

## **BODENHAM PARISH COMMUNITY-LED PLAN**

### **CONTRIBUTION BY THE BODENHAM FLOOD PROTECTION GROUP**

#### **BACKGROUND**

1. On 20 July 2007 severe weather resulted in Bodenham Church and some 40 residential properties in Bodenham Parish being flooded. The great majority of the residences affected were in Bodenham Moor and the flooding there was caused by blocked and inadequate drains and culverts preventing surface water from escaping quickly and easily into the River Lugg. This was compounded by the lack of sandbags and the mal-location of such stocks as were available, together with the unpreparedness of individual householders to cope with an unexpected emergency of this kind. A survey carried out in January/ February 2010 established that the cost of the damage by the flooding on this occasion exceeded £500K. In addition many householders found the value of their properties reduced and were faced with increased insurance premiums and excesses, while some had difficulty in getting any flood insurance cover at all.

2. This was by no means the first occasion on which the Village had suffered from flooding. In 1998 there was flash flooding which was very similar in extent and severity to the 2007 event and as far back as June 1955 there are records of severe flooding in parts of Bodenham. Flooding to the Village can be from either the River Lugg alone, from the small watercourses feeding into the Lugg, or (in the worst, but less likely case) both. It is important to stress that the 1998 and 2007 episodes, in particular, were not caused by fluvial flooding from the River Lugg; the damage was done solely by flash flooding of water running off the nearby hills into watercourses which were inadequate to cope with the resulting flow rate due, in part, to inadequate maintenance.

3. Following the 2007 episode it became apparent that the authorities did not have the resources to offer the Parish as much assistance as required to prevent a recurrence. At its monthly Meeting on 4 February 2008 the Parish Council therefore decided to take the initiative and to form a self-help group capable of carrying out the action necessary to monitor drains and watercourses, to keep them clear of debris and to take other precautions, such as maintaining stocks of sandbags, identifying those residents who, owing to age or infirmity, would need help in an emergency, and establishing contact with the National Flood Forum and with other local organisations.

4. This self-help group, the Bodenham Flood Protection Group (BFPG), was instituted as a sub-committee of the Parish Council and held a first informal meeting on 13 February 2008. After a number of monthly meetings it was formally established on 19 August 2008 and now has its own Constitution, an elected committee representing each area of the Village, and a membership of some 35 volunteers. It is now self-financing through donations and income raised at coffee mornings, quiz nights and similar events and its funds are held within the Parish's account. It meets on the last Tuesday of every month, with the exception of December, and its meetings (which are regularly attended by about 30 members, but are also open to the public) are formally minuted, the Minutes being passed to the Parish Clerk to form part of the Parish's records. A report on the Group's activities is also presented to the Parish Council at each of the latter's monthly meetings.

5. The real work of the Group is, however, carried out at working party sessions during which members gather to carry out such tasks as clearing drains and culverts, removing silt build up

around flap valves, cutting back vegetation encroaching on watercourses, and filling sandbags. These sessions, which are normally attended by at least 12-15 members, are usually held every alternate Friday evening from 6.00 p.m. onwards when daylight allows, *i.e.* between April and October. Sessions are, of course, held at other times, should the need arise.

### **THE PRESENT SITUATION**

6. This work has been - and continues to be - invaluable in helping to prevent flooding in the Village and to prepare the community to cope with any future emergencies. However, it does not, by itself, solve the problem of reducing the risk of flooding in Bodenham. This can only be substantially mitigated in two ways, first, by physical improvement to the main watercourse, the Millcroft Brook, and, second, by periodic major campaigns, on a scale beyond the capacity of the BFPG itself, to clear and, where necessary, re-instate all the local watercourses.

7. Following the 2007 flood the River Lugg Internal Drainage Board (IDB) built a relief channel through the grounds of Millcroft Farm, which, when there is severe weather, allows excess water to bypass the Millcroft Farm culvert, a former choke point in the Millcroft Brook. The IDB also widened the Brook downstream of this culvert to give it greater capacity. These works have subsequently operated very successfully on a number of occasions. They have, however, only provided a partial solution to the flood risk problem.

### **REPLACEMENT OF THE KETCH LANE CULVERTS.**

8. In late 2008 the Group therefore asked a local hydrologist, Mr Rod Hawnt, to advise on what other measures should be taken. In January 2009 he reported that the twin culverts carrying the Millcroft Brook under the road at the junction of Millcroft Road with Ketch Lane are too small to carry the capacity of the channel upstream even in normal circumstances, *i.e.* even when the Millcroft Farm relief channel is not operating. He added that the small diameter of the Millcroft Road/ Ketch Lane culverts means that they are prone to becoming blocked by large items of debris carried down the Brook, thus increasing the flood risk upstream. He recommended that the twin culverts should be replaced by “a new culvert, or bridge, to increase the discharge capacity under Ketch Lane, up to a design standard of a 1 in 100 year flood event.”<sup>(1)</sup>

9. A year later, in January 2010, Herefordshire Council commissioned another consultant hydrologist, Mr Brian Faulkner, to carry out studies of flood risks across the County and to make recommendations on how these might be alleviated. He submitted his Report in April 2010 and extracts relating to Bodenham were made available to the Parish Council in January 2011. In these he assesses that the 2007 flood was “statistically between a 3.3% to 2% Annual Equivalent Probability (AEP) event, (1 in 30 to 1 [in] 50 probability) ...”<sup>(2)</sup> and that: “Based on observed flooding depths for the July 2007 event and depths for the 1% AEP derived from rudimentary estimates, the residential Average Annual Flood Damage (AAD) for Bodenham is at least £41,000 per year or £777,000 over 30 years”<sup>(3)</sup> at present values (PV). As the Report makes clear this does

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1. Notes on Hydraulic Performance of Millcroft Brook on 13<sup>th</sup> December 2008 by Rod Hawnt, Consultant Hydrologist, dated January 2009.
  2. Herefordshire Flood Alleviation Strategy - Preliminary Assessment Report dated April 2010, Paragraph 4.3.2, Lines 10-11.
  3. *Ibid.*, Paragraph 4.3.3, Lines 2-4.

not include any allowance for losses in the value of properties <sup>(4)</sup> or for “Intangible residential flood damage costs (such as trauma, relocation costs and loss of earnings ...” or for “Costs of traffic disruption, emergency services and agricultural impacts ...” <sup>(5)</sup>

10. The Report goes on to say that “Because of the apparent magnitude of peak flows, even with the watercourse [*i.e.* the Millcroft Brook] in its improved condition, it is likely that Bodenham will flood significantly again in the coming years.” <sup>(6)</sup> Mr Faulkner’s view is therefore that: “The option to Do Nothing is ... an unlikely alternative.” <sup>(7)</sup> and he goes on to set out four possible schemes or options.

11. In the first of these he effectively supports Mr Hawnt’s earlier assessment by saying that: “Subject to detailed hydraulic analysis, we are of the view that replacement of the existing twin culvert at [the Millcroft Road/ Ketch Lane junction] might be a valuable ‘quick fix’. The structure is evidently prone to complete blockage, its alignment is poor, and it has the potential to elevate the backwater by at least 0.6m once water level reaches the road. .... We have assumed that a box culvert of 15m length, 3.0m (w) x 1.2m (h) would be sufficient. The alignment under the road [also] needs altering to provide a cleaner aspect ratio.” <sup>(8)</sup> The Report assesses the cost of such a culvert as £130K <sup>(9)</sup>, but is cautious about precisely how many properties would benefit from such a scheme on the grounds that: “A detailed design check is required to assess how far the backwater [from the existing twin culverts] persists upstream.” <sup>(10)</sup> However, given the installation of the proposed box culvert “the AAD reduces from £41K to £30K per year, and saves some £200K of flood damage over a 30 year scheme life.” <sup>(11)</sup>

12. This issue has been given some added urgency by the recent <sup>(12)</sup> collapse of a section of the Brook’s wall at the Ketch Lane junction, apparently caused by vibrations from the heavy agricultural and commercial traffic using the junction combined with the effects of water ingress and frost. The collapsed section is only a few feet upstream of the older of the two culverts under the junction and the intervening wall is already showing serious signs of cracking. Since the wall and the culvert appear to have been constructed at the same time, the state of the culvert itself must also be called into question. Should it collapse, a very serious situation would be created.

## **REGULAR MAINTENANCE OF WATERCOURSES**

13. In his Report Mr Faulkner turns next to the need for regular maintenance and de-silting of the Millcroft Brook from the River Lugg up to Brockington Road. He draws attention to the need for the “heavy clearance of the watercourse” at 5 yearly intervals and recommends that “Herefordshire Council or its Agents regularly inspect this reach” <sup>(13)</sup> In his definition of the required five yearly maintenance he includes not only “de-silting of all culverts, channel silt

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4. *Ibid.*, Paragraph 4.3.3, Lines 12-19.
  5. *Ibid.*, Paragraph 4.3.3, Last 5 lines.
  6. *Ibid.*, Paragraph 4.3.4, Scheme 0, Lines 4-6.
  7. *Ibid.*, Paragraph 4.3.4, Scheme 0, Line 2.
  8. *Ibid.*, Paragraph 4.3.4, Scheme 1, Lines 2-5 and 20-22.
  9. *Ibid.*, Table 4-3, Scheme Option 1, Scheme PV Cost.
  10. *Ibid.*, Paragraph 4.3.4, Scheme 1, Lines 10-11.
  11. *Ibid.*, Paragraph 4.3.4, Scheme 1, Lines 23-24.
  12. 8 January 2011.
  13. *Op. cit.*, Paragraph 4.3.4, Scheme 2, Lines 4-9.

removal, [and] gully jetting”, but also “riparian enforcement”<sup>(14)</sup>, all of which tasks are beyond the capabilities of the BFPG and all of which, the BFPG would argue, Herefordshire Council have signally failed to carry out in recent years.

14. Mr Faulkner combines this work with the installation of the Ketch Lane box culvert as the second of his four possible schemes or options and assesses that “this channel maintenance would typically reduce flood depths against all properties on both sides of the watercourse by 0.1m for all events ... up to and including a 2% AEP (1 in 50) event ... Annual Average Damage after this scheme reduces [from £41,000] to £28,000 per year. The flood damage avoided amounts to £246 K over a 30 year period.”<sup>(15)</sup>

15. The BFPG fully supports Mr Faulkner’s assessment of the importance of such maintenance work. Indeed, the Group would go further. It believes that such work is essential not simply to cope with the peak flows occurring in flash flooding, but also in periods of more prolonged and widespread, but less intense, rainfall. This is because the small watercourses respond more quickly than larger ones, and therefore can allow the bulk of any local rainfall to drain away into the River Lugg quickly before the latter’s level rises significantly with water from the Welsh hills.

16. In his other two possible options Mr Faulkner suggests that, in addition to installing the Ketch Lane box culvert and instituting the regular watercourse maintenance regime, the risk of flooding could be further alleviated by constructing an upstream attenuation reservoir which would help to reduce the flow rate at the Brockington Road bridge. The cost of such a reservoir would, however, be nearly £1M, or more depending on its size, and the BFPG recognises that such a scheme is not attainable in the present financial climate.

### **PROPERTY-LEVEL FLOOD PROTECTION**

17. On 22 February 2011 Mr Martin Jackson attended the BFPG’s monthly Meeting and updated members on Herefordshire Council’s work on flood protection matters, and Mr Faulkner’s Report in particular. He stressed that the Report was merely the first stage in the process of identifying where flooding risks lay in Herefordshire. Much more detail would have to be developed and therefore, although he could not be precise about the timescale, he thought that no significant decisions on flood mitigation were likely for anything up to two years.

18. He went on to say that the Faulkner Report reinforced his own thoughts that the usual engineering approach to flood alleviation was not the appropriate way forward for Bodenham because it would not produce significant benefits. His view was that there was a need to start considering more carefully how to protect property and people in the Village. The work which the BFPG was carrying out was, he said, one of the best means of reducing flood risks. However, at Cross Keys about 20 properties had now been fitted with individual property-level protection and one possibility was to see whether or not such an approach would be suitable in Bodenham as well.

19. Shortly after Mr Jackson’s visit it became clear that Government policy was moving away from community-level flood defence schemes. Instead, the Environment Agency announced that it was making some £2.3 million available in 2011-12 to deliver a country-wide programme of

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14. *Ibid.*, Table 4-3, Scheme Option 2, Design Details.

15. *Ibid.*, Paragraph 4.3.4, Scheme 2, Lines 12-18.

individual household flood protection measures targetted on areas where properties are at a high risk of flooding. The funding is to be spent on products for individual properties, such as flood barriers for doors and covers for airbricks, which help to minimise the damage caused by flood water entering properties and reduce the length of time needed to repair a building and its contents.

20. With the help of information supplied by the BFPG, Herefordshire Council submitted a bid for some of this funding to be allocated to Bodenham and on 12<sup>th</sup> May 2011 the Environment Agency announced that this bid had been successful and that some £144,500 is to be allocated to help protect over 30 properties in the Parish. Work on implementing this is now (late July 2011) well in hand.

### **THE BFPG'S RECOMMENDATIONS**

21. The Group is extremely grateful for the property-level flood protection funding which Bodenham is receiving and recognises that the grant will go a considerable way towards protecting the most vulnerable people and houses in the Village from the worst aspects of future flooding. The grant will not, however, reduce the actual risk of such flooding occurring, nor will it prevent gardens, garages and outbuildings being flooded, even on those properties which benefit from the grant. Such risk reduction can only be achieved by an engineering solution which protects the community as a whole. The Group therefore continues to believe most strongly that:

a. The replacement of the Ketch Lane culverts with a box culvert, which has now been recommended by two separate, independent and professional hydrological reports, is essential. By ensuring that flash flooding is carried away to the River Lugg as quickly and efficiently as possible, it is the single project with the capacity to significantly reduce the flood risk to a substantial section of the Village.

b. Herefordshire Council must fulfil its obligation to carry out the regular and complete maintenance of drains, culverts and watercourses across the Parish, and not just in and around the Millcroft Brook. While the Group will continue to do what it can to assist, much of this work is beyond the physical and/or technical capability of its members. Furthermore, neither the Group, nor indeed the Parish Council, have the authority necessary to compel riparian landowners to meet their legal obligations. The failure of Herefordshire Council in this regard was a major contributory factor in the 2007 flooding in Orchard Close and the July 2007 episode also exposed concerns that certain residents were reducing the effectiveness of Millcroft Brook, either by extending their gardens into it, or by failing to maintain their sections of it, or both.

22. The BFPG therefore strongly recommends that both the Ketch Lane box culvert project and the requirement for Herefordshire Council to carry out regular and full maintenance of drains, culverts and watercourses across Bodenham should be given high priority in the Bodenham Community-Led Plan.