

## Flooding



*The High Street flooded in 1953*



*All Saints and Chapel Street*

**Following serious flooding of the village in 1951 and 1953, a flood protection scheme was constructed in 1955. Since this time there has been no flooding in East Meon caused by the River Meon.**

As described in the River Meon section, the works involved the creation of a new river channel from The Cross to the western end of Workhouse Lane, which by-passed and shortened the original meandering route along the side of The Cross and through the garden of Cross Keys. It thus prevented heavy flow in very wet periods hitting a wall as the river turned 90 degrees to the right, which had previously caused the river to back up through the middle of the village resulting in flooding.

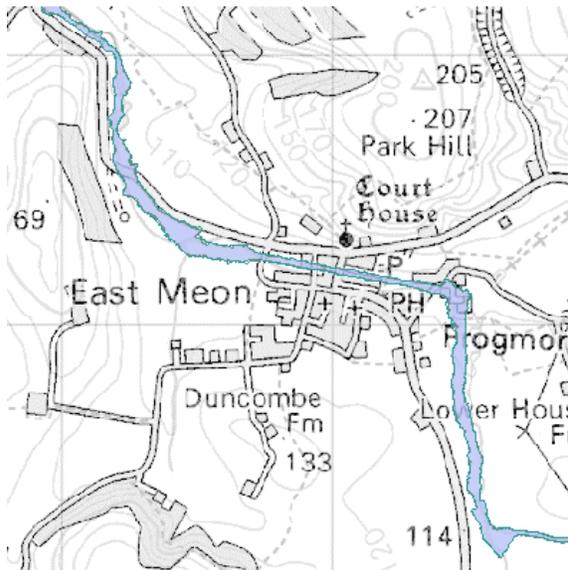
Shortening the river course by 22% through the village section increased the gradient by 28%. The bridges were widened to allow more water to pass beneath, and the river was deepened, widened, lined with masonry and its bed concreted in the stretch through the High Street: all of which allows water to run freely through the village.

Similar improvements were carried out in the stretch through Frogmore, although the wall defences were left breached by the preservation of an ancient ford to a farm that now no longer exists.



## East Meon Parish Plan

The River Meon information sheet, published by the Environment Agency in 2001, records the long previous history of flooding in the Meon valley and describes the river as being the "flashiest" of the Hampshire Chalk streams and rivers. The steep catchment and Middle Chalk causes a higher runoff following rainfall than is usually experienced on chalk streams. These characteristics of the catchment result in heavy rain having a dramatic effect, particularly when preceded by a period of rainfall.



In October 2004 the Environment Agency produced a map showing the potential flood risks facing East Meon (<http://www.maps.environment-agency.gov.uk/wiyby/gazetteer>).

The Agency categorises the Parish as an area with only a low risk 'from flooding by rivers or sea'.

However, the hamlet of Frogmore, to the east of the Village, is described as a high-risk zone.

It is appropriate to set these broad statements into the context of recent years in which April 2000 - March 2001 was the wettest year for 83 years of available records<sup>15</sup>.

## 2000 - 2004

As recorded at the Soberton Pumping Station, the rainfall in the "water year" April 2000 – March 2001 was 1500mm (59"). This exceeded the previous highest of 1200 mm (47") by 25% for the 83 years of available records and has been estimated as having a frequency of occurrence of 1 in 100 years. The rainfall of 1250mm (49") over the winter period, October 2000 – March 2001, was also estimated to be a 1 in 100 years event and was accompanied by incidents of flooding throughout the Meon valley at Frogmore, West Meon, Exton, Meonstoke, etc. In East Meon, records kept at South Farm and in the Village reveal that the rainfall from April 2000 to March 2001 was 2000mm (79").

The Environment Agency commissioned Halcrow, civil engineering consultants, to carry out a flood investigation of 120 locations in Hampshire that were reported to have been affected by flooding, which included an investigation into incidents in East Meon and Frogmore.

<sup>15</sup> The water year is measured from April to March.

A major incident occurred in East Meon on 5<sup>th</sup> November 2000 in which the 1955 flood relief works within the village were tested to the limit. At around 8pm that day the level of the river in the High Street started to rise to reach a peak at about 9.30pm, when the river depth was some 1400mm (4'-6"), but it then receded as the rain ceased at about this time. This photograph shows the state of flow on November 6<sup>th</sup>; the strength of the flow is shown by the 'arrowhead' formation of the water in the centre of the stream.



## Frogmore

There was no flooding in East Meon on that occasion but in Frogmore flooding did occur from surface water running off from Park Hill and Greenway, as well as spring flow from aquifers, as is examined in more detail later in Appendix 2. In reviewing this incident, Halcrow established that the groundwater levels in the preceding summer were the highest on record. The groundwater continued to build up (as measured at a borehole near Meon Hut), and by the afternoon of 5 November the fields to the south of Mill House, in Frogmore, were glistening like a lake. This high groundwater table in the valley also increased the base flow of the river, which was to be seen to be running at a depth of about 600mm (24") through the High Street by the afternoon. At about 2pm heavy rain began to fall and continued unabated for nearly 8 hours to give a total rainfall over the 24hour period for this day of 56mm (2.2"), which is estimated to have an occurrence of 1 in 20 years.

In Frogmore surface water runoff combined with spring flow from overloaded chalk aquifers caused flooding both in the river to the north of the river (*right*) and in the lane to Mill House where water was surging along like "white water"

During a similar event, witnessed on 31 January 2004, the surging water from Mill Lane was seen to divide; some poured into the river to the east of the bridge, whilst the energy of the flow propelled water to overflow the road ramp on the south side of the bridge to enter the river via the old ford.



In taking account of the high water table prior to November 5<sup>th</sup> 2000 and the events of this day, Halcrow estimated a probability of occurrence that was less frequent than 1 in 200 years; a situation in which the flood relief works for the village section of the river had triumphed.<sup>16</sup>

<sup>16</sup> It is reported that the river also ran at a level in the High Street<sup>16</sup> of about 1200mm (48") on 6th November 1990.

## East Meon Parish Plan

In 2001 – 2004 there were far more intense periods of rainfall, but the river flow in the High Street has not been recorded as exceeding 300mm (12 “). In April 2002 – March 2003, the annual rainfall was 1420mm (56”), with a probability of nearly 1 in 100years. This included a three month period of rainfall from November 2002 –January 2003 of 705mm (28”) which was 14% greater than the previous three months leading up to the incident on 5 November 2000.

The type of rainfall also contributes to the accumulation of groundwater. Long steady rainfall raises ground water levels both in the valley and especially where the rainfall is retained in chalk aquifers. Water soaking into the outer chalk layer needs to drain into the next layer before allowing more water to be absorbed into the outer layer, and so on down through the mass of chalk. The process is relatively slow; an intense storm lasting a few hours will not fill an aquifer to the same degree as the same amount of rain over 24 hours.

In the village of East Meon, increases in rainfall have not increased the risk of the river flooding. Whilst this is reassuring to those who live by the river in the village itself, the flooding situation in the hamlet of Frogmore has worsened in recent years, and in 2004 two severe incidents of flooding occurred.

### Frogmore



*Frogmore Cottage & Bridge in the 1920s - both are scenes of today's flooding*

As noted in the introduction to this section, the hamlet of Frogmore to the East of the village is designated by the Environment Agency as a zone at high risk of flooding. The Parish Council has liaised with both the Environment Agency and the Highways Authority and engaged a hydrologist to conduct a report on the situation and propose solutions. David Prichard, a retired Civil Engineer who spent much of his career working in this field, has written a report on flooding in Frogmore and recommendations for alleviating it which are set out in Appendix 3.

## Other Flooding Issues

Houses can suffer in a variety of ways but the problems raised here are not caused by the river. Those with basements which are not adequately lined suffer ingress of groundwater through the walls; the same is true of some with low-standing terraces which collect run-off from gardens and areas of tarmac. These problems are the responsibility neither of the local nor of the environmental authorities.

### **Coombe Road**

Runoff from the field south of Coombe Road still causes problems to some houses – there are sandbags permanently in place at one dwelling; this is despite remedial work carried out two years ago. One householder in Coombe Road has installed a simple low-level brick barrier to his property. This runoff is aggravated by considerable hard standing around the farm buildings at the top of the hill. As a condition of receiving planning permission for the retention of polytunnels for lambing, the farmer has undertaken to construct a drainage system north of the polytunnels, along with tree planting which should alleviate the problem. The Parish Council will be monitoring this problem closely.

### **Sewage Spillage**

In two locations in the village, Corner Cottage by the George Inn and Cross Keys in the Cross, there is a chronic problem in heavy rains with sewers overflowing and discharging raw effluent up through the manhole covers. Sewage then flows into the River Meon and into buildings, gardens and orchards causing a health hazard. Due to the complexity of the various drainage systems which conduct sewage and surface water in and around the village, successive efforts by the Parish Council and residents have been unsuccessful; despite continuous correspondence over more than a decade no effective remedy appears to be in sight. The Chairman of the Parish Council is currently in discussion with the Chief Executive of Southern Water regarding this problem.

## Responsibilities and advice

In 2004 the Parish Council retained the services of a professional hydrologist, who indicated the authorities responsible for different elements in the flooding equation:

- The River Meon is designated as a 'main river' and is therefore in the jurisdiction of the Environment Agency.
- Flooding on highways and bridges is the responsibility of the County Council.
- Tracks and footpaths also appear to be the responsibility of the County Council.
- Land drainage is the responsibility of landowners. In particular, a landowner may not pass on surface water generated by his own actions to landowners across his boundaries or onto the highway.

## Recommendations

The following measures are proposed to overcome the problems in the Village of East Meon:

1. The Parish Council to continue to monitor the effectiveness of drainage above Coombe Road.
2. Commission a professional and independent survey to investigate how the sewage system becomes overloaded during periods of heavy rain and to produce an action plan to address this issue.