



Wilts & Berks Canal Melksham River Route Study

May 2007



BLACK & VEATCH

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Document issue details:

BV project no. 120704 Client's reference no.

Version no.	Issue date	Issue status	Distribution
1	Dec 06	Draft for Comment	Project Team
2	May 07	Final	General

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1. INTRODUCTION

The Wilts & Berks Canal Trust ('the Trust') is committed to the restoration of the W&B Canal (W&B) along its entire length from the Kennet & Avon Canal (K&A) at Semington to the River Thames at Abingdon as shown in Figure 1. As a priority the Trust are progressing four flagship projects:



Above: Grand opening of Jubilee Junction, W&B Canal at Abingdon

- The Junction of the North Wilts Canal and Cotswold Canal at Cricklade
- The Swindon to Cricklade reach (including Swindon Town)
- The Abingdon and River Thames Junction (known as the Jubilee Junction)
- **The Melksham and K&A Junction**

Below: Artists impression of the Cricklade Junction



All four flagship projects have gathered momentum over the past few years. The grand opening for the Jubilee Junction was held on 30th August 2006 and construction continues on this reach.

Meanwhile the Cricklade to Swindon reach has recently won £250,000 of Lottery funding for further development that will hopefully lead to a further £10M Lottery grant.

This report focuses on the Melksham and K&A Junction, for which a new alignment is required through the town due to development on the original route. The report covers the canal alignment from the junction with the K&A to the point at which the new alignment meets the original alignment, at Melksham Forest north of Melksham. As consultants to the Trust, Black & Veatch Ltd (B&V) carried out the investigations in order to identify a preferred alignment for inclusion in the appropriate Local Development Documents.

Previous studies (refer to Appendix B) have identified a preference for use of the River Avon as a navigation through the town (known as the 'Melksham River Route'). The main advantage of the River Route is that it will bring significant socio economic and regeneration benefits to Melksham compared to other options that bypass the town. In addition, the River Route will minimise land take on agricultural land surrounding the town.

The current investigations therefore focus on the River Route option. The purpose of this report is to:

- Provide a defined corridor for the new canal from the junction with the Kennet & Avon Canal at Semington to immediately north of Melksham, utilising the River Avon through the town. Based on this new corridor the new route can be safeguarded, through the local development plan.

- Identify and address the principal technical and environmental issues
- Estimate the costs, the local economic benefits, and funding opportunities.

The investigations have shown that the new route proposed is technically achievable. There are some significant environmental impacts, but this report identifies measures to both mitigate the impact and provide additional enhancements.

This report does not:

- Provide detailed design and drawings
- Provide a full Environmental Impact Assessment
- Fully detail the exact environmental mitigation and improvement works – but the options are identified

There is significant work required to develop some of the concepts, and this would be undertaken in close liaison with West Wiltshire District Council, statutory consultees, local groups (e.g. Melksham 1st) and landowners.

However, the report indicates that there are no obvious technical or environmental obstacles to progress. On this basis the Trust hope that the project can be progressed with confidence through the more detailed stages referred to below.

The main report has been prepared using non-technical language and concepts where possible, to make it clear and accessible. Most of the detailed technical information on each of the studies carried out is provided in appendices and these are cross referenced in the main report. These appendices will be of particular interest to statutory consultees, and groups and people locally who have particular interests.

A partner report ‘Enhancing the River Avon Riverside through Melksham’ has also been prepared. This report identifies further enhancements that could be provided along the River Avon through Melksham. The partner report identifies large and small projects that could be undertaken with or without the new navigation proposed in this report.

1.1 Consultation and where next?

This report is being consulted on widely. Subject to general agreement in principle the route will be safeguarded. Funding discussions with British Waterways and others are ongoing, but negotiations regarding funding for the first length from the K& A Junction towards Melksham are well advanced. Detailed discussions with consultees and, in particular, relevant landowners would then commence. In parallel further detailed technical and environmental design would be undertaken. Subject to successful discussions, planning applications would then follow.

The Wilts and Berks Canal Trust and the engineers and environmental scientists working with the consultants Black & Veatch would like to thank all those who have assisted this project, and in particular the landowners and local groups who have provided many ideas, suggestions and guidance throughout the process.

2. THE WILTS & BERKS CANAL

2.1 Strategic importance of the canal

The W&B is an important link in the Wessex Waterways Network (refer to Figure 1). This network of canals originally linked the Severn and Thames Rivers to the North through the Cotswold Canals and to the south via the K&A. The W&B and the North Wilts Branch canal provide the central link and complete the network.



Above: The Cotswolds Canal, part of the Wessex Waterways Network

Restoration of the K&A is now completed and British Waterways is progressing restoration of the Cotswold Canals. Completion of the W&B will transform the K&A from the current 'out and back' canal to a part of a cruising circuit that is keenly anticipated by the boating fraternity. The impetus for restoration of the W&B, is therefore very strong, as the more comprehensive the network the greater the realisation of benefits in terms of business, recreation and leisure opportunities.

2.2 Economic benefits to the Melksham area

Once the whole canal is completed, our studies suggest that the potential gross annual visitor spend locally to Melksham will be approaching £1.5 million of which approximately £0.6 million will be retained in the local community. The canal would lead to approximately 50 full time equivalent jobs locally.

Direct economic benefits to the local community are derived from:

- Boating (private and hire) and associated mooring fees
- Cyclists
- Day visitors
- Holiday visitors

It is generally accepted that for every 5 people that visit the canal on boats, 95 additional visitors will either cycle or walk along the towpaths.



Above: Canal side café on Kennet & Avon

The W&B will open up a link between the existing well used walking and cycle routes along the K&A to the south of Melksham and the National Trust Village at Lacock to the North. It is therefore anticipated that the direct benefits to Melksham from the canal will be significant.

Secondary economic impacts have not been assessed. However there is the potential for riverside and more widespread regeneration, and the attraction of new (non-tourism based) business. Tourists attracted to the area by the canal will also visit nearby tourist attractions to the benefit of the wider community.

Secondary indirect economic benefits to the town and the local area may include:

- Attraction of new businesses
- Regeneration of riverside property
- Increased revenue to existing tourist attractions

Further details of the economic benefits associated with the canal are included in Appendix A.

2.3 Community and social benefits

The canal would also bring many other community and social benefits that cannot be quantified in economic terms. These benefits include:



- Environmental improvements and awareness within the community
- Increased local leisure activity (walking, cycling, fishing etc.) and improved health and fitness
- Improved quality of life
- Alternative transport opportunities to car use (walking, cycling)

- Employment opportunities
- A safe environment in the area around the canal
- Educational opportunities
- Enhanced recreational facilities and infrastructure for local communities, including disadvantaged groups



Potential river corridor enhancements are described further in the accompanying 'Enhancing the River Avon Riverside through Melksham study'.

2.4 History of the canal

The Wilts & Berks canal (W&B) was constructed between 1796 and 1810. The main line ran for 84 km from Semington with its junction on the Kennet & Avon canal (K&A), via Melksham, Swindon and Wantage to Abingdon on the River Thames. The canal was originally intended to carry 25-ton coal barges from the Somerset Coal canal, although agricultural produce, bricks & building materials were also carried at times.



Above: Melksham Forest Lock c1900

Below: Melksham Wharf c 1900



Trade dwindled with the opening of the Great Western Railway in 1841 and by 1906 the canal was no longer commercially viable and trade ended. In 1914 the canal was closed, and the rights of the canal company over the land and rights of way were extinguished. This resulted in subsequent development activity taking place without any recourse to the possible revitalisation of the canal route. This was the case in particular through the main urban centres at Melksham, Wantage and Abingdon.

The Wilts & Berks Canal Amenity Group was formed in 1977 from volunteers wishing to protect and conserve the route of the canal for the benefit of the community and the environment. By 1987 it was apparent that there was great public support for canal restoration and the aim of the Group changed to one of full restoration of the canal. Since

this time the Group has pressed ahead with restoration of various sections of the canal, changing its name in 2001 to the Wilts & Berks Canal Trust, in line with the current aims of the group.

In 2001 the Wilts & Berks Canal Partnership was formed to oversee the delivery of restoring the canal. The partnership consists of the following parties:

- Constituent Local Authorities
- The Wilts & Berks Canal Trust
- Sister canal Trusts from the K&A and Cotswolds canals
- The Countryside Commission (now a part of Natural England)
- British Waterways
- The Inland Waterways Association
- The Environment Agency
- Representatives from the private sector

3. THE PROPOSED ALIGNMENT

3.1 Overview

This study covers the canal alignment from the junction with the K&A to the point at which the new alignment meets the original alignment, at Melksham Forest north of Melksham. Figures 2a and 2b show plans of the proposed route for the restored W&B canal from the junction with the K&A canal to Melksham Forest. Figure 3 shows the corridor proposed for inclusion in the West Wiltshire District Council Local Development Framework. The corridor is wider than the footprint of the canal to allow further development during detailed design in order to allow mitigation and enhancements where necessary along the route and the general refinement of the design.

Wherever possible the views of landowners and other stakeholders have also been taken into consideration when selecting the alignment. Further details regarding the investigations that have led to the preferred alignment are given in Appendix B.

The estimated construction cost for the canal and navigation shown in Figures 2a and 2b is approximately £18.5 million. Of this, approximately half of the cost is associated with the construction of the 8 locks and the main new weir on the River Avon. Further details regarding the cost estimate are given in Appendix A.

A Water Resources Study, which is included as Appendix C to this report, has been carried out for the Melksham River Route. The study summarises the potential water resources and compares the water requirements of the canal with the approximate water resource that could be provided without significant environmental impact. This study covers the period during which the canal does not extend further north than Melksham and will therefore need to be self sufficient in terms of water resources. Sufficient water resources are available for the canal assuming some backpumping of locks (pumping water lost due to lock usage back up to the higher pound, as used on the Kennet and Avon Canal) and pumping of very limited quantities of water from local streams. The assessment confirms that it will not be necessary to take water from the Kennet and Avon Canal, but this remains an option for further assessment.

A strategic Water Resources Study for the whole of the W&B Canal is currently underway and this will include details of the long term operation of the Melksham River Route in conjunction with the rest of the canal.

A number of protected species are known to inhabit the area surrounding the restored canal including badger, water vole, bat species and otter. An initial appraisal of the environmental constraints and opportunities has been undertaken and is summarised in Appendix F. Detailed ecological surveys of the route will be carried out during the statutory planning process and a phased programme of mitigation will be developed. The canal also runs through an area of high archaeological potential and surveys will be carried out in liaison with Wiltshire County Council.

The following sections of this report provide more details of the canal over the 3 reaches, which are;

- K&A Junction to River Avon
- River Avon through Melksham
- River Avon to Melksham Forest.

Cross references are provided to appendices that give more details of the technical studies underlying this main report.

3.2 Kennet & Avon Canal Junction to River Avon

A plan of this reach of the canal is shown in Figure 2a.



Above: Proposed connection point to K&A

The new W&B canal leaves the K&A canal immediately to the west of the Semington Bridge on the old A350 (now diverted to the east to bypass Semington). The alignment then passes Outmarsh Farm and there is potential to create moorings in this area. To the west of the existing disused railway embankment a lock will drop the water level down from the K&A level.

A further lock near Holbrook Farm will provide an opportunity for further moorings and associated canal infrastructure. An access bridge will carry the existing road to Holbrook Farm across the canal, and this will also provide pedestrian access across the canal.

A final double lock will take the water level down to the operational range for the navigable stretch of the River Avon.

Although the majority of this reach will run through relatively permeable ground, the canal will be lined to minimise leakage. Further details are given in Appendix C (Water Resources) and Appendix D (Geomorphology Study).

3.3 River Avon through Melksham

A plan of this reach of the canal is shown in Figure 2b.

A new weir on the River Avon will ensure that the navigable section will be accessible during the majority of the canal season. The purpose of the new weir is to retain a minimum depth of water of 1.5m through Melksham along the River Avon at all times. The new weir will include provision for fish and elver passage, as the river supports a good mixed coarse fishery along with brown trout and eel. This will be a significant improvement on the current situation where fish passage is constrained by the existing Melksham Sluice and poor fish pass (see photo overleaf). Subject to appropriate funding, the new weir will be designed for safe traversing by canoeists, and there is potential for some 'white water' canoe interest.

Navigation of the river will be prevented during flood events on safety grounds. For this reason, only day moorings will be provided on the river section and refuge moorings will be provided above the locks at each end of the navigable river section. Common to much of the canal network it is proposed that the river navigation would be closed during high flow events through the winter, because of the fluctuating levels and flows. Further details are provided in Appendix E.

The existing sluice and weir will be demolished as part of the works (see photo right). Detailed hydraulic modelling has concluded that this will lead to a small reduction in flood risk on the River Avon and its tributaries through Melksham. The works will also remove the existing risk that the Melksham Gate becomes stuck in the open position (an event that has recently occurred) leading to a drop in water level. Further details are provided in Appendix E. Removal of the existing weir will provide significant river restoration opportunities upstream of Melksham, which are discussed further in Appendix F.



Above: Existing Melksham Gate weir and sluice to be demolished

The new weir would not need to be operated during floods – unlike the existing Melksham Sluice where mechanical failure would cause serious flooding. This is seen as a key benefit to the Environment Agency who are the operating authority for the River Avon.

The works will lead to a decrease in the water level upstream of the demolished existing sluice and an increase in the water level between the existing structure and the new weir. This will have an impact on the existing morphological and sedimentology regime of the River Avon. Details of the Geomorphology Study that has been carried out as part of the current investigations are included in Appendix D. Details of proposed mitigation and enhancement works are described briefly below and further details are included in Appendix F.

By lowering water levels upstream of the existing sluice there would be some impact on the existing Cooper Avon water abstraction, and modifications have been considered in the design of a modified offtake.

Immediately upstream of the new weir, sediment deposition may occur and therefore monitoring will be carried out to assess whether any potential dredging works are required by the canal operator. Upstream of the existing sluice, works would be carried out to manage channel erosion. This protection will be designed in close liaison with the statutory consultees during the later stages of the design process.

Below: Habitat creation - otter holt



Habitat creation including reed beds and bank reprofiling will also be carried out to mitigate any potential for permanent ecological adverse impacts due to the change in water level. These proposals will be developed further during the future planning and design stages of the project.

There is also significant potential for river restoration work in the reach upstream of Melksham along with other opportunities to create a larger area of wetland within Melksham Loop and for creation of reedbed throughout the reach. This may mitigate any sedimentation issues that arise due to canal water entering the river. Further details are given in Appendix F.

3.4 River Avon to Melksham Forest

A plan of this reach of the canal is shown in Figure 2b. This length of the canal was the most difficult from both an engineering and environmental perspective. The majority of this reach will run through relatively impermeable clay, which will lead to minimal leakage from the canal. In the more permeable reaches it has been assumed that the canal will be lined. Further details are given in Appendix C (Water Resources) and Appendix D (Geomorphology Study).

The canal leaves the river and passes beneath the Millennium footbridge, which will be retained in a raised and extended position. To the north of the footbridge there is a lock, raising the canal above the existing ground level.



Above: Connection to existing alignment

Extensive environmental enhancement work will be carried out to the flood plain of the River Avon including the construction of a new wetland and associated paths and access. The route will pass along the edge of the floodplain in order to avoid disturbance of the existing allotments and recreation field. Further details are given in Appendix F.

Three further locks will then raise the canal above the floodplain and from here it will join on to the original alignment of the W&B canal towards Laycock.

4. CONCLUSIONS

The Melksham Kennet & Avon Junction is one of four flagship projects that the Wilts & Berks Canal Trust has prioritised as part of their commitment to restoring the entire length of the Wilts & Berks Canal. Progress on all four of the projects is gaining momentum following the opening of the Abingdon River Thames Junction and a £250,000 Lottery Fund grant for investigations at Cricklade and Swindon.

The Melksham River Route, which involves navigation on a 900m (1/2 mile) length of the River Avon through Melksham, has been identified previously as the preferred option for this reach. This is due to the socio economic and regeneration benefits of navigation through the town and the negative impact on farming caused by options that bypass the town. Black & Veatch Ltd has prepared this report on behalf of the Wilts & Berks Canal Trust in order to identify the preferred alignment for the Melksham River Route for inclusion in the Local Development Framework. Figure 3 shows the recommended corridor.

The W&B is an important link in the Wessex Waterways Network and the impetus for its restoration has grown since completion of the K&A as the more comprehensive the network that is created, the greater the realisation of benefits will be. Gross annual visitor spend associated with the restoration of the canal to the Melksham area is estimated to be £1.5 million of which approximately £0.6 million will be retained in the local community. The canal would also lead to approximately 50 full time equivalent jobs locally. The canal would bring many other community and social benefits that cannot be quantified in economic terms. The estimated construction cost of the canal considered in this study is approximately £18.5 million.

Technical investigations have been carried out into the hydraulic impact of the scheme, the water resources of the canal, the geomorphology impact and the environmental impacts. Mitigation measures and additional studies have been included where appropriate and significant enhancement opportunities have also been identified. These include enhancement of the Melksham Loop area and river restoration works upstream of Melksham facilitated by demolition of the existing sluice. The works will also reduce flood risks to Melksham.

It is therefore envisaged that the project will deliver not only the benefits of a new amenity in the canal navigation, but also wider ranging environmental benefits and a significant enhancement of the river corridor through the town and beyond. Further details of the River Enhancements are given in the partner report 'Enhancing the River Avon Riverside through Melksham'.

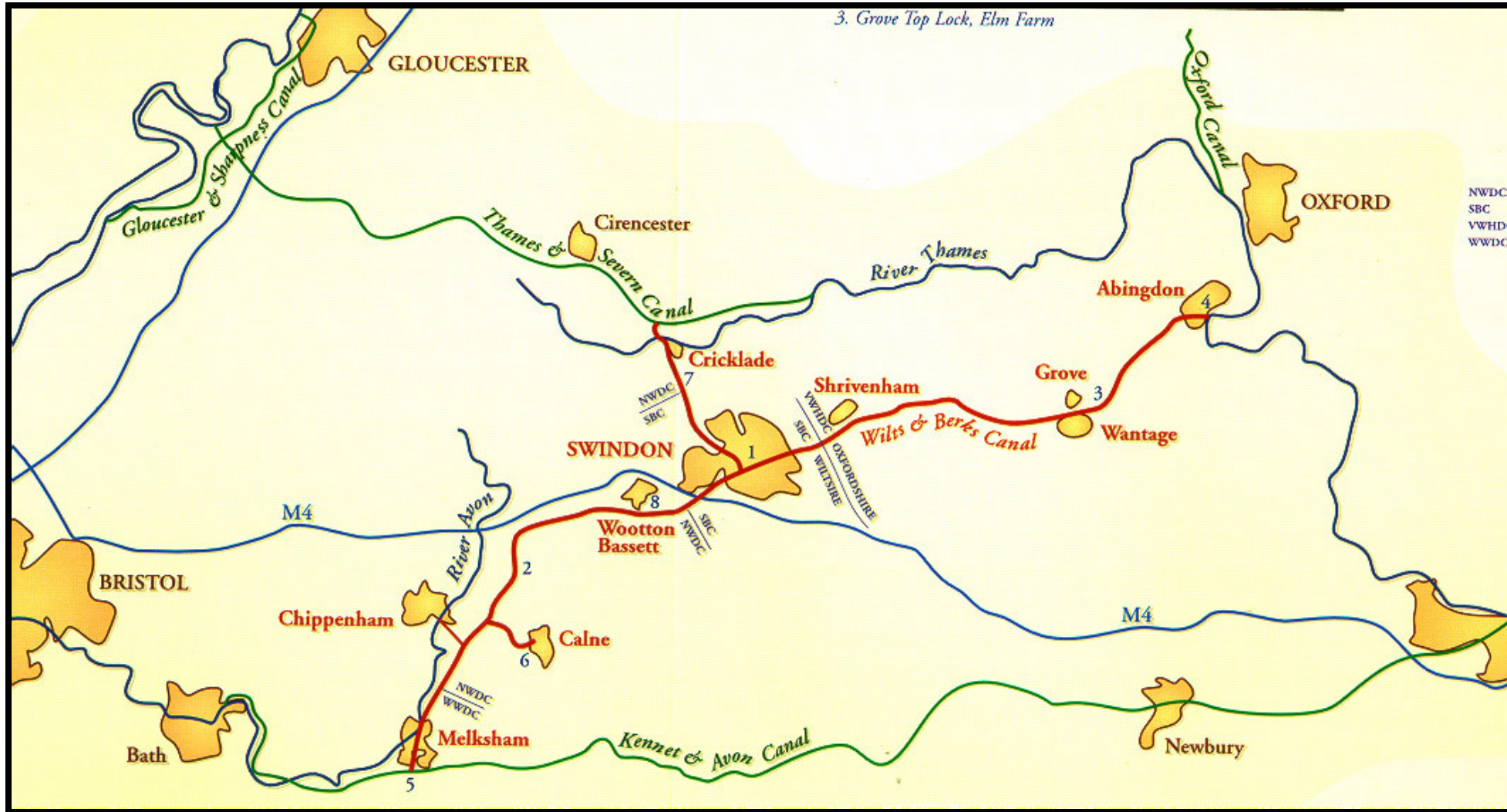


Figure 1 – Wessex Waterways Network highlighting the original route of the Wilts & Berks Canal

