



Preliminary Presentation

Flood Alleviation for Abingdon

31st January 2016

Response to EA

Flood Alleviation Proposals for Abingdon, 20 January 2016

Part 1 of 2

1.1 Abingdon Flooding – Historical Relevance

In the course of the historical research and the construction of the new length of the Wilts & Berks Canal (Jubilee Junction) opposite the Culham Cut, we offer the following information which might be of use in the planning of flood alleviation around Abingdon.



This view of 1815 was five years after the original Wilts & Berks Canal was opened and shows the bridges over the Ock where it joins the Thames. As can be seen there are six arches to accommodate the Ock's flow rather than the present single arch of the 1824 'Iron Bridge'. If the present backwater that runs through Mill Paddock occupied the near two arches that would have made discharge into the Thames less constricted than the present day.

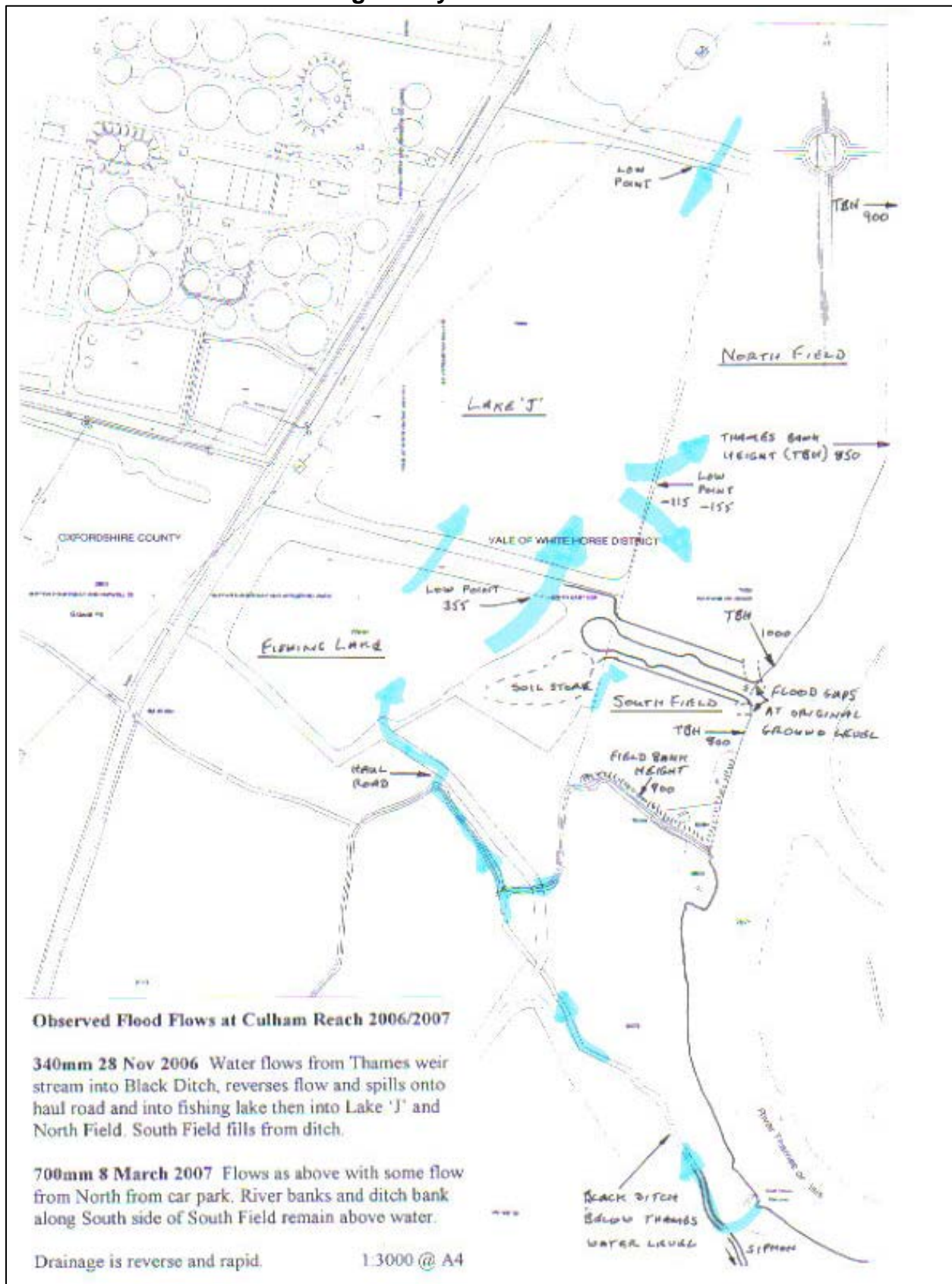


The floods of 1894 looking downstream along St Helen's Wharf. The man is standing by the gate which is the entrance to the alms houses and where the flood mark is now situated.

The July 2007 floods were unusual in that the water came across the local field surfaces rather than down the Thames. The manager of the gravel works at Peep-o-Day Lane (just south of the Thames Water sewage works) reported that he had not known water come from that direction in the years that he had worked there, it had flowed through the works towards the Thames rather than the Thames overtopping its banks. I made several surveys over about three days measuring the direction and flow across the fields between the Abingdon Marina and the gravel haul road, (see Figure 1.1).

Further drawings and data may be available.

Figure 1.1 – Measurement of flooding in July 2007



The above was in response to the EA request for 2007 information which is part reproduced below in Figure 1.2.

Figure 1.2 – Request for flooding information

11) All of this water is trying to drain to the River Thames and has only one route – the iron bridge on to St Helen's Wharf.

Sunday 22 July

12) Severe Flood Warning issued Sunday 22 July at 2:33pm for the River Ock.

1) The waters from the River Ock remain at a sustained high level for some time. And then begin to subside slowly during the day, Sunday. Flood water started to recede slowly in some areas in the morning, however flood water was still flowing rapidly through the town centre, the Drayton Road area and Manor Court. Flood Water continued to recede slowly throughout Sunday.

13) Severe Flood Warning issued Sunday 22 July at 4:01pm for the River Thames. At that time we believed that the River Thames would rise and affect Abingdon in a similar way to Oxford.

23 July onwards

2) Through Monday and Tuesday the River Thames rises steadily, but does not get to a level similar to 2003 – which was a large flood event for the River Thames.

3) This rising level in the River Thames also keeps the water level high in the last section of the River Ock. Some areas just upstream of where the Ock meets the Thames, areas were still flooded.

If you think the sequence of events differs to that above, please let us know by writing your contact details and the event as you know it in the box below. Then either leave this sheet at reception or return it in the prepaid envelope if you wish to complete it later at home.

Contact details (optional):

Abingdon amended sequence of events:

Any other comments:

Section 11 of the above comments:

'All of this water is trying to drain into the River Thames and only has one route – under the Iron Bridge on to St Helens Wharf.'

1.2 Proposed flood alleviation

The EA held a consultation at Grove a few years ago and in discussion with one of your officers (who was shortly to retire). I suggested that the new canal to be constructed south of Abingdon might assist in modifying this flow. The idea was accepted as a viable proposal but I repeat it here for convenience.

A link to the new canal (not yet built and delayed due to the uncertainty regarding the Thames Water Reservoir) from a point this side (east) of the A34 to a point on the new canal to the west of the B4017 Drayton Road. The new canal route is shown on Figure 1.3.

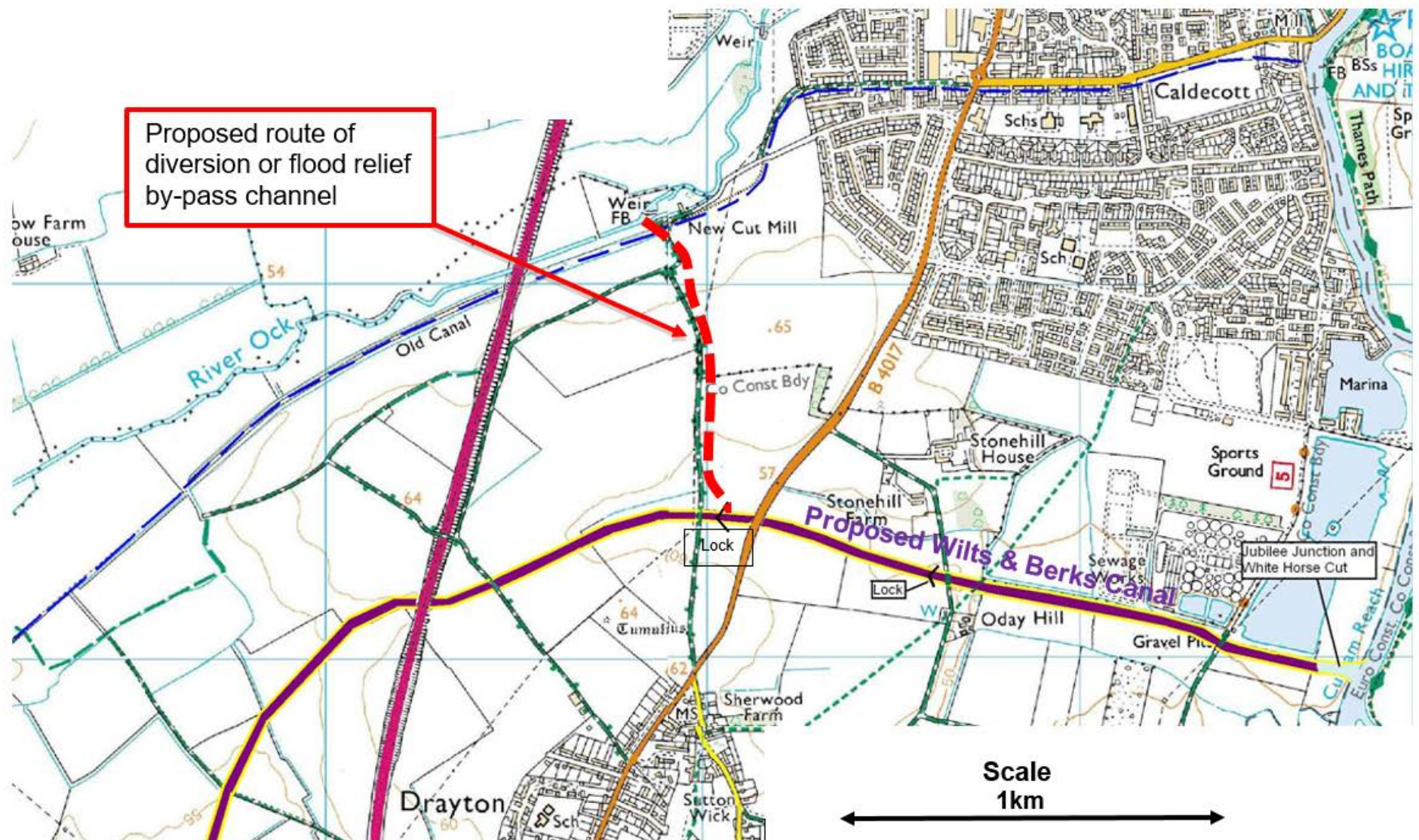
This would provide additional drainage capacity along a diversionary route avoiding the built-up areas of south Abingdon which are prone to flooding. Depending on the ability of the Thames to accept the increased flow from the River Ock, the diversion could balance the flows between it and the river route through the town.

Part of the present scheme being considered is to hold back water to the west of the A34 in the allotment area. Similarly, the existing River Ock and the diversionary channel could provide additional and alternative controlled routes for this discharge when the Thames could accept the stored water.

It will be seen that there is a planned lock just to the west of the A4017 and another to the east of the A4017. Canal locks nearly always have a bypass channel sometimes with a control sluice. In discussions with Thames Water who, in the last design submitted, would use the canal from the reservoir as an additional drawdown channel in the event of a need to rapidly lower the level of the reservoir.

The canal locks along the length from the reservoir to the Thames were therefore designed principally as weirs incorporating a lock in order to control the outflow. This weir/lock could perform a similar function in controlling the release of held-back flood water from the River Ock and there might be an opportunity for modest flood storage along the diversionary channel and surrounding land.

Figure 1.3 – Proposed alignment of diversion channel



1.3 Additional material

We have reproduced other correspondence from 2008 which followed the floods of July 2007. The following letter was sent to all Vale of White Horse District Councillors.

‘Dear Councillor

Abingdon Reservoir

I attended the Council Meeting held on Wednesday 13 August 2008 as an observer on behalf of the Wilts & Berks Canal Trust of which I am an Honorary Director. (A further Declaration of Interest might be that I am a former employee of the Council, Community Funding Officer, taking early retirement in 2006.)

I must emphasise that, for the purposes of the Water Resources Management Plan, the Canal Trust is entirely neutral and is not an appropriate body to comment.

However, I noted that Councillor Paul Burton advised that it might be prudent to have a ‘Plan B’ to ensure maximum benefit to the local community should the Reservoir be built.

I submitted a paper to Thames Water on 1 March 2007 in response to the Stage 2 Preferred Scheme and Design Options Report published 6 January 2007. This outlines the benefits to that could accrue to the Canal Trust and local residents and visitors at comparatively modest cost to Thames Water. I attach this paper for the information of Members.

Flooding

I also reproduce below part of an e-mail to the Environment Agency on 8 June 2008 addressing the need to provide Flood Mitigation for Abingdon and other areas in the Vale. I have not yet received a response but note that in the Abingdon Herald dated 31 July 2008 the item ‘Left defenceless against the floods’ that “... a major flood relief channel for the town is a long term possibility – if the proposed £1bn reservoir between Abingdon and Wantage is built.” This, although not named, is the Wilts & Berks Canal which runs from Wantage to Abingdon.

The restoration of the derelict canal involves the clearing or re-excavation of the plain sections of the canal at very modest cost using volunteer labour. (See our website www.wbct.org.uk for details of what has been achieved so far.) Structures such as pedestrian bridges and locks can be constructed for some 20% to 25% of commercial cost. A major cost, in terms of time and finance, is the obtaining of leases from the many private owners through whose land the canal passes and is the major issue to be resolved, though much progress has been made in recent years.

To Alison Futter, Conservation Officer, Environment Agency, 8 June 2008

Since the July 2007 and winter floods, and indeed the flooding which occurred last week, we have been looking closely at the role which the fully restored canal could play in the Vale of White Horse. The River Ock and Childrey Brook run along the valley bottom from Abingdon out to Shrivenham and collect run-off from the Ridgeway hills. The canal runs at a higher level than the natural waterways and could therefore intercept some of this run-off before it enters them. The canal's summit is at Swindon and there is a continuous fall all the way to the Thames at Abingdon via locks and their by-pass channels. The paddles (sluices) at the locks could be opened to aid flood flow control by providing a greater through flow than the by-pass channels.

The route of the canal in general avoids centres of population but it does pass between Grove and Wantage. There are proposals for up to 4500 new dwellings to the west of Grove and, although Sustainable Urban Drainage Systems will doubtless be employed, there is considerable potential for the restored canal to carry surface water to the Thames.

As you will be aware Thames Water propose to use the route of the canal from the reservoir to the Thames for their additional drawdown channel (which can be combined with a navigable canal). The protection afforded to the canal route by the Local Plan where it passes under the reservoir states that a 'suitable alternative route' must be provided around the foot of the reservoir bank. There would seem to be scope for the EA to become involved in discussions with Thames Water and the Canal Trust (we have been meeting them since 1991) to see whether the diversion route could be classified as part of the flood mitigation measures already required by the EA.

We would be very happy to discuss these matters with Mark Barnett (Water Quality) and Nick Read (Development Control). It would be appropriate to involve the Vale of White Horse DC's Drainage Officer, Peter Dela, in these discussions as he has attended our liaison meetings with the Vale.

Should you wish to comment on either of these topics our Chief Executive, Ken Oliver, or myself would be very pleased to hear from you.

Yours sincerely,

Martin Buckland'

This Part 1 is was submitted by Martin Buckland, Abingdon Contact Officer for the Wilt & Berks Canal Trust.

January 2016

Part 2 of 2

2.1 Potential Flood Alleviation in Abingdon

The following notes give additional information about potential flood alleviation works in Abingdon. These include the flood relief works described in Part 1, but also suggest additional flood protection measures which can be provided by the Wilts & Berks Canal. These may have been reviewed and rejected in the past, but they may be worth revisiting in the light of any new developments.

- 1) Flooding south of Abingdon in July 2007 was likely due to high flows and consequently raised water levels in the River Thames. This may have occurred due to the restricted discharge at Sutton Bridge (Figure 2.1). The conveyance may have been further reduced due to the roughness presented by dense summer vegetation in the flood meadow upstream of Sutton Bridge (Figure 2.2). This could have backed-up the water causing overtopping of the right bank with out-of-bank flow northwards towards the sewage treatment works, as was observed by the manager of the local gravel works (Figure 1.1).
- 2) The proposed Wilts & Berks Canal can form a flood barrier to such floods re-occurring in the future. The canal would need to be raised above the flood plain in order to form the flood barrier. To prevent high water levels in the River Thames backing-up the canal, a lock structure would be required near the point where the canal links to the river known as the Jubilee Junction and White Horse Cut (Figures 2.1 and 2.2). This lock can be set further inland as shown on Figure 1.3, however the embankments of the canal from the river to the lock would need to be set at a level so as to prevent the high flood water levels in the River Thames from spilling out of the canal.
- 3) To complement this flood protection provided by the canal embankment a flood protection earth bund linking the proposed lock to the higher ground levels at Abingdon Marina could be envisaged. This could afford a measure of flood protection for the sewage treatment works and reduce the risk of contaminating the river with sewage. In addition depending on the predicted rise in flood water levels as a result of the barrier formed by the canal, a further flood protection earth bund may be needed at Oday Hill.
- 4) The feasibility of forming a flood barrier will need to be studied applying hydrodynamic modelling for different return periods to assess the effect of removing the present flood storage volume by the proposed flood protection.
- 5) Depending on water level differences between the River Ock and the Wilts & Berks Canal, a relief by-pass diversion channel can be constructed (Figure 2.3). Under storm flow conditions excess flow can spill from the River Ock and be conveyed to the canal where the water can be stored and releases into the River Thames once the floods have subsided. This can help relieve the present constriction to flow in the River Ock at its confluence with the River Thames at St Helen's Wharf (Figure 2.3 and Part 1).
- 6) The excess flow from the River Ock can be released via a side spill weir set upstream of the existing weir on the River Ock (Figure 2.3) in order to provide the head needed to drive the flow to the canal. Similarly the relief channel should link to the Wilts & Berks Canal downstream of a lock.
- 7) Based on rainfall predictions from the Meteorological Office, the water levels in the Wilts & Berks Canal can be artificially lowered prior to the storm, thus providing capacity to store water from the River Ock.
- 8) The longitudinal profile of the Wilts & Berks Canal will need to be optimised so that the two functions of providing a flood barrier and relieving flow from the River Ock can be achieved.
- 9) These observations are cursory and based purely on mapping. A site visit would be required to confirm the potential for using the Wilts & Berks Canal as a flood barrier and for flood storage.

Figure 2.1 – Environment Agency Flood Mapping in Abingdon

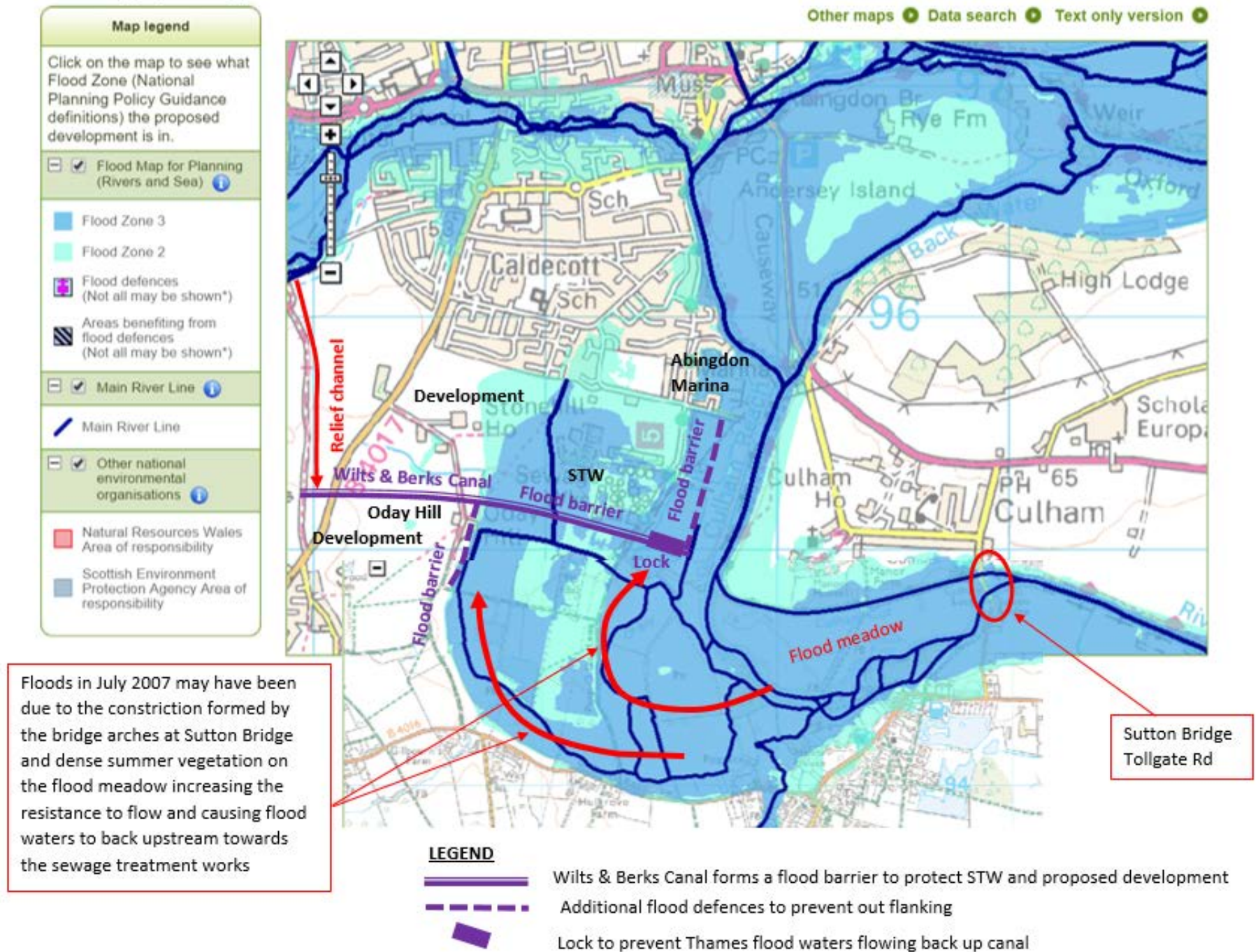


Figure 2.2 – Plan of Possible arrangement of Wilts & Berks Canal at Abingdon



Figure 2.3 – Possible flood relief channel linking River Ock to River Thames via Wilts & Berks Canal

