



Eye & Dunsden Parish

Neighbourhood Plan



Appendix VIII

Flooding in Sonning Eye

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A report prepared by Nick Marks, June 2022

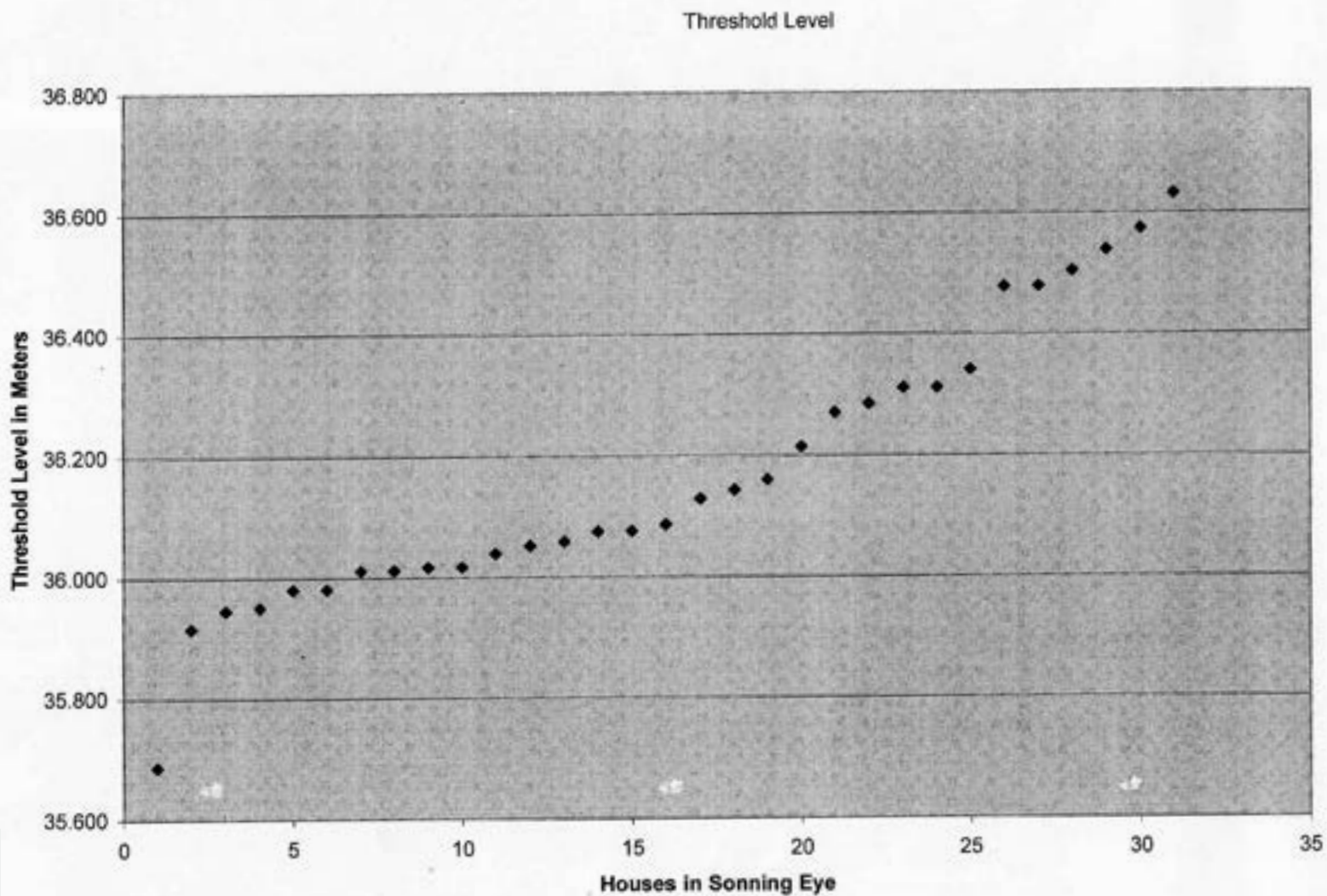
Context

1. The hamlet of Sonning Eye lies adjacent to the River Thames with a lock and weir a few hundred metres upstream of the historic eighteenth century bridge. In times of flood, the Thames breaks its banks and may completely surround the 'Eye'. In doing so it can also completely obstruct both the B478 and the adjacent Spring Lane. These are the only access routes to the community, and their closure prevents use of Sonning Bridge, a major part of the road network for the Reading area.
2. Minor flooding occurs every few years, going into fields and gardens, causing little or no problems.
3. As will be seen from the figures below, the more major inundations have become more frequent over the past two decades. These high levels roughly correspond to what were formerly 1 in 100 year events. It is very likely such events will become more frequent with climate change. The Environment Agency (EA) now requires a 20% addition to these levels to be taken into account for all new building developments. They now build this extra flood elevation into their flood modelling predictions.
4. In 2002 a major change was made to the local hydrological system when the Redgrave Pinsent Rowing Course was formed by joining two lakes and the creation of a 2km long bund. In 2007 the west end of the lake adjacent to the Thames was lowered to provide a weir to allow the lake to flood from the river in times of high water. The precise impact of this change on flooding patterns in Sonning Eye remains undocumented.
5. Local observation has however established the floodwaters now leave the river and course northwards around Sonning Eye in order to reach the main body of the floodplain to the north and east. In their way is the B478, which has been built as a causeway across the floodplain, with small bridges for Berry Brook and Eye Marsh Drain. The obstruction this road causes is obvious when water levels are high, as the water level differential on either side of the road can clearly be seen. In 2014 this led to the undermining and partial destruction of the road, with complete re-construction of it being subsequently required.



Issues relating to flood risk in Sonning Eye

6. From the data provided by the EA, a graphical presentation has been constructed showing property threshold heights (mAOD) of the most vulnerable houses in Sonning Eye. These levels were measured manually on the ground.
7. Some of these houses had already flooded in 2003.

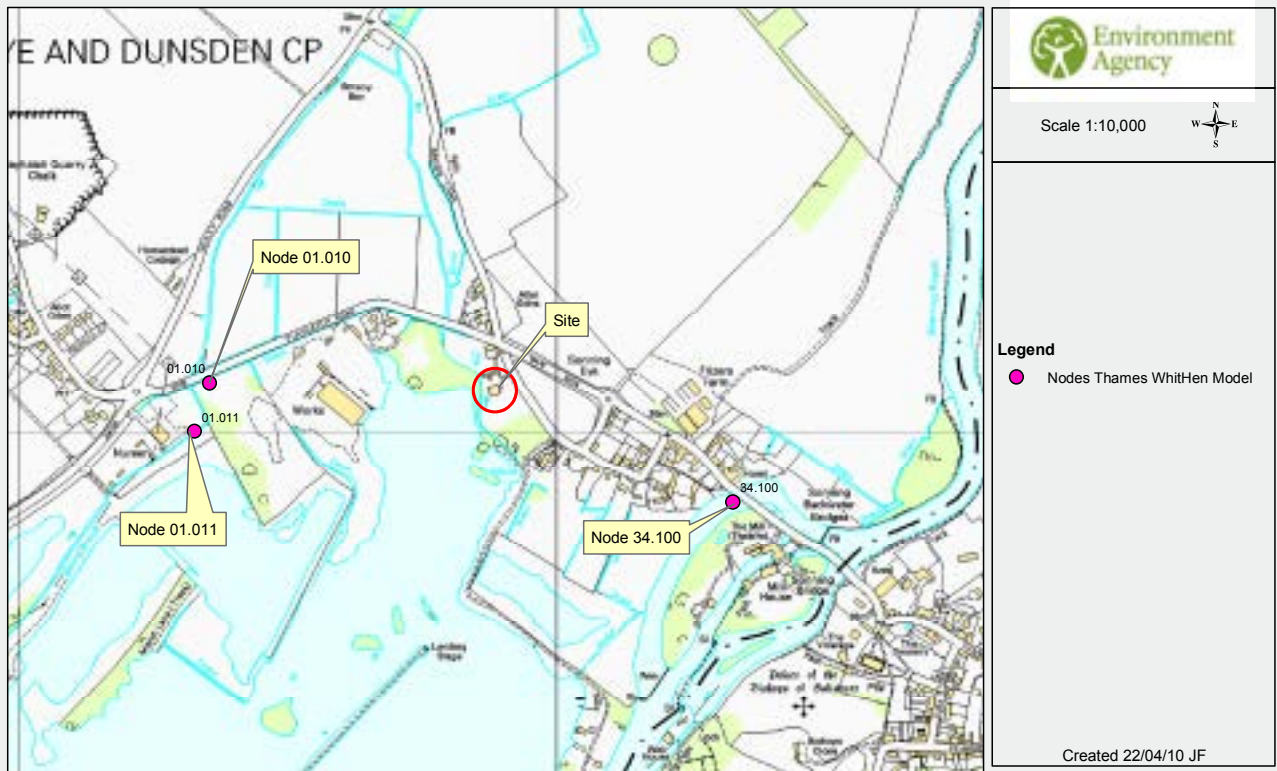


Flood levels at Sonning Lock (EA data)

	Upstream mAOD	Downstream mAOD
Normal level	35.2	33.6
2021	35.87	35.39
2019	35.73	35.18
2013/14	36.05	35.52
2012	35.89	35.43
2007	35.78	35.36
2003	36.11	35.56
2000	35.94	35.55
1992	N/A	
1986	N/A	
1977	N/A	
1974	N/A	
1947	36.21	35.67
1894		36.30 (estimate)

8. The Henley to Whitchurch Hydraulic flood model shows predicted levels for 1 in 50 and 1 in 100 year return periods at the nodes nearest to our properties as shown below, the only ones available.



Basic FRA/FCA Map centred on Dunsden Lodge, Sonning Eye RG4 6TP [The Site] Wir 32860

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Levels in mAOD**Data taken from the Thames Whitchurch to Henley model**

NODE	EASTING	NORTHING	LEVEL_50YR	LEVEL_100Y
34.100	475329	175870	35.788	35.884
01.011	474327	176002	36.350	36.477
01.010	474355	176092	36.350	36.477



Environment Agency Flood Map from 1 in 100 Year Flood Model

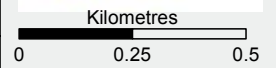
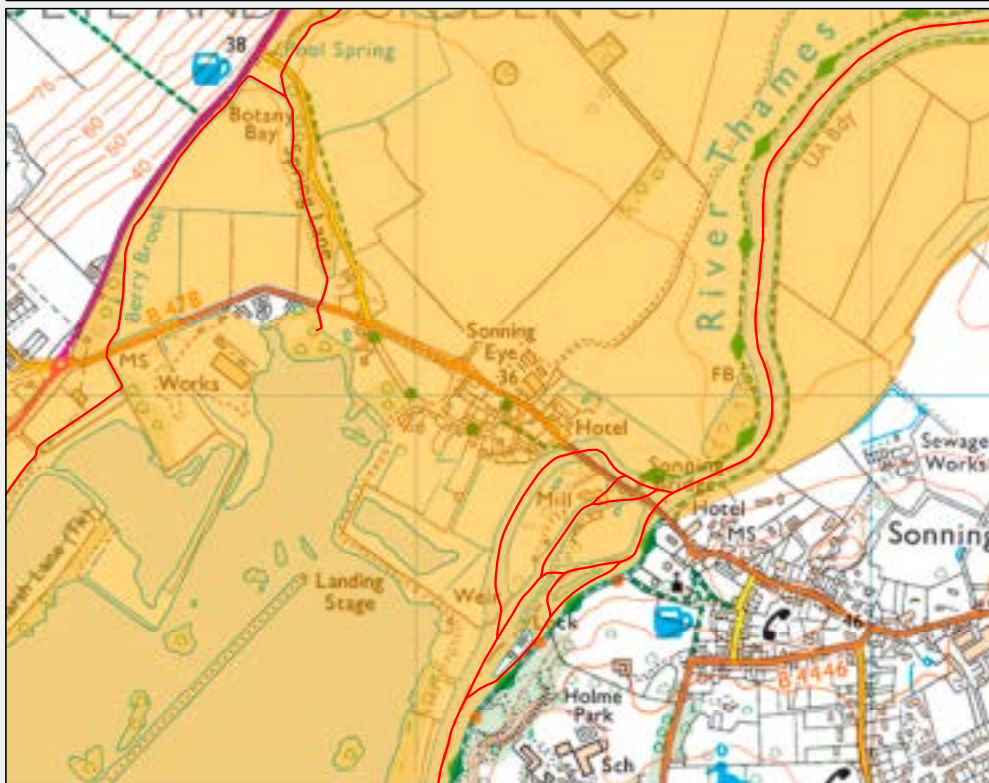


9. The area shaded with dots indicates land covered by water. The darker blue is the lake, river and small waterways. White areas remain dry. This map does not include the 20% allowance for climate change.
10. In this context it is worth looking at the flood outlines recorded by the EA. One can see that there are quite a lot of discrepancies between the flood model and reality of what was probably a 1 in 100 year event.
11. Some areas the model predicts will flood did not and other areas the model says stay dry did in fact flood. Thus the message has to be that both these maps are in fact unreliable. They are also unable to pick up the actual likelihood of flooding at a sufficiently fine granularity to be useful to all householders. The 2003 map shows how a difference of 10cm of water level at the lock makes only a marginal difference. Local memory of this confirms that many of the houses in Sonning Eye did NOT flood. Again this is a significant discrepancy to what the map is showing
12. This is indeed in keeping with the actual house thresholds compared with the measured lock level heights.



Historic Flood Outline 1947 centred on Sonning Eye

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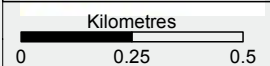
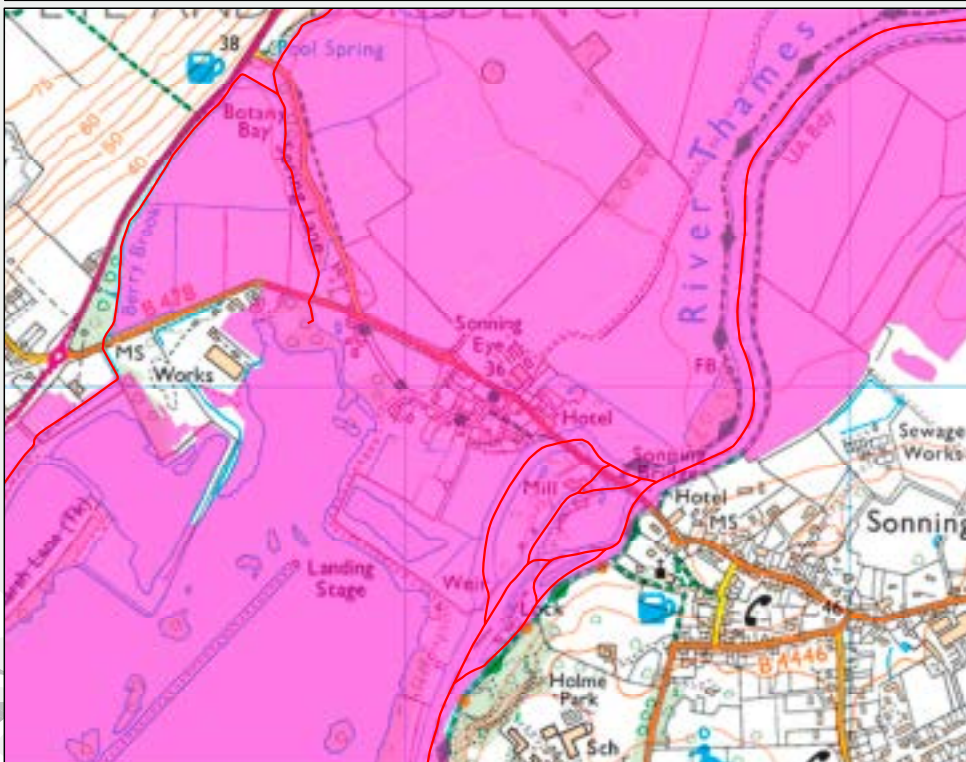
Legend

- Main River
- year
- 1947

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Historic Flood Outline 2003 centred on Sonning Eye

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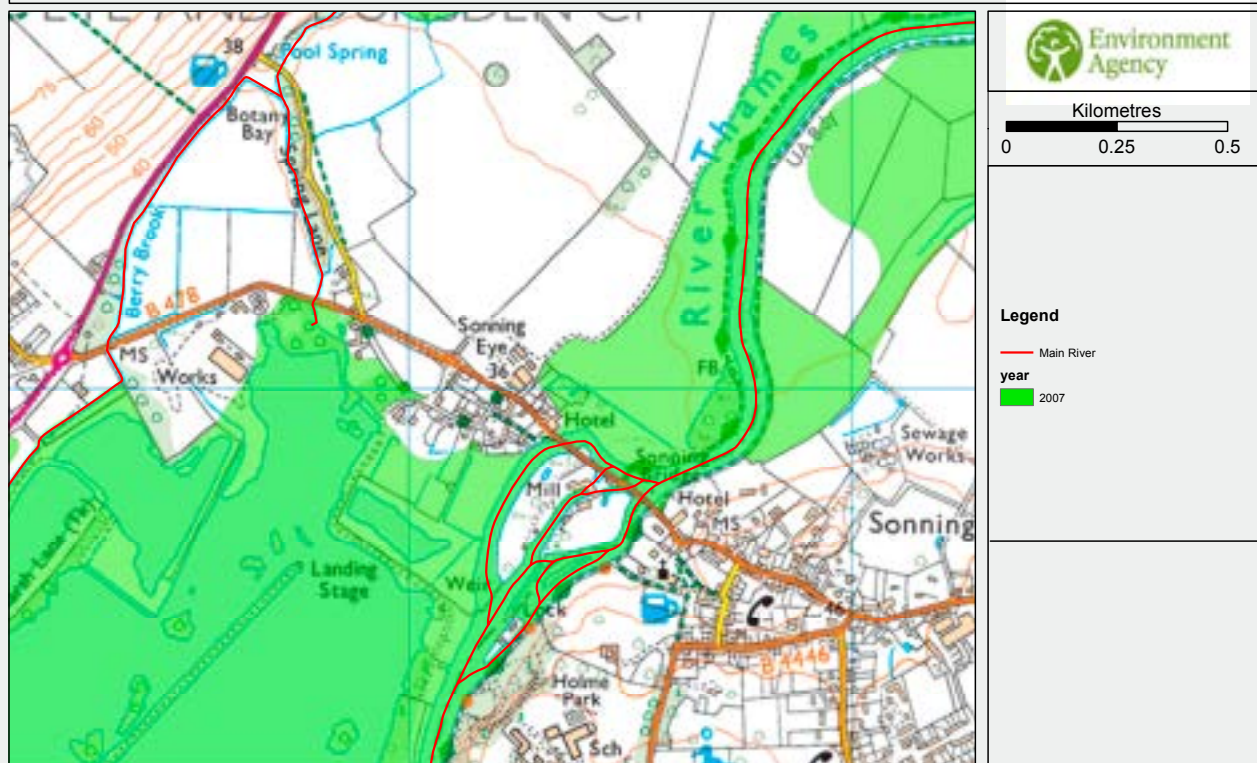


Legend

- Main River
- year
- 2002

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Historic Flood Outline 2007 centred on Sonning Eye
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13. The 2007 map shows a much milder flood with lock levels some 43cm lower than the 1947 record
14. None of this data takes account of the worsening situation we face because of climate change.
15. The figures clearly demonstrate that if our homes are to be prevented from unnecessary flooding, there is no leeway for any worsening of the situation which might be caused by any reduction in floodplain capacity such as that caused by inappropriate development in the floodplain. In fact improvements to the capacity of the floodplain should be the priority.
16. Maximising the free flow of water under the B478 is also an essential flood protection issue, as any hold up here will inevitably cause higher flood levels in Sonning Eye.





■ *Old B478 Flooding, 2009*



■ *Property Flooding, 2009*

Photographs taken during recent floods show the extent of the floodwaters.

17. Flood waters in Sonning Eye are the result of a composite of fluvial water from upstream and rising ground water. Rainwater run off from a steep chalk escarpment may also play a part. This is a highly complex system and no proper model exists which fully explains it
18. EA flood maps showing past floods are notable for their variability as to which areas flood. If this were a simple fluvial problem the same areas would flood for any given increase in river height. It's possible that the variation may be explained in terms of rising ground water
19. Local residents are well aware of floodwater rising into their gardens prior to the advent of the river water arriving.
20. The general pattern of rising floodwater is slow and usually predictable. It is predominantly caused by high levels of run-off from the catchment of the Thames and Kennet rivers. After heavy rainfall in these areas the river at Sonning gradually rises over 6–12 hours and starts to fill the Rowing Lake and spread across the fields downstream of the lock/weir. It may take 48 hours to reach its maximum height and then slowly drains away over a period of some days. 2013–14 was unusual in that due to persistently wet conditions, the flooding lasted up to 6 weeks, with two peak levels.



■ *Spring Lane Flooding, 2014*







■ *French Horn garden flooding, 2014*









■ Flooding of the B478: the road acts as a dam until it is topped





■ Aerial view, 2021

