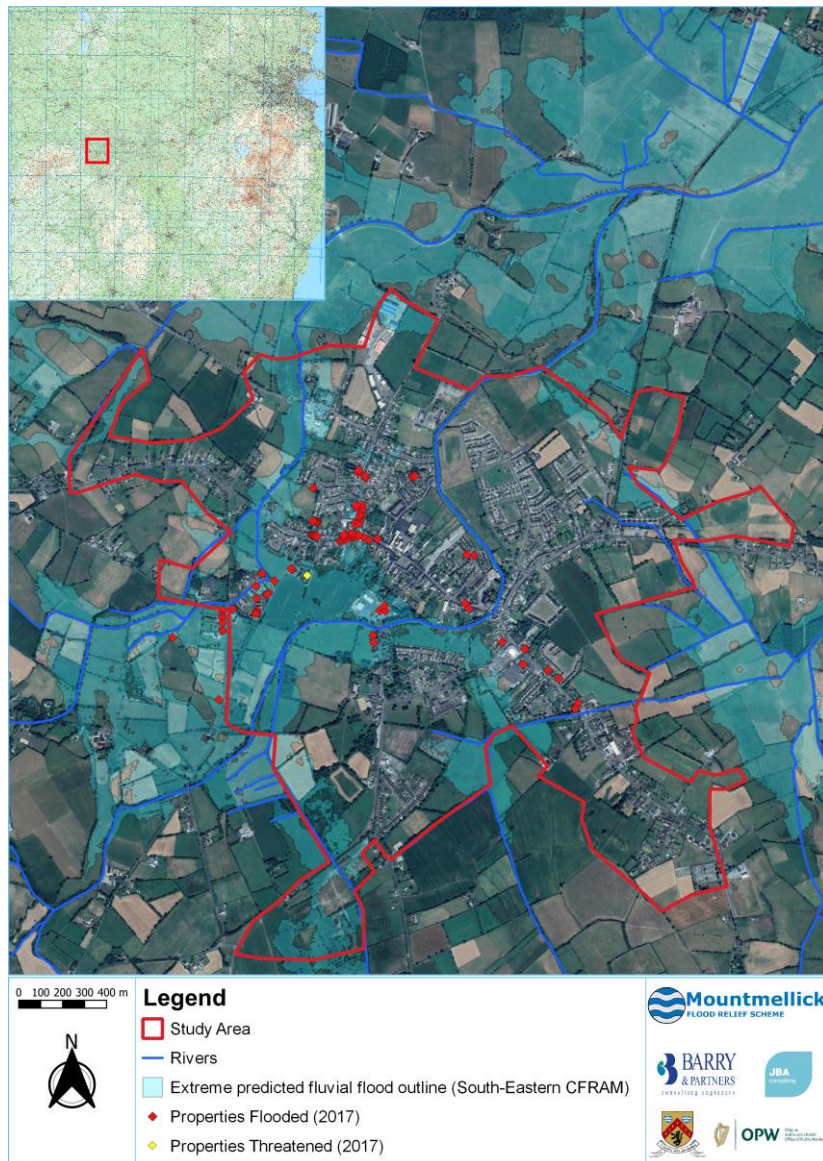


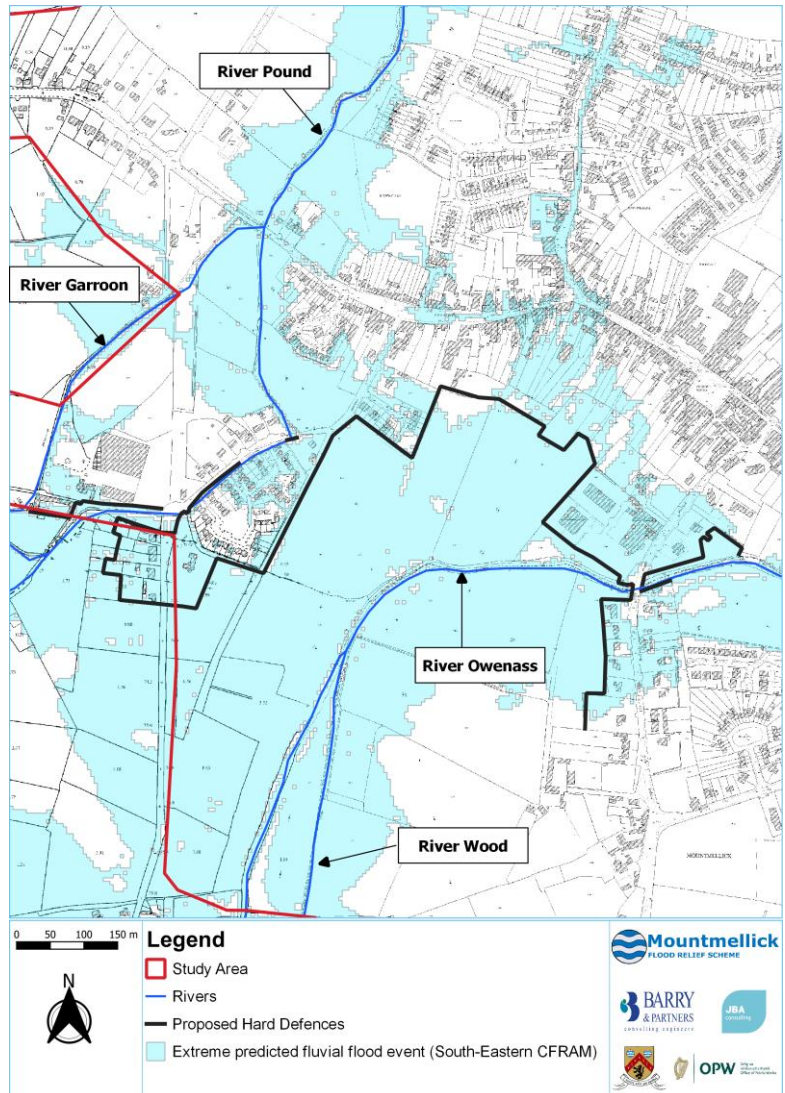
Flood processes in Mountmellick





South-Eastern CFRAM

- The South Eastern Catchment Flood Risk Assessment and Management (CFRAM) study was commissioned by OPW to meet the requirements of the EU Floods Directive, and to deliver on core components of the 2004 National Flood Policy.
- One of the aims of the study was to identify options for managing the flood risks for localised high-risk areas, including Mountmellick.
- The CFRAM Study was completed prior to the November 2017 flooding, so did not recognise the impacts of that flood event.

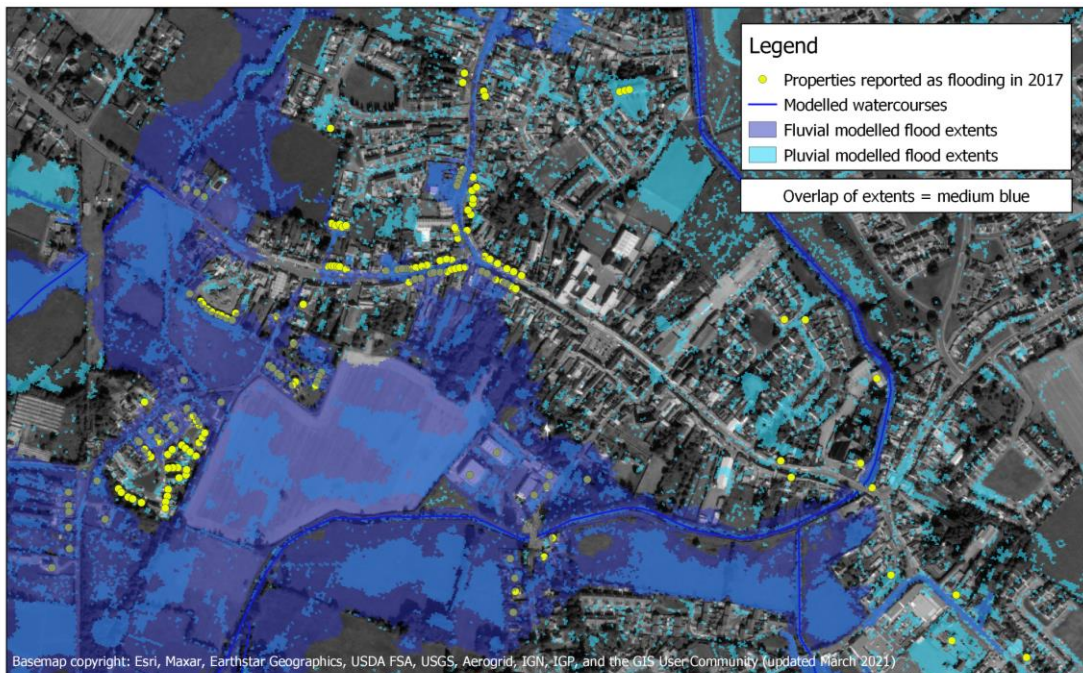


- A key output was the UoM14 Preliminary Options Report which highlighted potential flood management options, the most feasible of which was the hard defences option (e.g. flood walls, embankments and road raising).
- However, it should be noted that the hard defences proposed under the SECFRAM study would not protect all the properties that flooded in 2017, so although a starting point for this scheme, will not be the preferred option.



November 2017 Flood Event

- The flooding followed a period of heavy and intense rainfall that fell in the Slieve Bloom Mountains and flowed into the Owenass and Pound and their tributaries.
- The rivers overflowed their banks onto the flat floodplains in the town causing damage to a reported 89 properties.
- The flood was the largest event on record and was a result of both pluvial and fluvial flooding which impacted different parts of the town, with some areas, such as Manor Road affected mainly by fluvial floods and the Davitt Road area mainly impacted by pluvial flooding.
- There was only one river gauge recording this event, but a lot of anecdotal information and photographs were available to help with our understanding.



Modelled flood extents within Mountmellick town - 0 100 200 300 400 m

November 2017



Mountmellick
FLOOD RELIEF SCHEME



OPW

Oifig na
nOibreacha Poiblí
Office of Public Works

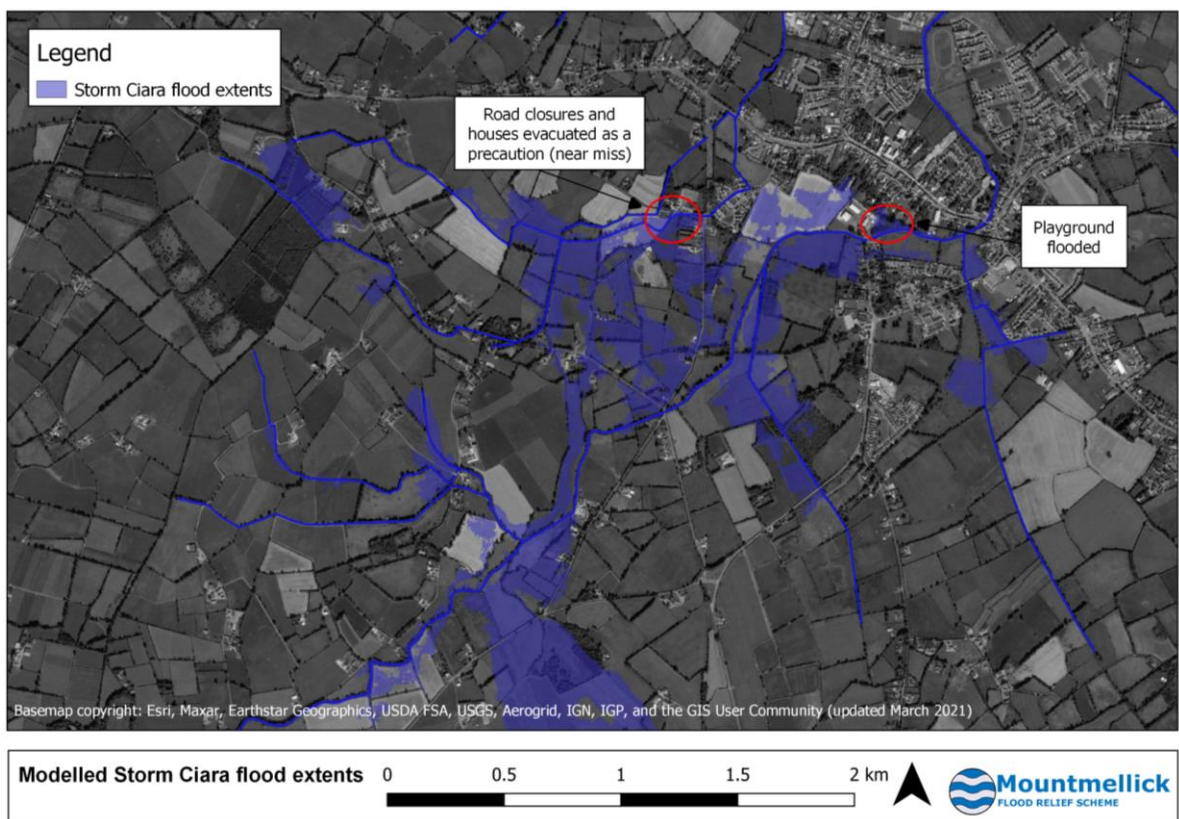


BARRY
& PARTNERS
consulting engineers

February 2020 Flood Events

• Storm Ciara February 2020

- Heavy rain across the catchment resulted in a minor flood event.
- While no properties were reported as flooded there were a number of road closures and near misses reported, along with extensive flooding across fields either side of the Owenass and Pound.
- Cross catchment flow between the Owenass and Pound was observed in this event which is a key flood mechanism and greatly influences the way flooding develops in the upper catchment.
- Three flow gauges recorded this event on the Pound and Owenass and a post flood survey of wrack marks was carried out.

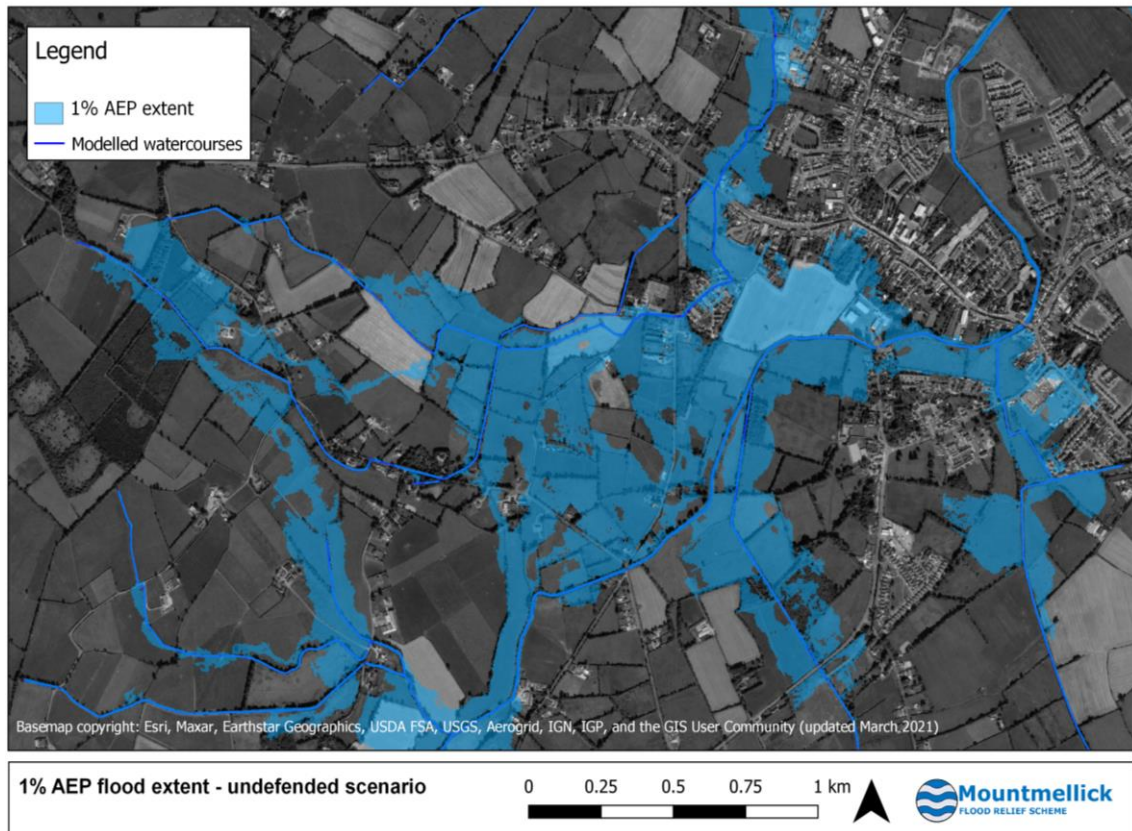


• Storm Dennis February 2020

- Minor in-channel event following heavy rainfall (occurred 1 week after Storm Ciara), also recorded at the three flow gauges.
- No flooding reported but the event has been used to analyse in channel flow behaviour in the computer model.



Key flooding mechanisms

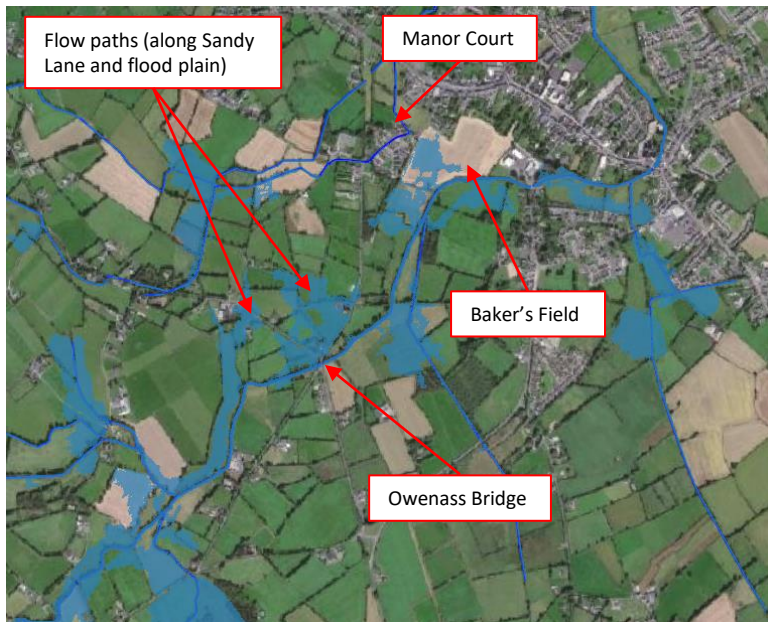


- Widespread fluvial flooding occurs as a result of cross catchment flow between the Owenass and Pound river systems upstream of Mountmellick town.
- In high flow events the Owenass banks are overtopped and the flood waters travel west across the flood plain towards the Pound system.
- The Pound, an already constricted channel due to the presence of multiple structures, becomes overwhelmed by the flow volume. As a result increased out of bank spill occurs upstream of Manor Court.
- The combined flow from the two watercourses that cannot pass down the Pound moves across the flood plain in a south-easterly direction towards Mountmellick town centre and Baker's field which further aggravates the flooding around the Owenass.
- A large proportion of this flow returns to the Pound watercourse downstream of Manor Court passing through Baker's field gate and across the road while some enters back into the Owenass.
- Once the water is out of bank it uses various flow pathways, such as rear gardens, roads (like Manor Road), gateways and lanes to travel north and north-east to the town center and ultimately reconnect with the Owenass and then the Barrow. On its way it passes around and through many residential and commercial properties.



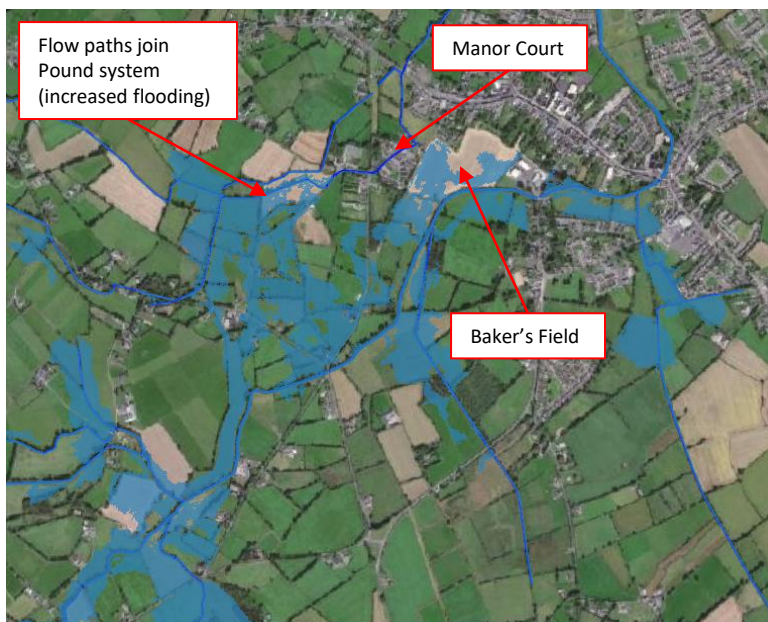
Key flooding mechanisms

- As you will have seen in the introductory presentation, significant cross catchment flow arises between the Owenass and Pound rivers. This was experienced in the 2017 event and was captured on the flow gauges in Storm Ciara. It is also demonstrated in the river model, which is shown in the following time step images.



Start: early onset of flooding

- Initial out of bank spill from the Owenass travels towards the Pound system via key flow paths

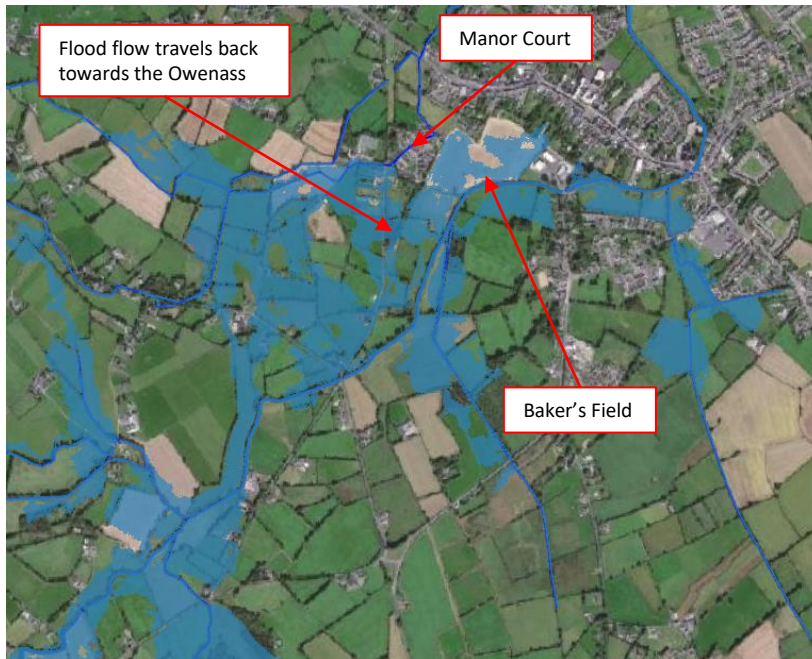


One hour from start

- Flow paths connect and flood waters enter, and overwhelm the Pound

Continued overleaf...

Key flooding mechanisms



2 hours from start

- Pound system becomes overwhelmed excess flow travels across the Derrycloney road and back towards the Owenass River



3 hours from start

- Flow re-enters the Owenass and in turn crosses back into the Pound downstream of Manor Court via the north gate at Baker's Field



Climate change impacts

- Climate change has been examined using the values under the OPW Medium Range and High End Forecast Scenarios (MRFS and HEFS).
- In each case the climate scenarios considers:
 - Predicted increases in rainfall and resulting river flow
 - Predicted increases in urban areas
 - Changes in land use (such as forestry)
- As expected, flood extents and depths increase for Mountmellick in both climate change scenarios further increasing risk to properties, with particularly significant increases downstream of Convent Bridge and in Irish Town at Davitt Road.
- Any scheme developed will need to be adaptable to the changes expected with climate change. All emerging options have been tested for this.

