational for future floods. We will continue to review the flood risk of roads, railways, water and power supplies that are locally critical, and we will take action, where appropriate, to protect them and maintain them so that they remain in good working order.




A number of actions in this theme address how partners ensure maintenance of all critical infrastructure and the assets which protect them, this includes facilitating better information sharing with the wider community.

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
Energy					
72	107/2017	Recover (remove the equipment) from the following sites Hebble End 2243, HX7 6AT, Mayroyd 641, HX7 6AT, Calder Mill 196, HX7 5NA, Market Street 633, HX7 6AT, Cheetham St 1827, HX7 8EJ to new sites at Bridge Lanes and Hollins Place.	Complete since September 2018 ✓	Northern Power Grid	

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73	40/2016	Relocate current power substations at: Calder House Mill 1225, HX7 5QF Scout Road 864, HX7 5DU Der Street Mills 1145, OL14 5QT; Gauxholme 383, OL14 7PD.	End 2020 Scout Rd- Complete End 2022, Spring 2020	Northern Power Grid	
74	41/2016	Improve resilience of power substations at Walton St 775, HX6 1AN, Lock Hill Mill 577 HX6 2LA.	Complete since September 2018 ✓	Northern Power Grid	
Transport					
75	104/2016	Design and delivery of scheme to manage railway-related flood risk (surface water) at three sites east of Luddendenfoot.	Deferred to 2021/2022	Network Rail	Environment Agency
76	114/2017	Develop programme and secure funding to improve the resilience of the main highway routes in Calderdale, in particular the A646 in the Upper Calder Valley. (Links to actions 17 [1/2016]; 18 [2/2016]; 35 [52/2017]; 93[147/2016])	Ongoing to 2022	Calderdale Metropolitan Borough Council	Environment Agency Department for Transport
Water and wastewater					
77	28/2016	Replace storm pumps and control panel at Elland Lowfield sewage pumping station.	Complete since September 2018 ✓	Yorkshire Water	
78	168/2016 ✱	Review feeder arrangements for the Rochdale Canal, to identify where improvements could be made, taking into account heritage and environmental factors.	Ongoing to mid-2020	Canal & River Trust	

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
79	126/2017	As part of the preparation of their first National Flood Risk Management Strategy in 2017, the Canal & River Trust will use experiences and lessons learnt on the Rochdale Canal, from the December 2015 floods, to inform and influence national approaches and policy development in relation to flood risk management. The creation of the Strategy will also present relevant outputs to feed into the Calderdale Flood Action Plan work, particularly actions 14,15 [164,165/2016] and ongoing actions.	Ongoing to late 2020	Canal & River Trust	

General Infrastructure

80	127/2017	Complete outstanding Calderdale highways recovery work at Scout Road, Phase 3 Drainage Works.	Ongoing to June 2020	Calderdale Metropolitan Borough Council	
81	42/2016 	Find information on landslips that have occurred in the past and investigate the possibility of them happening again.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	
82	106/2018 	Carry out temporary stabilisation on landslips, where ongoing risks have been identified, and where required develop capital schemes to deliver long term solutions.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	
83	86/2016	Host an annual maintenance meeting to discuss and review the planned maintenance work of Calderdale Metropolitan Borough Council, Environment Agency and Canal & River Trust. Involve local community representatives to promote a joined up approach and increase community involvement.	Complete since September 2018 and ongoing 	Calderdale Metropolitan Borough Council	Local community representative Calder Future Calder Valley Clean-up Team Canal & River Trust

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
84	110/2018	Develop maintenance plans for critical flood resilient infrastructure identified in the Calderdale Metropolitan Borough Council Flood Asset Register.	Ongoing to October 2020	Calderdale Metropolitan Borough Council	Environment Agency



Community resilience

Actions in this theme are about making sure that people and property are as resilient as they can be when facing the perils of floods and what might follow, by taking actions ahead of time to help life get back to normal as quickly as possible. It includes people signing up to flood warnings, developing a community action plan or making alterations to their home or business so flood water causes less damage.

Effective warnings are vital, and since December 2015 many more people have signed up to get flood warnings and Calderdale Metropolitan Borough Council working with partners have carried out an annual emergency planning exercise. The Environment Agency and Calderdale Metropolitan Borough Council continue to investigate and develop new methods to warn communities in areas where river levels rise quickly and continue to engage with schools, nurseries, care homes, and other groups of vulnerable people who need to have emergency plans in place.

Partners have established a network for community flood action groups to share learning and ideas and set up a database of volunteers who can help out during and after a flood. More than sixty volunteer flood wardens are active in nine groups down the Calder valley.

Calderdale Metropolitan Borough Council have investigated the potential for mobile banking services and pop-up shops such as chemists, post office and groceries. The Council have paid out grants of more than £6 million to householders and £2.6 million to businesses who were affected by flooding. We need to do more to ensure residents in private rented homes also know how to improve their flood resilience.

Calderdale Metropolitan Borough Council has completed strategic flood risk assessments to inform local spatial plans so that new development is located and designed to keep people safe during a flood.

A key message to remember in terms of resilience is that it begins with the individual, the householder, the business. When floods occur, the roads flood, emergency services have trouble getting to us and we are thrown onto our own resources. We need to make these as good as we can. The best person to understand your risk and what you can do about it, is you. Look at your home, think about flooding and what steps you can take to limit the impact of these events. Think about what you need to do if alarms sound, and be prepared. Think about your neighbours, if they may need help in times of crisis, and talk to them.

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
Preparedness					
85	109/2016	Link willing shops to the local flood hubs so they can be used in the event of a future flood, work to ensure coverage is robust and exploring provision of other local amenities.	Ongoing to December 2020	Calderdale Metropolitan Borough Council	Banks and local business NHS/ Health emergency planning Adult health and social care team Staying Well
86	106/2016	Improve communications with public transport operators to enable them to better plan adjustments to their services and to issue travel warnings.	2016 onwards	Calderdale Metropolitan Borough Council	Environment Agency West Yorkshire Combined Authority
87	111/2016	Work with schools across Calderdale to provide evacuation and invacuation training to support school emergency plans.		Calderdale Metropolitan Borough Council	Environment Agency
88	118/2016	Carry out a questionnaire to find out how many properties are still without flood risk insurance cover and promote Flood Re insurance scheme to qualifying households.	Spring 2020	Calderdale Metropolitan Borough Council	
89	126/2016	Target schools at high risk to raise awareness of flooding with students and staff to develop knowledge and skills and to keep safe during flooding.	Ongoing to September 2020	Environment Agency	Calderdale Metropolitan Borough Council Community Resilience Operations Group

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
Warnings					
90	168/2017	Review delivery of Calderdale Metropolitan Borough Council actions resulting from the Council S19 report (lead local authority requirement following major flood event) on the winter 2015 floods; future S19 reviews will be incorporated into the learning and Council actions resulting from any other Calderdale floods.	Ongoing to May 2020	Calderdale Metropolitan Borough Council	
91	135/2016	Work with Google to use Environment Agency data from the Environment Agency flood warning system to enable greater visibility of flood warnings and to alert those at flood risk based on their location. (National action)	Complete since September 2018 ✓	Environment Agency	Google
92	140/2016	Agreements being developed with mobile phone companies to enable recruitment of customers to the flood warning system through an opt-out approach. (National action)	Complete since September 2018 and also ongoing ✓	Environment Agency	Community Resilience Operations Group O2 Other mobile phone companies
93	147/2016	Explore additional ways to communicate information about roads affected by and impassable due to flood water during incidents, such as real-time mapping.	Ongoing to end of 2020	Calderdale Metropolitan Borough Council	
94	106/2016	Installation of variable message signing at key decision points across Calderdale's major highway network to warn drivers of closures and incidents.	Complete since September 2018 and also ongoing ✓	Calderdale Metropolitan Borough Council	

2019 Action No	Original Ref No/ Year	What we're going to do	When we will do it by	Who's leading	Who's supporting
Recovery					
95	149/2016	Review and communicate how flood recovery grants were allocated in 2015 to 2016. Consider any policy modifications to promote take up.	Spring 2020	Calderdale Metropolitan Borough Council	
96	190/2017	Delivery of mental health support, information and advice to improve health and well-being of Todmorden residents.	Ongoing to 2020	Healthy Minds	Community Foundation for Calderdale
97	134/2018	Development and delivery of mental health support, information and advice to improve health and well-being and resilience of Calder valley residents vulnerable to or affected by flooding.	Ongoing to Spring 2021	Community Foundation for Calderdale	Healthy Minds

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