

STORM DESMOND: 10 YEARS ON

In December 2015, Storm Desmond brought record-breaking rainfall to the North West, flooding towns, homes and businesses. Ten years on, recovery has led to stronger defences, natural flood management, property flood resilience and improved community preparedness.

IMPACTS OF STORM DESMOND

- Record rainfall: Honister Pass 341.4 mm in 24 hrs; Thirlmere 405 mm in 48 hrs, both UK records.
- Worst-hit towns: Carlisle, Kendal, Appleby, Keswick, Glenridding, Cockermouth, Lancaster.
- Properties flooded: Over 5,200 across Cumbria and Lancashire.
- Infrastructure damage: Bridges collapsed, roads washed away, schools and utilities disrupted; 61,000 homes in Lancaster lost power as the substation flooded.
- Estimated cost: £1.3 billion.



FLOOD RISK MANAGEMENT SCHEMES (FRMS)

After Storm Desmond, major flood schemes were developed or improved to protect communities across the North West, helping homes, businesses and infrastructure recover and prepare for future floods.

- **Kendal FRMS:** 6 km of walls and embankments, pumping stations, upstream storage, 4,000 new trees; protects 1,480 homes and 1,150 businesses.
- **Low Crosby (River Eden):** Nature-based scheme reconnecting 185 ha of floodplain, manages risk for 95 properties.
- **Lancaster FRMS (River Lune):** £12.1 million scheme, 2.8 km of new or improved walls and embankments, protecting over 170 homes and businesses directly.
- **Carlisle FRMS (Rivers Eden, Petteril & Caldew):** Investment of £25 million, protection for more than 2,100 homes and businesses in the city.
- **Other FRMS:** Appleby, Keswick, Cockermouth, Glenridding, Staveley.

COMMUNITY RESILIENCE

Since Storm Desmond, communities across the North West have become stronger and better prepared. Over 40 Flood Action Groups now operate in Cumbria, with trained flood wardens, emergency plans and equipment stores. Residents also had access to property flood resilience grants and took part in drills and workshops.

- **Bridge Street Close, Cockermouth:** 14 properties installed flood barriers, sump pumps, and airbricks (£5,000 per property) and developed a community flood plan.
- **Willow Park, Carlisle:** 40 bungalows protected with flood gates, walls, pumps, and non-return valves (£228,000 funding) alongside a community flood plan.
- **Castle Street, Kendal:** Over 200 properties engaged; 56% accessed Flood Resilience Grant funding for flood barriers and self-closing airbricks, forming a Community Flood Action Group.



NATURAL FLOOD MANAGEMENT (NFM)

After Storm Desmond, NFM was used to reduce flood risk by slowing water, storing it upstream, reconnecting floodplains, planting tree and restoring peatlands, helping communities manage future extreme rainfall.

- **Thirlmere Catchment:** Peatland restoration and woodland planting to slow runoff.
- **River Kent and Swindale Beck:** Leaky woody dams and pond storage upstream of Kendal.
- **Cairn Beck:** 8 new leaky dams, modification of 15 earlier leaky dams, 3 new ponds (holding ~116 m³), 1.63 km of hedgerows and 1.7 km of riparian buffer strips.



Birds Park NFM Case Study

After Storm Desmond flooded over 600 properties in Kendal, the disused Birds Park reservoir was transformed into an NFM site in 2020.

Techniques like willow hydro-fences, leaky dams, earth bunds, tree planting and wetland features slow and store water upstream, temporarily holding ~10,000 m³ and reducing downstream flood peaks. The project improves biodiversity, water quality and community resilience and is monitored by Lancaster University to guide future NFM schemes.

PROPERTY FLOOD RESILIENCE (PFR)

Even with major flood schemes, many properties remain at risk. Following Storm Desmond, over 1,100 homes in Cumbria were supported with property flood resilience measures. PFR helps properties withstand flooding, reduce damage and speed up recovery.

Edenside Barn PFR Case Study

- A model property demonstrating PFR in a rural, flood-prone area along the River Eden.
- Retrofit funded by homeowner investment and guidance/support from Cumbria County Council.
- Measures include internal flood barriers, water-resistant plaster and flooring, raised electrics and external landscaping to divert water.
- Used to showcase effective flood resilience techniques for other homeowners in the area.



ENHANCED FLOOD WARNINGS

- After Storm Desmond, flood warning systems were strengthened to keep communities safer. Coverage was expanded to more properties and new river and rainfall sensors were installed, including stations on Glenridding Beck and across the Windermere and Coledale catchments, improving flood forecasting.
- Alerts became faster and more localised, with residents receiving direct messages, supported by guidance, volunteers and community tools to respond quickly.
- Sign-up rates to the Environment Agency Flood Warning Service have increased, meaning more residents now receive timely alerts and can take action sooner.

THE FLOOD HUB

Created in response to Storm Desmond, The Flood Hub provides a trusted, central source of flood information for communities. It offers alerts, guidance, case studies and resources for residents, local authorities and flood action groups. The Flood Hub continues to support communities, helping people prepare for, respond to and recover from flooding.