

1. History of the Canals

The construction of the tub boat canal network in Telford between 1768 and 1792 provided the transport network for raw materials and goods that enabled the development of the foundations of the modern industrial revolution. In 1797 this network was extended to Shrewsbury (the Shrewsbury Canal) and in 1835 a new section of canal was constructed from Wappenshall in Telford to Norbury Junction on the main line of the Shropshire Union canal in Staffordshire (the Newport Canal) to connect the local canal network to the national network. In 1944 the route was officially abandoned. (see www.sncanal.org.uk).

2. The Shrewsbury and Newport Canals Trust

In 2000 at a public meeting in Newport, the Shrewsbury and Newport Canals Trust was formed. It now has over 800 members. Since that date the Trust has worked closely with Staffordshire and Shropshire County Councils, Stafford Borough Council, Telford and Wrekin Council, Shrewsbury and Atcham Borough Council and all the parish councils along the route to develop the project.

The objectives of the Trust are:

- (1) To promote and undertake the restoration of the Shrewsbury Canal between Shrewsbury and Trench in the county of Shropshire and of the Newport branch of the Shropshire Union Canal between Wappenshall Junction and Norbury Junction in the county of Staffordshire by the original route or diversions as necessary (hereinafter together called "the Canals") to good and navigable order and to promote and undertake the maintenance and improvement of the Canals for the benefit of the public.
- (2) To promote and undertake the fullest use of the Canals by all forms of waterborne traffic and for all forms of water-related commercial, local amenity, tourist and recreational activity for the public benefit.
- (3) To promote and undertake the education of the public in the history and use of the canals and waterways and of the Shrewsbury and Newport Canals in particular.

3. The Wider Restoration Proposal

Although the Trust has the objective of the restoration of the whole length of the canals, the initial priority is the restoration of the 17 kms of canal from Norbury Junction in Staffordshire (where it connects with the national network) to Wappenshall in Telford. This restoration has four broad aims to meet the needs of the communities along the route. These are leisure, economic, conservation and education. The aims in detail are:-

Leisure

- A major new amenity and leisure facility stretching from Staffordshire to north Telford
- A wide range of leisure activities for all abilities – angling, walking, boating, cycling, painting, photography, wildlife studies etc.
- An opportunity for all to participate in volunteer projects
- A linear park providing additional opportunities for relaxation, enjoyment and interpretation of the countryside
- An inter-county green footpath from Stafford to Telford and, eventually, on to Shrewsbury.

Economic

- A major stimulus to sustainable economic regeneration of the rural area, the rural villages, the town of Newport and the north of Telford.
- Initial benefits in the form of local employment and local materials and services purchased for the reconstruction.
- A significant long-term tourism attraction for the area providing employment in boatyards, marinas, shops restaurants, accommodations etc. It will provide a major amenity in north Telford at Wappenshall to balance the Ironbridge Gorge in the south and complementing the historic links within Shropshire.

Conservation

- In the built environment of locks, wharves, canal basins, junctions, warehouses etc. which are of national importance particularly at Wappenshall.
- In the natural environment the waterway, towpath and hedgerows will provide a wildlife corridor and sanctuary for a wide range of plants and animals.

Education

- The opportunity to study the role played by these canals in the growth of Telford as the birthplace of the Industrial Revolution. Opportunities for interpretation for the public as well as research at the proposed development of the warehouses at Wappenshall.
- An environment that provides authentic local experiences and teaching and learning resources for all ages, regarding the development and use of alternative energy sources, the canal and its history, as well as the wildlife and plants that the new environment creates.

4. Government Policy

The Government's policies for inland waterways in England and Wales are set out in "Waterways for Tomorrow" published in June 2000. The Government's aim is to promote the waterways, encouraging a modern, integrated and sustainable approach to their use. This involves conserving the waterways, while at the same time maximising the opportunities they offer for leisure and recreation, urban and rural regeneration, the environment, and for freight transport.

The restoration of the canal is strongly supported by Government policy. In the DETR publication “Waterways for Tomorrow” the government sets out its encouragement for restoration. *“Restoring waterways to full navigation also produces many benefits. Waterway restoration over the last 40 years has revitalised key parts of the country’s transport and industrial heritage, generated jobs and development and increased opportunities for leisure, recreation and tourism. The government supports this approach and looks to RDA’s and local authorities to support worthwhile projects. Local Authorities can help..... by adopting appropriate policies and land use allocations in development plans.”*

5. Inland Waterways Advisory Council (IWAC)

The Inland Waterways Amenity and Advisory Committee (IWAAC) was created by the Transport Act 1968 to advise the Government and British waterways about the use and development of the latter’s waterways for recreation and amenity purposes. In 1993 IWAAC was asked by the Government to concentrate on providing strategic policy advice on issues such as widening the customer base, balancing the needs of conservation and greater use, and development and regeneration. On 1st April 2007, IWAAC was replaced by the Inland Waterways Advisory Council (IWAC), established by the Natural Environment and Rural Communities (NERC) Act 2006.

Relevant recent publications by IWAAC include:-

- Working Group on Conservation Management Planning (2001)
- The Inland Waterways: towards greater social inclusion (2001)
- The Benefits of Sustainable Waterways; British Waterways since 1996 (2003)
- Just Add Water; how our inland waterways can do more for rural regeneration - a practical guide. (2005)
- Inland waterway restoration & development projects in England, Wales & Scotland – third review report (December 2006)

The Third Review Report (December 2006) reported on the Shrewsbury and Newport Canals Project. It classified the restoration as a **nationally** significant project and defined the projects Key Asset as having a “**high built heritage value**” and its Key Benefits as:-

- Strategic link and/or extension to the national connected system,
- Regeneration – urban
- Regeneration – rural.

In the review of canal restoration schemes, IWAAC commented on the Shrewsbury and Newport Canals project as follows:-

*Council welcomes progress by the Trust since the last review on this **outstanding** heritage waterway. Feasibility study and detailed engineering report completed [showing that full restoration is feasible in engineering terms] and partnership being*

formed. Implementation issues, including water supply and wildlife, considered with care. Privately financed development initiatives expected to provide about 25% of restoration costs but success in obtaining regional/national funding will be the key. An early priority should be the conservation of the surviving heritage structures along the route. A successful restoration would be a significant addition to the national system and the waterway heritage.

6. The Local Planning Position

The Local Development Framework

Telford and Wrekin Council has been developing its Core Strategy as part of the new Local Development Framework for the area.

The Independent Inspector produced an “Initial List of Main Matters for Examination”. Under the Spatial Distribution of Employment the Inspector identified:-

“Should reconstruction of the Shrewsbury and Newport Canals be included as a strategic proposal, given the suggestion that it might lead to over 1000 new jobs and tourism based regeneration in the north of the Borough (including Newport).”

Following the initial meetings and discussions with the Examiner, the Council have added the following paragraph to the draft Core Strategy:-

“The disused Shrewsbury and Newport Canals run through the rural area from Newport in the east to Rodington in the West. The Council recognises the potential contribution that the reinstated canal could make as a tourist/leisure attraction and supports the principle of its reinstatement which should result in the regeneration of associated local employment in Telford, Newport and a number of rural communities across the Borough”.

Existing Local Plan Policies

The Wrekin Local Plan 1995 – 2006 (para 2.2.13) undertakes to “*identify, conserve and enhance elements of critical natural and historic capital within the District e.g. the Ironbridge Gorge World Heritage Site, Shropshire Hills AONB, SSSI’s.*” The Trust believes that the restoration of the historic canal, its buildings and structures, through the District fulfils this objective.

Policy E12 – Conversion of Rural Area Buildings – *The Council will, as a priority, encourage proposals to convert and reuse existing buildings for employment uses of an appropriate scale in relation to their location.*

Policy HE12 – Retention of Traditional Features and Floorscape – *The Council will not permit development proposals that may result in the loss of, or damage to, traditional features, such as street furniture, railings, walls, kerbs and floorscapes and other landscape features which make a positive contribution to the character of the area; and, where appropriate, the Council may request that these be reinstated as part of any development proposal –*

Policy HE14 - General Duty – *The Council will use its powers, and through its functions, to ensure that listed buildings are preserved, restored and continue in beneficial use*

Policy HE16 - Alterations and Additions to Listed Buildings - *Alteration, extension and other changes to listed buildings will only be permitted if the following criteria are met:-*

- (a) the essential form, character and special interest of the building are maintained and the historic interest of the building and its setting are not adversely affected*
- (b) its architectural features, both internal and external, are preserved intact*
- (c) the proposed development is of an appropriate design in terms of massing, scale form, proportion, details, colour and materials*
- (d) the alteration, extension or new use can be dimensioned to be in the interests of the long term survival of the building*
- (e) where an extension is proposed, it should be designed to complement the character of the building, being generally subservient in scale and of a suitable form, materials and detailed design*

Policy HE17 - Change of use of Listed Buildings - *The Council will encourage the change of use of Listed Buildings, provided the original use is no longer viable or possible, and where the character, form, fabric and setting of the building will not be adversely affected by the user.*

As stated in the Local Plan, “*The use for which an historic building was designed will almost always be the best use for the building and this should be pursued as the first option..... However, the Council must also have regard to the aim of preserving the character and special interest of historic buildings and will resist changes of use which cause unacceptable harm to the form and fabric of the building. The most profitable alternative use, for example, may not be the most appropriate and less damaging uses will be encouraged.*”

Policy HE19 - Protection of the Setting of Listed Buildings - *The Council will protect or enhance the setting of Listed buildings by refusing development, which would detract from or damage their setting. Development will only be permitted when :-*

- (a) is located in a way which respects the setting and form of the Listed Building and respects its relationship to surrounding buildings, features, street scene or sky line and does not otherwise impair important views of and from the building*
- (b) is of a high quality of design in terms of scale, massing, form, proportion, detailing and materials which is appropriate to the Listed Building and its context*

- (c) *does not result in the loss of features, such as ancillary buildings, boundary walls, planting, hedgerows and floorscape materials that contribute to the character of the setting of the building*

The Trust believe that their proposals for the reinstatement of the canal from Lubstree Wharf to Wappenshall Junction, the restoration of buildings and structures along the route and the development of the warehouses at Wappenshall into a canal “hub” is entirely consistent with the emerging Core strategy and the existing Local Plan policies.

7. Wappenshall Junction to Lubstree Wharf – Work Packages

As part of the restoration of the canal from Norbury Junction in Staffordshire to Wappenshall at Telford, the Trust has identified a potential first phase in the restoration of the length from Lubstree Wharf to Wappenshall, all on the northern edge of Telford. This section has exceptional heritage restoration and tourism potential.

The section covers the length of the main canal from the warehouses and the east basin at Wappenshall (east of Bridge B22b) to the junction with the Humber Arm and the length of the Humber Arm from the junction with the main canal to the wharf and warehouse at Lubstree. It has been subdivided into three work packages; 17, 18 and 19. The location of the three work packages are shown on the map at Appendix 1.

Work Package – WP17

This work package covers the length from the Humber Arm wharf terminal at Lubstree to east of bridge B20 on the main line.

The short length from the wharf terminal at Lubstree to bridge HA-B1 is in water and was widened by the previous owner to allow more capacity for irrigation and fishing. The warehouse building at Lubstree has had the roof and trusses removed, although an example of one of the truss's lies nearby as a pattern for refurbishment. There is also an example of the sliding warehouse doors. The brick structure is in a reasonable state. The stationary engine shed adjacent to the bridge is in a generally poor state but the brickwork is reasonably sound. A flat roof (which is in a poor state) has replaced the original rounded roof. These buildings can be restored back to original external condition but internally the intention would be to reutilise them for modern purposes (Appendix 2). The wharf manager's cottage and office are privately owned, the owner having maintained the office in its original condition, as an office.

The first half of the length northwards from bridge HA-B1 to the junction with the main line has been filled and returned to agriculture whilst the second half is on a gradually rising embankment to join with the main line. Approximately three quarters of the bed on the embankment has been filled with the northern junction end being dry bed which has mature trees and scrub growing on the bed. The structure of the bridge HA-B1 looks to be sound, although the north side parapet wall has been removed (presumably when the bed at that side was filled), to widen the track over the bridge to allow the larger modern farm machinery to cross. From the inside of the bridge there is evidence that the bricks and capping stones were possibly pushed into the bed and then filled over. If this proves to be correct they can be recovered and used to restore the bridge back to original condition.

From the junction, the main line bed continues westward on a gradually reducing embankment. The bed is dry and in the same state of vegetation growth as the northern end of the Humber Arm. The length from there to just a few metres short of the Preston wide hole has been filled and returned to grazing. The wide hole and the short length leading to it are in water but are hardly discernable due to the heavy weed growth. The short length from the wide hole to bridge B20 is filled, part of which is used as an access across for the farm owner and the rest, which was used as a

contractors compound when the Kynnersley foul water main was built, remains partly covered with hardcore, (Appendix 3).

Work Package – WP18

Bridge B20 which carried the road from Kynnersley to Preston was subsequently demolished while being used as a test to establish the maximum load a traditional brick bridge of that type would stand. It sustained structural cracks when loaded to 250 tons.

Immediately to the west of the bridge a foul water drain has been installed across the bed. It is understood that this is below bottom bed level but this needs to be authenticated. The full length of the bed running from bridge B20 to the western boundary of Kinley Farm, appears to have been pushed out onto adjacent land along the stretch from bridges B20 to B21 and from there to Kinley Farm boundary it has been filled. Accommodation bridges B21 and B22 have been demolished.

Between bridges B21 and B22 a brook originally ran through a culvert under the canal bed, this brook was widened and deepened to take storm water emanating from the Telford conurbation and when this work was done a new culvert was built that runs under the canal (now filled) and an adjacent farm track that ran parallel to the original canal. It appears that this was done to allow for a future reinstatement of the canal, but a levels survey is required to ascertain if this is the case.

Work Package – WP19

This package involves the length from the Kinley Farm boundary to the Wappenshall Junction roving bridge B22b.

The section from the farm boundary to bridge B22a opens out to form what must have been an area for overspill mooring when the junction was very busy with boats waiting to load and unload, or possibly was used as additional wharf area for loading and unloading. This area is now a dry bed colonised with mature trees and scrub. The brick accommodation bridge B22a still exists in fairly good condition. The under side of the arch has been bricked up and a pipe installed for drainage through. The short section from the bridge to the entrance to the east wharf basin of the junction is a dry bed colonised with tall weeds and scrub.

The east basin and the two warehouse buildings at Wappenshall were used by a transport company for a number of years and the basin was filled and used as a parking area for the trucks and trailers. It is now redundant for this purpose. There is evidence that the wharf sidewalls and copingstones may not have been unduly disturbed when the basin was filled. The track entrance from the south and the extended hard standing wharf area to the south, which was also used for parking trucks and trailers, is not metalled and is in a poor condition (Appendices 3 & 4).

The Wappenshall Warehouses and Basins

The brickwork of the large warehouse is in generally good condition and is structurally safe at present with no apparent roof leaks. The wood board flooring is well worn and in poor condition. It appears that some remedial work has been done on the roof timbers. Some changes have taken place to the lower floor structural supporting beams spanning the channel and the attachment of these beams into the southern supporting wall is of inferior structural soundness and needs to be modified. Along the south wall an original brick lean to building existed has been demolished to make way for a corrugated steel clad building, erected used by the transport company as a maintenance workshop.

The external brickwork of the small warehouse has suffered some surface erosion; internally the second floor has been clad and partitioned for use as offices, including kitchen and WC. The ground floor has not been altered and is in a poor state.

The larger warehouse building is unique as it is built over a navigable channel that runs through from the east basin to the west basin on the other side. Goods were loaded and unloaded from boats moored in the channel and lifted up to and down from the two floors above via trap doors. The west outer end wall of the building sits on the arch of a bridge that also straddles the channel, the arch of which extends eastwards to an inner wall of the building that then forms that side structure of the bridge. The bridge extends out to the west giving the Trench Arm towpath access over the channel. The upper floor of the building is longer than the lower floor, the inner wall only extending to the level of the lower floor ceiling, the upper floor extending out over the bridge below to the west outer wall of the building. This opening covered by the floor above running north to south through the building provides access over the inner bridge. This inner bridge carries a lane which also crosses bridge B22b to give access to land on the north side of the canal. Bridge B22b is a scheduled ancient monument.

This whole area (including the West Basin and the roving bridge B22b that are not part of this designated work package [WP19]), is of very significant historic importance and its restoration, particularly of the warehouse buildings and basins, needs to reflect this and preserve the heritage it represents.

8. Engineering and other construction issues

Construction Requirements – Work Package 17

All the work involved is within the capabilities of the Waterways Recovery Group (WRG) on the arm and on the main line stretch.

The first requirement would be to organise the architectural design requirements for the buildings to allow the restoration work to be carried out by the WRG, with help from the Trust's volunteers. Where the wharf basin has been extended on the east side undercutting erosion has taken place, which will be exacerbated by boat movements. When carrying out repairs a more substantial solution is required to prevent reoccurrence.

To allow navigation the basin will also need to be dredged to remove silt. The fact that the embankment has been filled for most of its length would suggest that it was used as a tip for general rubbish and unwanted demolished building materials. There is evidence that the lower area to the east of the embankment is still being used for this purpose. This could also have been the case prior to the flat length of bed being returned to agriculture, a preliminary dig investigation is required to establish both on this length and on the filled embankment what materials are in the bed in order to establish the extent of material required to go to landfill. If it is proved that good soil materials were used this could be spread on the surrounding land. Any rubbish material depending upon volume will have to go to landfill site, although if small in volume could possibly be removed to the area described above that has recently been used for this purpose with a suitable licence.

On the embankment the first task will be to remove the mature trees and scrub. Removal of the tree roots and digging out the bed will require the use of heavy equipment. Once this is done an assessment can be made of the state and suitability of the original clay puddle for re-use as a water retention lining, if proving unsuitable a modern lining material will be required. The same process will apply to the mainline length for the filled section. The dry bed section on both this length and at the end of the arm, including the junction area, will only require the original silt material to be dug out, which can be spread on surrounding land. The Preston wide hole and short section in water adjacent will also need to have the silt removed.

Once the arm is reinstated the only access to the land on the west side will be via bridge HA-B1, which will not be wide enough for larger modern farm machinery. A new accommodation steel bridge of the lift type will need to be provided. The owner of the section between the wide hole and bridge B20 will also require a new access bridge of the same type, since he now has access at this point that previously did not exist when the canal was open.

Estimated Costs - WP 17 (based upon some voluntary labour)

1. Wharf Basin, Warehouse, Engine House and bridge HA-B1 ----- £50,000
2. Bed and towpath from bridge to Junction with main line -----£600,000
3. Main line from junction to bridge B20 ----- £1,000,000
4. Provision of two steel lift bridges -----£120,000

Construction Requirements – Work Package 18

The new bridge B20, required to replace the original demolished one, will be of modern concrete structural design brick faced and stone capped to be more aesthetically complementary to the restoration of the canal. Traditional lift style modern steel bridges will replace demolished brick accommodation bridges B21 and B22, as they are located in the open county-side. The stretch between bridge B20 and B21, that appears to have been pushed out onto the land on the north side, will need to have the side contours and towpath completely rebuilt and modern lining and canal sides installed. The rest of the length, which has been filled, will require a preliminary dig investigation to establish what materials the bed fill contains. If good soil material was used this could be spread on the surrounding land with any unsuitable material having to go to landfill. If the original clay puddle lining has not been disturbed or contaminated by the fill material it may be possible to reuse it, otherwise a modern lining will be required.

Where the storm drain passes under the bed a discharge weir is required to spill excess storm water from the canal into the drain, this will need to be designed to match the eventual storm water flow capacity which will be considerably more than required at this stage (See Section 4 - Water Balance). Because of the requirement to rebuild part of the bed plus the new bridges and storm drain weir this package length will have to be assigned to civil engineering contractors.

Estimated Costs (based upon contract labour)

1. New bridge B20 -----£420,000
2. Bed from B20 to Kinley Farm boundary -----£1,280,000
3. Provision of two steel lift bridges ----- £120,000
4. Crow Brook culvert and discharge weir -----£220,000

Construction Requirements – Work Package 19

Work package WP19 only involves a short length of the main line of the canal, but is concentrated on the basin area east of bridge B22b and the warehouses.

The main work task is the renovation of the two warehouses, the east basin, and the wharf area. The first priority is to undertake a detailed structural appraisal of the two warehouse buildings. A provisional architectural appraisal of how the interiors of the buildings can be renovated and adapted as a heritage, interpretation and education centre (Appendix 5).

The concept is that the larger warehouse should have a dual function as both a community and visitor facility and a heritage interpretation facility. The lower floor housing a small retail and catering area and the upper floor a heritage interpretation area with historic pictures, records and maps being placed on and around the walls, together with some artefacts sensibly placed at various locations in the building.

The concept for the smaller warehouse are that the lower floor be used as a Trust office with the upper floor being used for volunteer and heritage educational purposes housing historic records and Trust records.

The corrugated steel clad building attached to the south sidewall of the large warehouse will need to be removed before remedial work involving scaffolding can be carried out on this side. English Heritage may consider that the heritage features will not unduly be affected if the demolished lean to brick building is not replaced but it will be necessary to repair damage caused.

Digging out the east basin would hinder the work of renovation of the two warehouses so the restoration of the basin and surrounding wharf areas will have to be delayed until the building work is complete. On completion of the warehouses, the basin can be carefully dug out to avoid any damage to the wharf sides that are still intact and to retrieve any masonry pushed into the basin. The original clay puddle can then be inspected and checked for possible reuse. If it is contaminated with fill material a modern lining will need to be fitted and the walls carefully dismantled the lining then placed to go under and up the back of the walls as they are rebuilt. The track entrance from the south and the extended hard standing wharf area to the south, including the area at present occupied by the corrugated iron workshop building, will need to be tastefully landscaped with hard surfaced parking facilities, footpaths and entrance road.

The Trust has submitted a planning application to Telford and Wrekin Council for the works.

Once digging out of the basin can start the silt deposit in the bed up to the Kinley Farm boundary can also be dug out at the same time, followed by an assessment of the state of the puddle clay lining. If unsuitable for reuse, a modern lining and towpath sides will be required. Trust volunteers can clear the mature trees scrub and weeds in advance ready for removal of the silt.

Estimated Costs - (based upon contract labour)

1. Bed from Kinley Farm boundary to B22b -----£300,000
3. Warehouses, wharf and east basin -----£1,100,000
4. Car-park, entrance and surrounding landscaping -----£20,000

9. Total Estimated Capital Costs

Work Package WP17 - Construction -----	£1,770,000
Work Package WP17 - Transported spoil to landfill -----	£420,000
Work Package WP18 - Construction -----	£2,040,000
Work Package WP18 - Transported spoil to landfill -----	£410,000
Work Package WP19 - Construction -----	£1,420,000
 TOTALS: - Landfill ---- <u>£830,000</u> Construction <u>£5,230,000</u>	

Total Construction Cost -----	£5,230,000
Design & Project Management 10% -----	£523,000
Preliminary Costs 1% -----	£52,300
Spoil Transported to Landfill Cost -----	£830,000
Total Cost less Contingency -----	£6,635,300
Contingency 5% -----	£331,765
Total	6,967,065
VAT	1,079,235
Total	8,046,300
Land Acquisition	200,000
Grand Total	<u>£8,246,300</u>

10. Water supply

Water Balance – Abstraction and Discharge

A water balance study has been carried out by the Trust engineer for the whole 41 Kilometre length of the canal, which has been submitted to and acknowledged by the Environment Agency. The conclusions of the report indicated that the project would proceed at various locations along the route based upon the progress pattern of land assembly, planning approval, funding availability, and that interim arrangements would be required for abstraction and discharges at the various locations as the project progressed.

At present, water to replace losses and maintain the water level in the Lubstree wharf basin is abstracted from the Humber Brook. The original licence to abstract water was for irrigation of the surrounding fields that were used for growing raspberries and strawberries by the previous owner of the Humber Arm. The present owner has dispensed with the pumping equipment that was housed in the warehouse, the fields now being used to grow conventional crops. Evidence of the pump installation can still be seen in the warehouse. Abstraction from the brook involves a simple stop plank dam that raises the brook water to a level above the wharf basin, the water then runs by gravity via a culvert into the basin to replenish losses. The planks only being inserted when top up is required. The fact that the flow volume of the brook was sufficient to irrigate a large area of soft fruit fields during the summer growing season indicates that it will be adequate to supply this project's requirements, there being no locks involved in this length of the canal.

Construction Requirements

At the maximum design rainfall rate per hour the discharge volume into the Crow Brook over an hour period would be 215,000 litres. This compares to 2,782,880 litres under the same rainfall when the whole canal is complete. To cope with this volume the discharge weir will need to be 7.5 metres long to ensure that the height of the canal water does not rise significantly above normal. The abstraction volume required to replace losses from evaporation, transpiration, and leakage based upon the maximum design loss rate per day would be 215,000 litres per day from the Humber Brook. This compared to 2,782,880 abstracted from the Crow Brook under the same weather conditions when the canal is complete. This source of supply from the Humber Brook was not considered in the calculations for the whole canal length.

Estimated Costs

Costs of weir covered in WP17