

Preliminary report with respect to flood risks at Curbridge, Hampshire

By Anthony C. Blewett C.Eng., M.I.C.E.

1. INTRODUCTION

This assessment has been prepared at the request of and for the Curbridge Preservation Society. When approached by the Society I was aware that the area around the "Horse and Jockey Public House" at Curbridge, adjacent to the Whitely Stream was extremely vulnerable to flooding, since I had investigated the problems of a flood event in the mid 1980's when top flood water level reached the Cottage No.17 but fortunately did not go above floor level. This was the first significant rainfall event occurring around high tide time shortly after the Whitely Business Park development was largely constructed. Since this time there has been an increase in the area of hard surfaced roof and ground areas which generate much higher peak runoff flows. It is very doubtful if these are properly attenuated by flood storage. At that time there were no records of any previous event when the water level had reached this level at Curbridge.

2. INVESTIGATION OF MID 1980's EVENT

This investigation revealed that the event was caused by very high fluvial flows from Whitely as well as in the Hamble, it was never proved that the Whitely Balancing Lakes had worked as designed. This fluvial flow combined with a higher water level than predicted in the tidal River Hamble driven both by low pressure and strong winds caused the water surface levels (the hydraulic gradient) of the tidal section of Curbridge Creek and the Whitely Stream water levels to be extremely high. This caused the water to reach house No17.

The combination of low barometric pressure and strong south westerly winds are not INDEPENDENT variables but linked. For every 10millibars of low pressure water level is raised by 100mm (4inches). Additionally, the south westerly wind draws the water surface levels upwards in the River Hamble . In any estuary the energy due to the tidal velocity has to be converted into a rise in height of water to stop the forward velocity. The amount of this rise is reduced once the ebb tide starts to lower the downstream water level. Unfortunately due to the double high water experienced in the Solent the water level stays fairly high for over four hours. The probability of high fluvial flow, low barometric pressure, strong winds and a high tide is not insignificant. The first three are all dependent variables, due to the nature of weather systems and tide is the only independent one.

Without access to the flood risk assessment it is not possible to see if these three events are being treated as independent variables or as a combined one. If treated as separate events the assessment will significantly under estimate volumes of flood water and tidal height to discharge against and therefore the risk of flooding houses at Curbridge. I understand that the Environment Agency still do not consider these three as dependent variables.

Appendix v

3. TIDAL HISTORY

The port of Southampton has recorded tidal levels for many years. In November 1924 a level of 5.6 metres above Chart Datum was recorded and a similar level was not reached until Christmas and Boxing Days 1999. These two tides were 0.6 metres above prediction. However on 10th March 2008 the tide in the River Hamble at Swanwick reached the same high water levels but the prediction had only been for a 4.7metre tide, that is it was 0.9metre above prediction, and it lasted for several hours. The barometric pressure had been 964 millibars and the wind Southerly force 5 but the wind had been gusting upto 60knots at 0700, five and a half hours before highwater.

I am not aware of there being any tidal or flow gauges at Curbridge or Botley and high tidal water levels are only occasionally recorded by individuals or the scum line noted from flood events. The ground levels by cottage No.17 are only about 3metres above Ordnance Datum Newlyn,(2.74metres above Chart Datum) which means that a combined tidal and fluvial water level of 5.74 metres above Chart Datum will cause flooding of the properties near to the bridge at Curbridge.

4. FREQUENCY OF TIDES SIGNIFICANTLY ABOVE PREDICTION AT HIGH WATER

I note that on 27th February 2009 the tide was above prediction by 0.6 metres (4.4m predicted, 5.0m actual) at 0900, wind SW force 6-7, barometer 994mb. Again 13th November 2009 the tide was above prediction by 0.8 metres (4.3m predicted, 5.1m actual), wind SW force 8, barometer 991mb. On the 14th November 2009 the tide was above prediction by 0.7 metres (4.5m predicted, 5.2m actual), wind SW force 7, barometer 991mb. This is a small sample of tides observed from records to be significantly above prediction within the last 5years.

5. HIGHER TIDAL PREDICTIONS and RISING SEA LEVELS

Within the next five years there are predictions for the tide to exceed the Highest Astronomical Tide (HAT) levels for about seven periods by upto 0.13metres. On these tides even very modest fluvial flow down the Whitely Stream will cause flooding due to tide locking in Curbridge Creek if there is even moderately low pressure and/ or strong winds with a southerly component.

The Environment Agency are predicting that sea levels may rise by one metre in the next hundred years. At this level a large part of Curbridge will be at risk of being flooded including the A3051 which would become a tidal road. There may be an economic and political case now for relocating to higher ground several of the dwellings which are most at risk of flooding within the hamlet, probably further south but retaining its character. Could this possibly be funded by the proposed development? This cost could probably be met by the financial savings of not having to construct attenuating surface water storage for the proposed development. It would remove the flood risk vulnerable dwellings within the hamlet of Curbridge, allowing their owners to build replacements in a much safer place in terms of flood risk. The biggest stumbling blocks to this proposal would be the Winchester City Planning Department and the willingness of land owners to sell suitable parcels of land to achieve this short distance transplantation of some residents within the hamlet.

Appendix v

6. FLOOD AND WATER MANAGEMENT ACT

Hampshire County Council, Winchester City Council and the Environment Agency all have various statutory powers and duties which they should undertake to meet the requirements of this act as well as various other acts relating to drainage and flood risks.

Without all the reports into the drainage of the proposed development being released to Curdrige Parish Council and the general public there has to be a strong suspicion that are serious unresolved issues on and off the development site with respect to flood risks. Therefore any consideration of development should be deferred until a satisfactory solution is found and made public.

Without this information I can make no comment on the adequacy of any of the drainage and flood risks related to this development proposal, particularly off site at Curbridge. Taking the precautionary principle all the drainage proposals should be modelled using existing rainfall records but also tested with more extreme rainfall events, which seem likely to arise in future due to the way the general climate appears to be changing.

7. SITE OF SPECIAL SCIENTIFIC INTEREST, RAMSAR SITES & OTHER DESIGNATED HABITATS

I am making no comments on the likely effects on the botany and zoology of these habitats should this development be carried out. It is most likely that there will be some, if not major effects on the river Hamble and the surrounding designated habitats.

This assessment has been prepared for the Curbridge Preservation Society into the flood risks in the area adjacent to the tidal Curbridge Creek and Whitely Stream near the "Horse and Jockey public house". It has been produced "pro bono and without liability" for the information contained or implied therein.

A.C.Blewett, C.Eng, M.I.C.E.

11/10/2012