

## Report on Flooding in Frogmore by David Prichard



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Spring flow, which happens when the chalk aquifers become saturated, adds considerably to these floodwaters and Frogmore Lane then effectively acts as a river, with high banks and an impervious bed on a downward gradient, conducting the combined floodwaters into Frogmore.

The water then floods from Gravel Lane into Frogmore Lane; the tarmac road from Oxenbourne also conducts water from Greenway and the combined floodwaters then surge into Frogmore as a river (*right*).

To this accumulated flow surging into Frogmore is added runoff flowing down the path from the field to the north of Frogmore that exits adjacent to Bottle Ale Cottages (*below*).



## East Meon Parish Plan



To cater for this vast accumulated flow from Park Hill to the north and from Greenway and beyond to the east, conventional road gullies and aquakerbs have been installed.

Aquakerbs (*below, left and right – in partial flood by Frogmore Cottage*) depend on public-spirited local people wading through floodwater to lift the flaps (*Seen on right*).

For public safety these flaps cannot be left raised over night, in case people fall down them, so their function is impeded during storms at night.



Because it isn't adequately dispersed, floodwater can build up in times of intense rainfall to a depth of about 600mm (24") in the heart of Frogmore.

On 5<sup>th</sup> November 2000, the flood was 700mm (28") in depth and entered Frogmore cottage. At their peak the floodwaters pour as a torrent into the brick relief channel near Bridge Cottage; the yard area of this cottage is also flooded (*below*) in times of high floodwater.



*(Below, Frogmore Cottage front step inundated in February 2004)*



Such flooding happened twice in 2004. The volume of flow during a similar flood in January 2003 was estimated at one stage to be in the order of 100 gallons/second, flowing at a speed of 3 feet/second. At this speed a young child falling into 24" of floodwater outside Frogmore Cottage could be swept away into the river in about 30 seconds - a matter of extreme concern to its occupants who have two young children.

There is a ramp leading up to the crown of the bridge over the River Meon in the centre of Frogmore which prevents floodwater draining. Tinkering with road gullies is not an adequate solution to the problem especially as they are quickly blocked by debris scoured from the banks of the lane. Debris also blocks the road gullies; after one heavy storm during the night of 20/21 October 2004 all the gullies in Frogmore Lane were blocked with debris.

Such situations increase flow via the lane surface into Frogmore, nullifying the drain that serves the gullies in the lane. Further, silt and stones and even small rocks are flushed in. The District Council is often reluctant to clear up this mess so the debris has to be cleared by the residents, who deposit it into the river. The debris is then borne by the river and deposited on the river bed along the High Street section, where islands are forming as a result.

*(Right, clearing the drains in partial flood spate)*



## **Flood Relief Proposals**

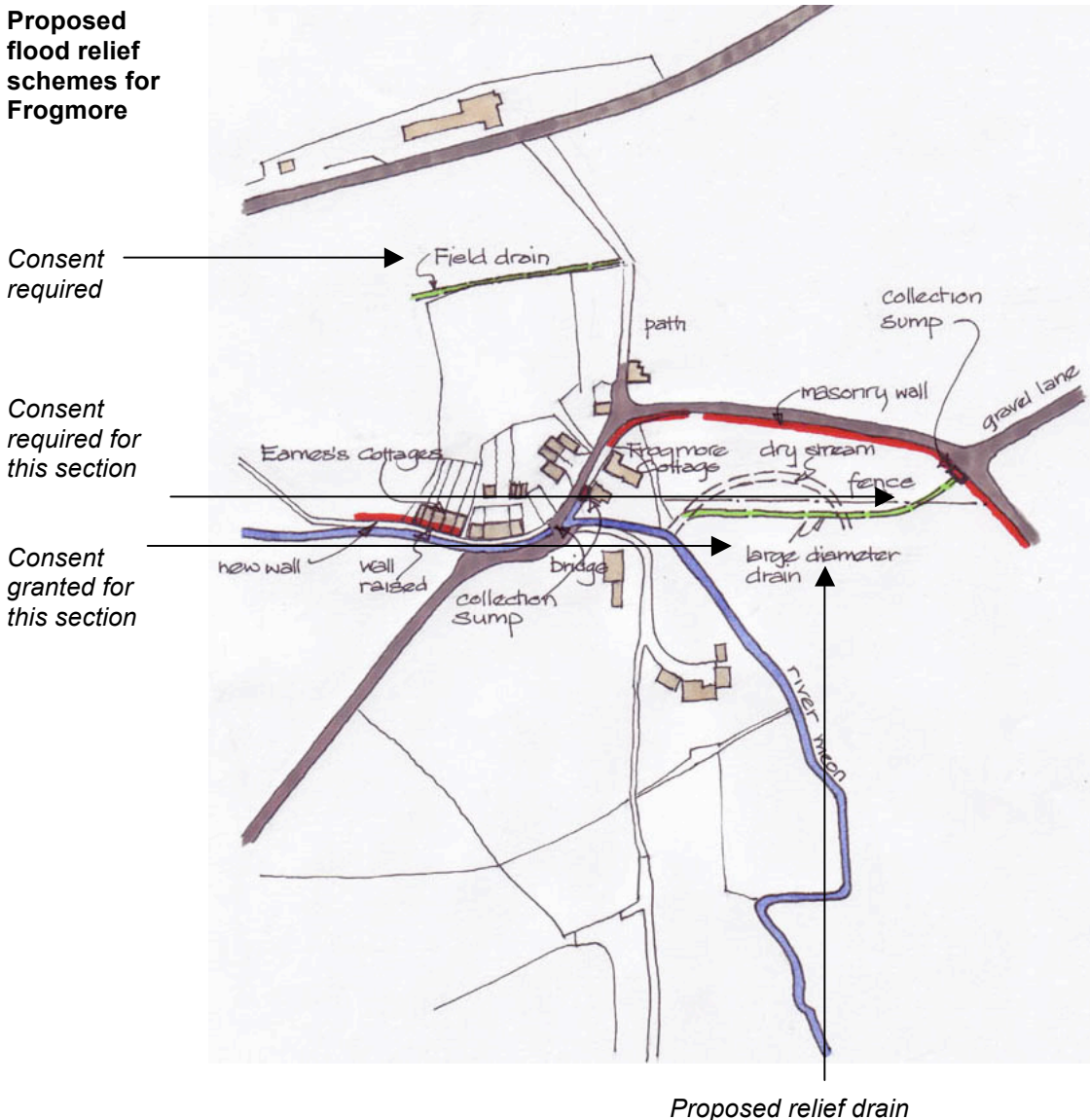
The fast flowing floodwaters pose a serious risk to young children and elderly people and it is urgent that the volume of floodwater flowing into the hamlet be reduced, either by lowering the road so that there is a constant gradient from the entry point of Frogmore Lane to the relief channel by the bridge, or by a flood relief scheme, as proposed in the map on the next page. The diameter of the pipe is both a function of the flow and of the gradient, but the latter cannot be determined until a level survey has been carried out.

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Further problems were reported on 5<sup>th</sup> November 2000 at Eames's Cottages, a terrace of brick-built houses by the river. The threshold of the front doors of Numbers 1 & 2 is 4" below the top of the wall which flanks the river but just west of the cottage the brickwork is reduced in height by 15" and further west the brick wall is totally breached by a ford. It appears that water flowed along the path from these breaches and entered No 1 Eames's Cottages at which point the water level in the river would have been only just 4" below the top of the wall.

To reduce the risk of such flooding, the wall could be extended westwards to seal the breaches as the farm that this ford served no longer exists. It would be prudent to add two additional courses of brickwork to the whole length of the wall to provide a greater margin of protection.

### Proposed flood relief schemes for Frogmore



In the early part of the last century a ditch outside Frogmore Cottage drained floodwaters. Another option, therefore, would be to replicate this approach by constructing a lined channel from the ramp access into the field on the southern side of Frogmore Lane to the signpost by the stile in the hamlet. This could then connect to the drain that runs under the pavement in front of Frogmore Cottage. The channel would need to be supplied with a suitable metal grill over. A channel 900cm (36") wide by 600 cm (24") deep should cater for the flow of 100gallons/second.

It is also important to prevent the scouring of the banks of Frogmore Lane resulting in debris being swept into Frogmore and impeding the drainage system there, as well as blocking all the gullies in this lane. This can be achieved either by the construction of a masonry wall or by a proprietary protective system. This protection should be carried out on the southern side of Frogmore Lane to the junction with Greenway, along which length the scouring is significant.

## **Recommendations for tackling flooding in Frogmore**

1. Implement a level survey of Frogmore on both sides of the river, Frogmore Lane and the fields to the south of the lane up to the southern bank of the river to include levels of the riverbed.
3. Investigate with the HCC Highways Department whether the road in front of Bridge Cottage can be lowered to allow floodwaters to drain into brick lined channel without building up as flood in the hamlet.
4. Consult with the Environment Agency and investigate a flood relief scheme in the field behind Frogmore Cottage and Bridge Cottage, as a means of significantly reducing the volume of floodwater that currently flows into the hamlet.
5. Construct a low level wall, or other form of protection, from Frogmore to Greenway to protect the southern bank of Frogmore Lane from scouring.
6. Implement a scheme to alleviate the flooding and the influx of debris from the banks of Frogmore Lane into the hamlet, based upon the above investigations, as matter of urgency in the light of the current risks to people and property.
7. The local authority to implement a vigorous, consistent and timely service to clear the road gullies in Frogmore Lane and Frogmore after every major storm in the winter months, including clearing the drains when blocked.
8. Monitor runoff down the path, which exits near Bottle Ale cottages, during heavy rainfall to establish whether it is necessary to install a land drain along the southern edge of the field above to restrict runoff from this field from flowing down the path into Frogmore.

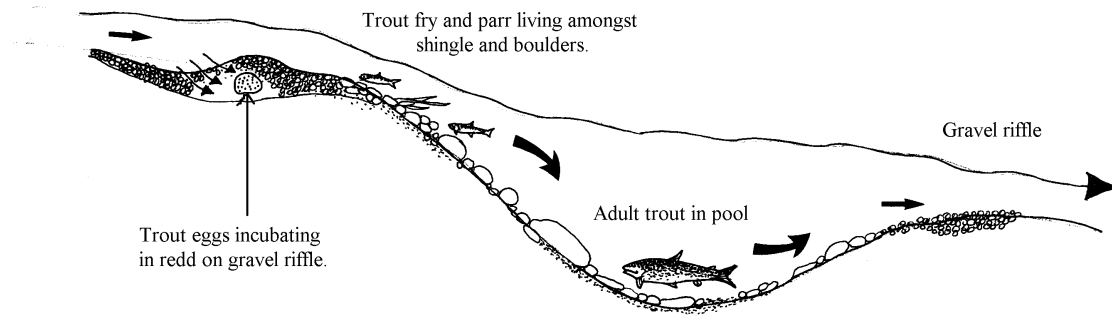
## Appendix 2. Extracts from report by Dr Giles of the Wild Trout Trust

Dr Giles noted that downstream of the village (Drayton/Riplington) “the fields are used for sheep pasture, the general physical habitat quality of the river is good, with natural sequences of gravel shallows (riffles), pools and glides. More immediately, below the village beyond the car park, where arable cultivation takes place, the river has been dredged and straightened and would benefit from added physical features such as gravel shallows, modest pools and added cover (small boulders) for wild brown trout. The removal of overhanging trees will allow in more light to enable weed to grow within the river. The same is true where the river retains a natural bed through the allotment area between the sections of the river through Frogmore and East Meon where the river bed has been concreted and the sides have been lined with brickwork, both measures being introduced in the 1950’s to enhance the flow characteristics. Timber obtained whilst cutting-back over-hanging trees could be used to create better in-stream habitats (eg physical cover and current-deflectors). This in-stream work, which requires prior Environment Agency consent, must be very carefully designed so as to pose no increased risk of flooding. This means that the work needs to be carefully managed so as not to impede or impound flows and to enlarge, rather than decrease the channel volume. In carrying out such work in the allotment area, the pruning of the trees would reduce the risk of either branches, or even whole trees, breaking away and causing blockages against the bridges in the High Street. Moreover with the cross-sectional area of the allotment stretch of the river being greater than that through the bridges, which are the pinch-points in the system, minor changes to the river should not create a critical situation in times of high river flow.”

Dr Giles comments on the river as it passes through the middle of the Village. “Where the stream has been concreted and walled through the village, as part of a former flood defence scheme, the habitat quality for trout and other wildlife is abysmally poor. In the event one day of any re-building of this artificial channel, there would be great scope for habitat improvement so as to create a series of gravel shallows and small pools, marginal stands of aquatic vegetation and submerged weed beds. All of this could be done sympathetically whilst retaining the essential flood capacity of a re-built channel. However, work just to deliver this is unlikely to be economically feasible.”

“The wild trout stock is being adversely affected by a riverbed, which is silty and compacted, providing a poor environment for incubating fish eggs. This can be helped by a thorough water-jetting of suitable areas of gravel early each autumn, before the trout spawn in early winter. These cleaned areas will also be of value to bullheads and lampreys, which spawn in the spring. Fly life will also be boosted by the opening-up of the formerly clogged riverbed, which will be re-colonised by a wide range of aquatic invertebrates. Larger flints uncovered during the water-jetting will be used by bullheads for breeding and cover and by trout fry for cover. Sediments disturbed during the jetting process will re-deposit downstream in areas such as inner bends where they will produce habitats for various burrowing invertebrates (eg *Ephemera* mayfly nymphs) and for lamprey larvae.”

## East Meon Parish Plan



“The lack of light reaching the river and stream bed along much of the stretch walked has a number of important knock-on effects:

- Bank side grasses are shaded-out, producing erosion of banks, which are no longer bound by grass roots.
- Silt washed in from the banks is added to by large amounts of dead leaves falling from the trees each autumn – this can lead to silting of the channel.
- Aquatic plants including marginal rushes and reeds, in-stream weed beds and algae coating stone surfaces are all strongly suppressed.
- This lack of underwater plant growth leads directly to little food for aquatic invertebrates and diminished insect and other invertebrate populations.
- Few invertebrates mean that there is little food for wild brown trout and other fish (bullheads, stone loach).”

### Tree work

Dr Giles concludes: “What is required to reverse the various adverse situations is a strategic tree-pruning plan, implemented as funds permit. First, the tree boughs keeping light out of key areas of river channel must be identified and marked clearly. Then they should be cut back, ideally after the sap has dropped in autumn. By taking out over-shading boughs each year, gradually, the stream will become better lit and productivity will increase. An additional benefit is that top-heavy trees will be much less likely to be bowled over by winter gales, ripping-out sections of bank with their roots in the process.”

“All of the above tree works can be carried-out without any official permissions, provided that there are no Tree Preservation Orders (TPOs) currently in operation, the Local Council can advise.” The permission of landowners would, of course, be needed, including the Parish Council which owns the allotments.

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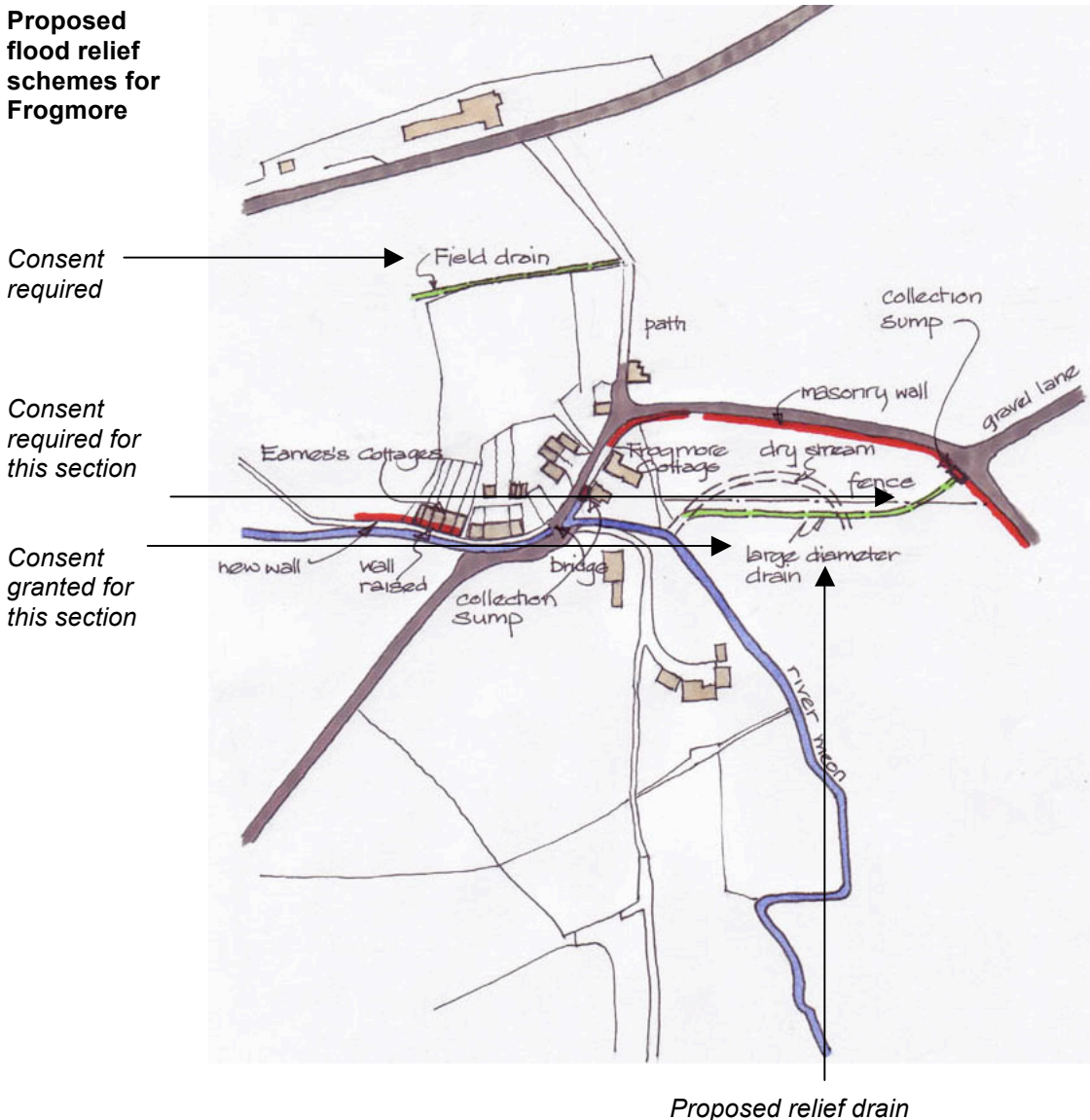
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