

# **Flood Risk Assessment**

## **Melksham Link Waterway, Pedestrian and Off-road Cycle Routes**

## **Document Control**

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Author        Mike Lee Engineering Director Wilts & Berks Canal Trust

Complied by Ken Oliver Canal Officer Wiltshire Council

Approval Mike Lee

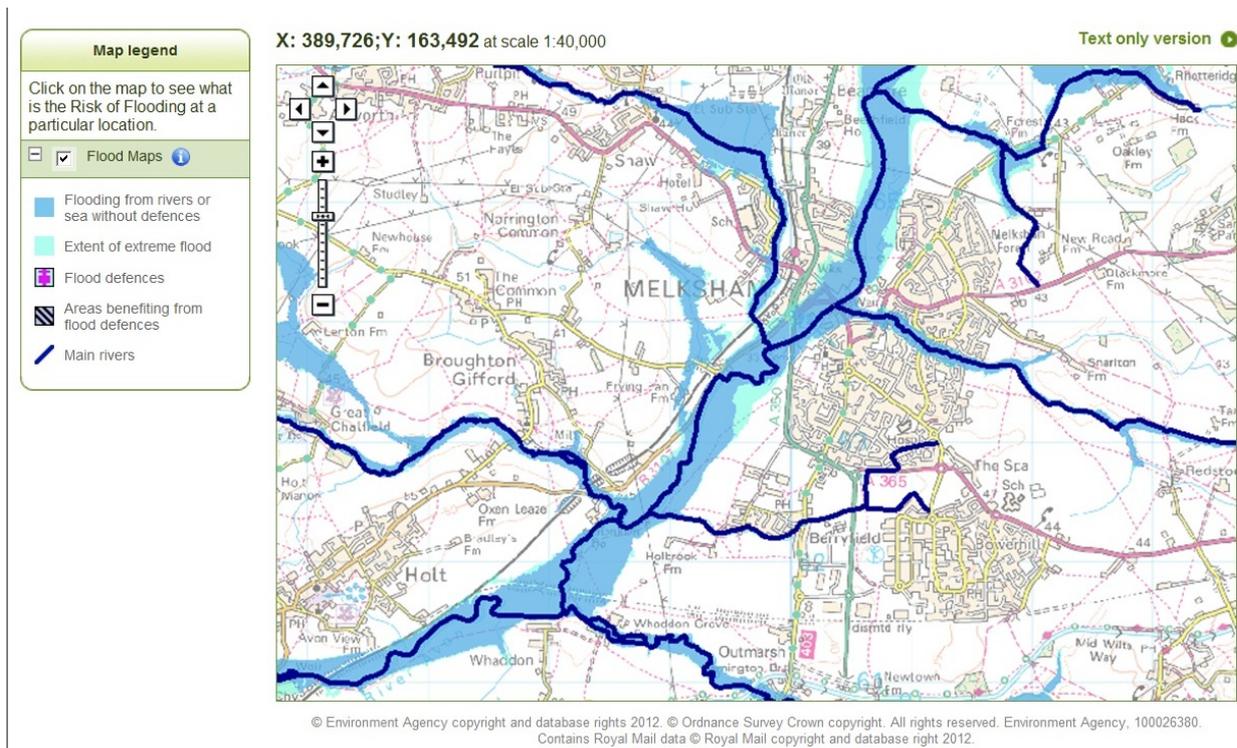
## Background

The Wilts & Berks Canal linked the Kennet and Avon south of Melksham with Abingdon on the River Thames, and was opened in 1810. The North Wilts branch was 9 miles long and linked the Wilts & Berks in Swindon to the Thames & Severn Canal just to the North of Cricklade. The Wilts & Berks Canal was closed by Act of Parliament in 1914. The historic route of the Wilts & Berks Canal has been lost in Melksham to subsequent development since abandonment. In order to restore the waterway, since 1998 a number of options for alternative routes in Melksham have been explored and their feasibility tested. This flood risk assessment examines the route as proposed in figure 2 which consists of a new build of canal form the Kennet & Avon Canal at Semington to the River Avon at Challeymead, and by a new weir downstream of Challeymead to deepen the low flow River Avon level by approximately 0.5m. A new narrow lock and hydro power generator are sited alongside the existing weir and flood control structure above Town Bridge.

## Flood Risk Assessment

The River Avon is, of course, prone to flooding and this has been considered in all the Consultants Reports, particularly that of Black and Veatch. Their original report of 2007 has been reviewed and updated as each option has been considered and the 2007 hydrology report and subsequent amendments are included in the appendices to this document.

Fig 1 EA Map showing flood zones





## River Avon

The proposed development of the river section, as now submitted, has been designed to reduce the effect on the flood regime to the minimum with the result that there is no significant change to the existing conditions.

Fig 2 shows the current information supplied the general scheme

The major proposals are:-

- 1 There will be no navigation on the river in flood conditions and all boats are to move off the river to a designated refuge area above the 2<sup>nd</sup> lock on receipt of an agreed warning .
- 2 Long term mooring on the river mooring sites will not be permitted and boats are not to be left unattended for more than 24 hours .
- 3 The existing town weir and sluice will remain unaltered.
- 4 The new narrow lock, and its surroundings, on the South side of the river adjacent to the existing weir, will be constructed to a standard to resist complete immersion during flood incidents.
- 5 The sluices of the narrow lock will be capable of remaining open at both ends to provide a small increase in discharge capacity .
- 6 The existing river channel is badly silted and partly obstructed by heavy reed growth. Minor dredging works will be required to produce an effective navigation channel. Spoil from this operation can be used to reshape the channel at Challeymead Bridge where serious erosion and obstruction has occurred. This operation should also produce a small improvement in the flow conditions during minor floods. The worst length of channel is around Town Bridge and Clackers Brook outfall where the available levels indicate that the bed needs to be lowered by approx. 900mm to achieve an even bed grade.
- 7 The new weir below Challymead will be built in the widened length of river upstream of South Brook and Wessex Water outfall. The new retention water level will need to be not lower than 30.60, provided the bed of the navigable channel is re-graded to a level of 29.00. A retention level of 31.00 is desirable to allow a bigger margin for siltation. The Black and Veatch Hydraulic Model (Appendix 2) demonstrated that there was no increase in flood level with a retained level of 31.20 .
- 8 The new canal will not be subject to River Avon flooding above the 2<sup>nd</sup> lock. The River Lock will however become inoperable in a 1in5year return period and be at or just under water in the 1in 100 flood event.

## **New Canal**

The new canal is designed to standards approved by British Waterways. This would include a towpath freeboard of 0.3m to accommodate short term 'flash' events.

The operational level of the canal is controlled by fixed weir structures discharging to other water courses. These control structures are designed to prevent over-topping from normal surface water discharge into the canal, lock operation or sluice failure. At lock, bridge and other structures 'stop plank' groves are integral to the design to allow isolation of individual sections of canal to minimise flood risk under catastrophic failure of embankments or control sluices

## **Details of Appendices**

Appendix 1 is the 2007 B&V Hydrology Report Flood Risk Assessment using original design parameters.

Appendix 2 is a supplementary report using revised project design

Appendix 3 is a further report on other watercourses ( Clackers Brook and Berryfield Brook)

Flood Risk Supplement July 2012 deals with revisions to engineering design and consequential changes in flood modelling