

The Shrewsbury & Newport Canals: Feasibility of Restoration Study

Final Report

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1. Introduction

- 1.1 This report has been prepared by Atkins in response to a commission from the Shrewsbury and Newport Canals Trust. Atkins was appointed by the Trust on the 17th April 2003 to produce a feasibility study into the proposed restoration of the Shrewsbury and Newport Canal and its branches.
- 1.2 The Trust has specifically sought an appraisal of reopening the Shrewsbury and Newport Canal from Norbury Junction to Shrewsbury, including the Trench Branch and Humber Arm.
- 1.3 The purpose of this study is to determine whether canal restoration is viable and worth embarking upon. It is within the consultant's remit to recommend various proposals to best suit the canal's circumstances and to attain greatest remunerations for the Shrewsbury and Newport Canal and the local and regional economy.
- 1.4 The aims of the study as defined in the brief are as follows:
- ◆ Propose feasible and costed engineering solutions for restoring the canals to navigation;
 - ◆ Identify and give an outline quantification of economic and other benefits arising from restoration;
 - ◆ Identify key sites of local, regional, national and international significance of importance to the restoration;
 - ◆ Identify the scope of the ecological impacts of restoration; and
 - ◆ Demonstrate that the proposed solution provides for optimum planning and environmental benefits.
- 1.5 The consultant has drawn together several key disciplines to examine the potential for re-opening the whole canal. These include:
- ◆ Ecology
 - ◆ Economics
 - ◆ Engineering
 - ◆ Planning & Environment
 - ◆ Water Supply
- 1.6 Each is an established and professional discipline in its own right and by assembling them together in a co-ordinated and integrated approach the consultant can gain a holistic picture to assist in identification issues and proposals.

HISTORY OF THE SHREWSBURY & NEWPORT CANAL AND BRANCHES

- 1.7 The following is a brief summary of the history of the canal and its branches whereby information has been taken from a number of published sources.
- 1.8 This canal was one of many built in the mid to late 18th Century in order to move large quantities of raw materials and coal from one place to another. One Josiah

Clowes was appointed chief engineer, but when he died half way through the project he was replaced by his assistant - Thomas Telford. The Shrewsbury Canal was opened in 1797, although it operated in isolation from the rest of the British canal network. In 1835 the Newport Branch was completed connecting the Shrewsbury Canal at Wappenshall to the Birmingham and Liverpool Junction Canal at Norbury Junction. Thus Shrewsbury was connected to the national canal network.

- 1.9 In 1846 the Shrewsbury and the Newport branch came under the ownership of the Shropshire Union Railway & Canal Company, which later became part of the London Midlands and Scottish Railway (LMS). The company's canals traded reasonably successfully into the twentieth century but as trade declined with railway competition the canal was gradually maintained less and less. In 1921 the Trench inclined plane, the last to continue working in Britain, closed and trade on the tub-boat section of the network ceased. The last working boats reached Shrewsbury in 1936 and, Longdon-upon-Tern in 1939. In 1944, along with many other of the Shropshire Union's canals, the canal route from Norbury Junction to Shrewsbury was officially abandoned.

REPORT STRUCTURE

- 1.10 The structure of the report is as follows:

Section Two: What Remains Today – identifies the route, features and current status of the canal

Section Three: Proposed Works and Costs – outlines the restoration and maintenance cost for each section of the canal;

Section Four: Key Projects – a commentary of key projects proposed at Newport, Wappenshall and Shrewsbury;

Section Five: Policy Review – encapsulates the local, regional and national policy context that applies to the canal;

Section Six: Ecology – provides an ecological appraisal of the proposed scheme;

Section Seven: Heritage – outlines features of historical importance that will be of consequence to the restoration;

Section Eight: Economic Benefits – outlines the economic benefits that may be expected as a result of restoration;

Section Nine: Funding Sources – identifies possible opportunities for funding to aid implementation of the proposed restoration scheme; and

Section Ten: The Way Forward – summarises the findings from the report and outlines further work required to take the project forward.

2. What Remains Today

2.1 In order to allow comparison with costs presented elsewhere and to present the canal lengths in meaningful sections, the canal will be described in the following sequence:

◆ **The Shrewsbury & Newport Canal**

- Norbury Junction to Newport
- Newport to Wappenshall
- Wappenshall to Longdon-upon-Tern
- Longdon-upon-Tern to Berwick
- Berwick to Shrewsbury

◆ **The Trench Arm**

◆ **The Humber Arm**

2.2 The following descriptions are intended to give the reader an impression of the canals as they are today, including an indication of particular blockages. This does not constitute a formal engineering appraisal. For details of works required see Section Three 'Proposed Works and Costings'. Maps showing the historic route of the canal and significant structures can be seen in Fig's 2.1 to 2.3.

THE SHREWSBURY & NEWPORT CANAL

Norbury Junction to Newport

2.3 Between the Canal's beginning at Norbury Junction, the intersection with the Main Line of the Shropshire Union Canal and the town of Newport, the first major settlement the canal reaches; there are a several features although most of the canal has been filled in, locks buried and two bridges destroyed. There are very few of the original lock structures and canal bed visible or still in existence. Most of the bridges remain and most still carry roads or tracks.

2.4 Of note on this section of the canal route is the Forton Aqueduct and adjacent Skew Bridge by Thomas Telford. The Forton Aqueduct carries both the canal and a minor road over the River Meese. Thomas Telford's 'Skew Bridge' (B9) derives its name from the angle at which the road crosses the canal. The superstructure is not perpendicular to the substructure hence a skew angle is created. The canal at this point is well defined and in good condition, although the bed is dry and overgrown with vegetation.

2.5 The line of the canal crosses the A41 Newport By-pass between the settlements of Meretown and Islington. Very soon after crossing the A41, over one mile of canal remains fully in water through Newport from the site of "Meretown Lock" (L18) to the site of "Polly's Lock" (L22) and upon this length can be seen a number of structures. The Summerhouse Bridge (B12), a typical lock-side cottage at Fisher's Lock and the Newport Basin. Here the canal has been restored for leisure activities and the tow path is used as a footpath starting just east of Summerhouse Bridge and continuing roughly to Newport Baths.

- 2.6 Between B12 and B13, “Fishers Lock” (L19) and “Newport Wharf Lock” (L20) are capped with concrete but largely intact. At L20 there stands a warehouse that dates back to the beginnings of the canal and directly adjacent are “Cosy Hall” and “Victoria Park”.
- 2.7 Around B13 the line of the canal has been concreted over and forms part of a walkway. This was done to allow the Strine Valley Sewer to be routed along the bed, and also because the bed rose as a result of ground heave caused by adjacent loading. A small drainage channel still remains, which travel for approximately 100 metres west from the bridge before the canal bed is reinstated. The line of the canal is bordered mainly by trees to the north side and a small band of land containing the tow path on the south. “Tickethouse Lock” (L21), is intact. Immediately past L21 is an accommodation bridge used to access farm fields, this is now unused for that purpose. Between L21 and L22 the canal widens with weed lining its bed as it advances into more open countryside. Towards the end of this reinstated watered section there is a small basin on the north side roughly opposite the sewage works. Between the end of this section and L22 there is a short infilled length and a cut through culvert.

Newport to Wappenshall

- 2.8 Between Polly’s Lock (L22) just west of Newport and Wappenshall Junction the route heads roughly south west and apart from some remnants of the bed nothing substantial remains. It should be noted that at this point through to Shrewsbury the vast majority of the bridges have been destroyed with the exception of the roving bridge at Wappenshall and five others: one east of Wappenshall B22a; one at Rodington (B35) which is now unused; one near Withington (B40); one between Berwick Wharf and the Berwick Tunnel (B48); and one at Uffington (B51) which is in poor condition.
- 2.9 At the site of “Edgmond Lock” (L23) the canal route passes directly through a Severn Trent Pumping Station and the site of “Edgmond Bridge” (B15). Once past the pumping station the canal begins to curve to the south continuing through agricultural land and then through Longford Moors.
- 2.10 The aqueduct at Kynnersley, which is approximately 13km from Norbury Junction, has been destroyed and the embankment has been breached for access. Kynnersley Drive which crosses the canal has now become overgrown and is apparently unused. Approximately 0.4km past the site of the destroyed aqueduct is the junction with the Humber Arm. The junction is almost unrecognisable for the dense undergrowth and trees cover the intersection. The bed west of the junction has also become overgrown.
- 2.11 There are very few traces of canal between this point and Wappenshall and the route is virtually entirely open countryside having to cross a minor road and farm tracks.
- 2.12 Wappenshall Junction lies behind the village of Wappenshall, north of Telford and is approximately 10.5km from Newport. Original structures including the warehouse and roving bridge still exist and are largely intact. The canal and East Basin have been levelled to form a yard. A large pond exists where the west basin was and the whole area is now overgrown.

Wappenshall to Longdon-upon-Tern

- 2.13 From Wappenshall the canal heads in a north-westerly direction towards Eyton-upon-the-Weald-Moors. The bed between Wappenshall Junction and Lock 25 has been adapted as a drainage water course called “Hurley Brook” and travels through a linear copse until Eyton Lower Lock (L25). The water course which uses the bed veers to the left just before L25. After L25, the line of the bed meanders north-easterly through arable land until bridge 25 and Long Lane.
- 2.14 Directly west of B25 to the A442 a short stretch of bed contains water. Sixty metres to the east of B25 is a junction to a disused wharf on the north side. B25 is approximately 3kms from Wappenshall Junction and is in good condition. It carries at Long Lane what was the original old A442, which now remains as a residential access road. This section of the canal appears to be in a potentially functional state, with bed and banks uncluttered and the towpath clear.
- 2.15 The bed west of the A442 passes through pasture land and a private garden prior to reaching Bratton Road and the site of B26. Beyond B26 the line of the canal proceeds north-east through another garden before proceeding into open countryside again. Past the garden towards the disused railway line the canal contains water as it curves to the left and proceeds south-east, through a mixture of arable and pasture land towards Longdon-upon-Tern.
- 2.16 As the canal route approaches the village it crosses the River Tern over the Longdon-Upon-Tern Aqueduct, the oldest surviving iron aqueduct in the world. It passes about 16 feet over the River Tern in the middle of open agricultural land. Both the brick and iron structure seem to be in sound condition but are becoming colonised with vegetation.

Longdon-upon-Tern to Berwick

- 2.17 The bed, west of the aqueduct, curves around, following a hedge line, and heads towards the centre of Longdon through arable land. On approach to the B5063 the line of the canal travels through a copse where a power line runs along it. The canal crosses the B5063 at the site of bridge 30, in a south-west direction. East of bridge B30 the line of the bed passes an original building that serviced the canal and then through private gardens before heading west through agricultural land to B31.
- 2.18 At the site of B31, at Marsh Green, the line of the canal crosses a narrow country lane that joins the settlements of Sugdon and Isombridge to Marsh Green. From there the line of the canal curves gently to the right and runs south-westerly through open agricultural land toward Rodington. The path of the canal continues westward, crossing the sites of destroyed bridges 32, 32a, 33 and 34 before passing just south of Rodington Hall. Immediately past Rodington Hall the bed travels along an embankment, lined with trees, towards the River Roden and the Rodington aqueduct, which has been destroyed.
- 2.19 Once across the River Roden the line passes through a private garden and under B35 which is used as a farmer’s access to the surrounding fields. The bridge is constructed of brick and in a dilapidated condition. After this point very few traces remain as the line of the canal meanders in a south-westerly direction, passing through a mixture of arable and pasture land before approaching Withington.
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- 2.20 The next significant remnant of the canal is B40 on the south western fringe of Withington. The bridge still stands and even has its original Shrewsbury Canal plate number but it is in poor condition.
- 2.21 After this point the dry bed becomes more noticeable and follows a tree line through agricultural land. Just east of B42 the dry bed has become colonised by vegetation and trees line the banks. On its approach the dry bed becomes more untidy with debris scattered along the line.
- 2.22 A major obstacle in the canal's path after this point is the railway line and A5 Trunk Road. After crossing the railway line. The route then continues towards Berwick Wharf.

Berwick Wharf to Shrewsbury

- 2.23 At Berwick Wharf, approximately 15kms from Wappenshall Junction, there is a section of the canal in water. It crosses the Berwick to Upton Magna road at the site of B46, just outside the hamlet where there are cottages. Cutting the corner between the two roads that run through Berwick Wharf, the canal heads north-west behind the cottages on the east side of the Atcham to Uffington road. The bed east of B47 has been partly restored and contains water. Past the cottages the canal then crosses the Atcham to Uffington road. At this point the road has been straightened and widened since abandonment and the canal line now crosses the road on a shallow oblique angle at the site of bridge 47. West of B47 the canal advances through dense vegetation before the channel is reinstated.
- 2.24 A short distance past the site of B47 the canal passes under B48. The bridge which is still in existence was previously used to access the adjacent field and is not a through route. The structure is sound and the bed appears to be clear. The route then continues through a deep cutting with vegetation encroaching over the banks and into the canal towards the Berwick Tunnel
- 2.25 The approach to the tunnel has become unkempt and dilapidated. The banks are unclear due to the undergrowth encroaching into the channel. The south-west opening has been blocked off with brick and has become overgrown with overhanging vegetation. The tunnel is roughly 900 metres in length and is brick lined. There is a slight bend, roughly in the middle, that means that it is impossible to see through to the opposite entrance.
- 2.26 The tunnel entrance on the north side is in a poor condition. Both banks have become heavily overgrown and have slipped into the canal. The bed north of the tunnel, just north of Preston, is in a cutting. It contains water but the banks are covered with vegetation and the canal itself is beginning to become colonised. The water remains until the canal reaches the edge of the A5(T).
- 2.27 On the opposite side of the A5(T) the canal heads north to Uffington. First, it proceeds under a railway bridge through rough pasture land. The bed just north of the railway bridge is visible but covered in vegetation. It follows a tree line until bridge 49, where it crosses Church Road and become dry and unobtrusive. Once again the canal is noticeable but covered in vegetation.

- 2.28 The canal bed then curves around the east side of Uffington. As the canal approaches B51 the line of the bed travels along the path of three electricity pylons which are set on (or very near to) the bed. Other Canal restoration schemes (most notably the fully restored Huddersfield Canal) have been reinstated through the arch of electricity pylons where these straddle the route. Bridge 51 at Uffington although still standing is in poor condition and is used as an access to farmland. The bed north of B51 contains water but has become heavily overgrown. At the site of B52 at Uffington the line of the canal passes close to residential properties and further up there is an actual building built upon the line.
- 2.29 The bed between A49(T) and Uffington has been filled in and The Shropshire Way foot path and cycleway laid over it. At the A49 the foot path underpass is at a much lower level than the original bed level of the canal. From Bridge 53 at Pimley Manor, The Shropshire Way continues on the line of the bed west toward the A5112. West of the A5112 the line rejoins the path and continue west through park land. The canal then crosses Whitchurch Road and the site of B55.
- 2.30 Upon crossing Whitchurch Road the canal heads south-west through the Spring Gardens residential area and the current site of the Midland Red Social Club behind the Arriva Bus Depot, before reaching the Flax Mill. Past the Flax mill the line of the canal proceeds south across Whitchurch Road through a narrow gap between two residential properties. From there the line proceeds through parkland and onto a footpath until the Morris Depot. The canal then terminated at a small basin in the depot yard at the time of closure. Originally the canal terminated under the Butter Market but was altered when the railway warehouse and sidings were built.

THE HUMBER ARM

- 2.31 The line of the Humber Arm runs from its junction with the main canal line, just east of the site of the Kynnersley Aqueduct for 1.2km south to its terminus just short of the Humber Lane. The bed at the junction with the Shrewsbury and Newport Canal has become overgrown with trees and scrub. For half this length the line runs down a decreasing embankment which still exists. Over its final length the original water level was not far beneath ground level.

THE TRENCH ARM

- 2.32 The Trench Arm was not modified when the rest of the Canal was joined to the rest of the canal network via the Newport branch, meaning that only tub boats could access the branch. It is for this reason the warehouses were built at its junction with the main line at Wappenshall, for transfer of goods to narrow boats, from the narrower tub boats.
- 2.33 Since closure of the canal the subsequent development of Telford has totally destroyed most of the original route but it can still be traced from the area around the A518 and A442 Junction at Trench Lock as far as Wappenshall. During this 3km section the remains of some of the locks and structures can still be seen including Turnip Lock SL3 and Hadley Park Lock SL4 which still have the remains of the guillotine gates and as such are listed structures. However the first 850 metres from Trench Lock runs through the centre of the GKN Sankey Site (a significant employer) and the first 500 metres running south from Wappenshall Junction has been

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converted to form part of the Hurley Brook Storm Drain. From the drain to the Wheat Leasows road the line has been converted to agriculture but the stretch from this road to GKN boundary remains unblocked, with the exception of the crossing of the A442 and the Wheat Leasows road.

3. Proposed Works and Costings

Introduction

- 3.1 We have looked at the information provided by the Trust following our appointment to carry out the canal restoration study. We have also noted the design parameters laid down by the Trust in their Invitation to Tender.
- 3.2 The canal is in various states of dereliction. The majority of the canal track has been completely filled in, probably by pushing in earth from each side to remove any cross section above the adjacent ground level, followed by a general cross grading of the land to present an even and manageable profile for the land owner. The majority of the locks have been infilled probably after the removal of coping stones and all surface gear and identity. Many bridges have disappeared, particularly at access track crossings of the canal, where the track exists but the exact location of the crossing of the canal is not apparent.
- 3.3 The Trust has indicated on photographs, the probable line of the canal and the structures. Where possible we have visited the structures and the main canal track. We have not tried to pick up the exact line of the old canal track, as the suggested position need only be a few metres out and considerable time, cost and annoyance to adjacent landowners may arise in locating it.
- 3.4 The Canal was not built generally in straight lines between fixed points but followed the land contours of the time. However, the contours may have been altered by general working of the land plus the operation of filling in and regrading.
- 3.5 A second consideration is to ask the question “is it necessary to find accurately the canal track?” In our opinion, it is essential to locate accurately the old lock chambers. Quite apart from the historic value and connotations with restoration, they will hopefully save considerable expense; similarly with existing bridges.
- 3.6 As regards the old canal track, due to the industrial heritage value we do see restoration of the original route wherever possible as being the aim. However, the original puddle clay lining lay exposed and dry for many years, suffering wet and dry weather, plant growth and attacks by small mammals etc. The infilling operation would have destroyed the lining to the sides and possibly further impaired the base and may have introduced contaminated materials into the canal. As a result the original lining and construction will have to be replaced with an alternative modern construction.
- 3.7 To summarise our views from the practical and financial aspects:
- ◆ If repair of the old track lining were undertaken, this would require:
 - Accurately locating it throughout its whole length;
 - Deciding which areas required to be replaced;
 - Sourcing a supply of puddle clay;
 - Arranging transport in sheeted lorries to avoid fouling highways;

- Double handling onto small vehicles (probably dumpers) along the canal track from specified access points;
 - Placing the material in layers and compacting each layer (possibly 3 no) to form the waterproof lining.
- 3.8 We compare this to forming a new canal track either on the line of the old route or in close proximity. The main function of the canal lining being to retain water. Puddle clay was used historically as being the best material available. In modern times puddle clay is difficult to source and very onerous to lay effectively. A deep layer of clay had to be laid, sometimes up to 0.6m thick. Modern materials can perform the same function but be cheaper to source, easier to lay and have improved water retention properties. Fig's 3.1 to 3.3 show a preferred canal route, whilst Fig's 3.4 and 3.5 show the proposed modern canal construction.
- ◆ The required canal is excavated and arisings disposed on site wherever possible but otherwise to tip.
 - ◆ On very stony ground a 50 – 100mm layer of sand is placed over the formation to prevent sharp stones migrating upwards. A protective geofabric is then placed on top of the sand as the main liner protection material. On silty clay soils the sand blinding is not required.
 - ◆ There are a number of impermeable liner systems. High Density Poly-Ethelene (HDPE) liners have been the geomembranes used traditionally. However, there are a number of other alternatives such as Polypropylene. Both liners would be around 1mm thick. The liner is unrolled, laid, and heat jointed. It is then tested by machine controlled air pressure testing. Finally 0.1m thickness of protective concrete is placed on top of the lining. The technique requires specialist suppliers and installers and can only be laid in fine weather. Specialists normally give a 25 year warranty on the liner installation
 - ◆ More recently bentonite clay liner systems have been introduced. A layer of clay powder is sandwiched between two protective geofabrics. The liner can be laid by non specialist labour and is simply sealed by overlaps and pouring a clay seal. The liner must be kept compressed by a minimum of 300mm cover of stone. This system can be laid in inclement weather.
 - ◆ For all liner options, the geomembrane is taken beneath the side gabions and turned up behind them to ground level.
- 3.9 The HDPE system has been constructed under contract by ourselves on the Montgomery Canal between Frankton Junction and Queens Head. It has been in service for a number of years without problems. The bentonite clay liner system has been used by ourselves on relining a section of the Swansea Canal and on the Kennet and Avon Canal by British Waterways.
- 3.10 Financially the cost of restoring the puddle clay lining compared to the geomembrane method shows that puddle clay will be approximately twice the cost of geomembranes. There will be fluctuations in this comparison due to:
- a) The sourcing of the quantities of material required and haulage to site.
 - b) The long length of canal (25 miles) to be reconstructed.
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- 3.11 The typical average depth of operational water loss for a puddle clay lined canal on the UK system is around 160mm per day (i.e. 160mm depth over the entire length). This compares to 50mm per day for a geomembrane liner system. The figure of 50mm is based on a typical value of 10mm evapotranspiration. 10mm through the lining and 30mm loss at joints with structures. These losses can be made up by rainfall, adjacent land run-off and external supply sourcing, but in periods of drought these losses must be considered against the point at which navigation would have to stop from lack of depth of water. It is of course possible to introduce back pumping at locks to assist in off-setting this problem, but this has to be considered against the cost of installation, maintenance and even delay.
- 3.12 A lined canal will help to minimise water loss. However, there will be times during severe droughts that canal navigation may have to be prohibited temporarily. In a similar manner to the UK network, the minimum criteria for a sensible and economically viable canal is that stoppage of use due to lack of water should not occur on more than one year in ten.
- 3.13 The liners will have a minimum warranted lifespan of 25 years but the actual lifespan is likely to be in excess of this timespan. The only other major material affecting the lifespan of the canal will be the gabion baskets. Typically the gabion baskets can have a life of up to 80 years, which can be further extended by pressure sprayed grout/concrete to reface and contain the stone or by installing replacement mesh panels.
- 3.14 Regular maintenance will be essential to ensure that the lifespan of the canal is maximised. In a similar vein, heavy build up of silts can lead to navigation difficulties. In our opinion routine maintenance removal of silt is easier and faster than carrying out major dredging programmes every decade or so. A tracked or preferably wheeled excavator fitted with a blade could (with a lowered water level) push the silt to convenient locations to be removed by a statically positioned excavator on the towpath.

Conclusions

- 3.15 For the canal track, we propose to use the HDPE solution as described above. The old locks and bridges will be recovered and restored using heritage/ conservation techniques unless otherwise stated.

Locks

- 3.22 Locks will be restored using the old existing chambers, excavated and restored as necessary. Traditional masonry techniques and hydraulic lime mortars will need to be used to restore the historic structures. Replacement masonry will have to be carefully sourced and tooled to match the existing structures. Where brickwork is present there may be the need to produce special bricks to match the exact course height, which would have been typically shorter than modern bricks. The copings will be retrieved from the invert of the locks and re-used if available. Replacement copings will be carefully sourced tooled and if necessary traditional metal cramps added. Timber gates with paddles and balance beams would need to be used comprising a single top gate and 2 mitred gates at the bottom. Taking onboard sustainability could well dictate that the gates will need to be constructed from ekki or similar rather than the traditional oak and elm. Other vital furniture such as access

bridges across the gates to operate paddles and Lock metalwork will need to be sourced as necessary.

- 3.23 We will allow for reinstatement of a by-wash at each lock.

Bridges

- 3.24 The surviving bridges over the canal are largely intact and other than minor repairs can be re-used. Where it is necessary to replace a bridge, we propose to use a reinforced concrete box culvert sensitively faced with brick to give a traditional look. The cost of these can be minimised by ramping the towpath up and over minor roads and tracks. Hand operated lift bridges will also be used along minor roads, the actual requirements including traffic lights and road re-alignment will be subject to detailed investigation and consultation with the local council highways department at detailed design stage.

Culverts

- 3.25 The positions of the old abandoned culverts are noted on the information plans supplied by the Trust. We have made a financial estimate of cost of restoration replacement of these although it may well be that in practice due to infilling and regrading of the track some of them will not be required.

Aqueducts

- 3.25 There were 4 no. aqueducts on the old canal. In the cases of A1, A2 and A4 allowance will be made to repair or replace as necessary.
- 3.26 In the case of A3, a new aqueduct on a diversion route is required. It is understood that the old existing iron trough aqueduct here is a historic monument. We have visited this structure and propose to restore the aqueduct and create a marina basin as a tourist attraction. This structure will be restored using conservation principles and in full agreement with English Heritage.

Major Obstructions

- 3.27 These are described as the crossings of:
- a) The A41T
 - b) The A442 (Sleapford)
 - c) The B5063
 - d) 2 No. crossings of the A5T and the Railway
 - e) The A49T
 - f) The A5112
 - g) The A5191

A separate explanation of our views and adopted solutions is given for each of these problems.

Services

3.28 We have contacted the following service providers:

- ◆ Severn Trent
- ◆ Gas
- ◆ Electric
- ◆ Telecom
- ◆ Cable TV

3.29 We have collated all the services together and produced service record plans. An allowance will be made in the budget cost calculations for diversion of services where necessary.

Water Supply

3.30 The fundamental pre-requisite for a canal is to have a reliable water supply. We have met British Waterways and discussed water supply options with their water resources team in Watford. We have also investigated the use of surface water drains and water well abstractions.

SCHEDULE OF CANAL STRUCTURES

- 3.31 The following is a schedule of canal structures – bridges, locks and aqueducts – and the pounds in which they are in.
- 3.32 Pounds are described as the canal track between locks. (Note: Pound No.1 is between Norbury Junction and Lock No. 1.)
- 3.33 There are 25 no. locks. 16 no. are buried and their condition is unknown. They are assumed to have masonry/brick walls originally with a masonry coping (removed or buried). They are assumed to have brick/masonry floors. There are now no gates or lock furniture present. The chambers are all 25m x 8' wide. No by-washes can be seen. Locks 1-23 all have a drop of 6'1".
- 3.34 There are 4 no. aqueducts, two of which remain.

Pound 1

- 3.35 Navigable. Structures within pound:
- ◆ B1 Bridge over. Adjacent Norbury junction
 - ◆ L1 Converted to dry dock. (This will need to be replaced in a new Location at Norbury.)

Pound 2

- 3.36 Partially in water. Structures within pound:
- ◆ L2 Infilled. No visible trace.

Pound 3

- 3.37 Infilled – no trace. Structures within pound:
- ◆ B2 Bridge over. No access ramps
 - ◆ L3 Infilled. No visible trace.

Pound 4

- 3.38 Infilled – end of lock visible. Structures within pound:
- ◆ L4 Infilled. No visible trace.

Pound 5

- 3.39 Dry bed weed overgrown. Structures within pound:
- ◆ L5 Chamber exists. Empty

Pound 6

- 3.40 Wet bed, trees present. Structures within pound:
- ◆ B3 Bridge over. In use road to Norbury
 - ◆ L6 Chamber exists. Overgrown, remains of old gates.

Pound 7

3.41 Wet bed, trees present. Structures within pound:

- ◆ L7 Chamber exists. In water.

Pound 8

3.42 Infilled – no trace. Structures within pound:

- ◆ B4 Bridge over. In use road to Culton
- ◆ L8 Infilled. No visible trace.

Pound 9

3.43 Infilled – no trace. Structures within pound:

- ◆ L9 Infilled. No visible trace.

Pound 10

3.44 Infilled – no trace. Structures within pound:

- ◆ L10 Infilled. No visible trace.

Pound 11

3.45 Infilled – no trace. Structures within pound:

- ◆ L11 Infilled. No visible trace.

Pound 12

3.46 Infilled – no trace. Structures within pound:

- ◆ L12 Infilled. No visible trace.

Pound 13

3.47 Infilled – no trace. Structures within pound:

- ◆ B5 Bridge over. In use road to Cliffs Lane
- ◆ L13 Infilled. No visible trace

Pound 14

3.48 Infilled – no trace. Structures within pound:

- ◆ L14 Infilled. No visible trace.

Pound 15

3.49 Infilled – no trace. Structures within pound:

- ◆ B6 Bridge over. In use road to Sutton
- ◆ L15 Infilled. No visible trace

Pound 16

3.50 Infilled – no trace. Structures within pound:

- ◆ L16. Infilled. No visible trace.

Pound 17

3.51 Infilled – no trace. Structures within pound:

- L17. Infilled. No visible trace.

Locks 2 –17 form a single flight over a distance of 2.4km

Pound 18

3.52 400m dry bed; 30m wet bed weed overgrown; 600m in water; 30m wet bed overgrown; 1200m dry bed; 400m infilled no trace; 50m dry bed. Lock L18 to remain unused and new lock built on proposed reroute for access under A41. See separate description. Structures within pound:

- ◆ B6a Bridge over. A public footpath crosses at this point. If the landowner does not require access a footbridge combined with lock L17 will suffice.
- ◆ B7 Bridge over. In water and in use, road to Sutton
- ◆ B8 Bridge over. A public footpath crosses at this point.
- ◆ A1 Length estimated 50m – stone aqueduct – good condition with some growth over it. Bed dry – In pound 18 between B8 and 9.
- ◆ B9 Skew Bridge over – to Forton
- ◆ B10 Bridge over. This is now only used for access to farm fields. The road was made redundant when the A41 bypass was built.
- ◆ B11 Access across A41T. Old bridge exists now off route of A41 which has been diverted. See special note.
- ◆ L18. Meretown - Old lock now to be redundant and removed. New Lock 18 to be constructed on diverted route east of A4T.

Pound 19

3.53 In water – overgrown. Structures within pound:

- ◆ B12 Bridge over. This bridge provides access to a farm only.
- ◆ L19. Haycocks - Chamber empty – no gates or furniture. Bridge across chamber with insufficient headroom. Rubbish in chamber.

Pound 20

3.54 In water: Structures within pound:

- ◆ L20. Newport Wharf - Chamber partially infilled. Growth.

Pound 21

3.55 50m infilled west of L20, remainder in water. Structures within pound:

- ◆ B13 Bridge over. In use road to Newport
- ◆ L21. Ticket House - Chamber empty – overgrown – no furniture.

Pound 22

3.56 470m in water, 30m infilled. Structures within pound:

- ◆ L22. Polly's - Infilled. No visible trace.

Pound 23

3.57 L22 to B14 1000m infilled no trace; B14 to L23 400m dry bed overgrown weeds and trees; 300m infilled no trace. Pumping station built on location of L23, reroute around including new lock and bridge to replace L23 and B15. Structures within pound:

- B14 Bridge removed. Accommodation Lift Bridge (M) required.
- B15 Demolished new bridge required.
- L23. Edgmond - Infilled. New Lock required on diverted route to avoid STW pumping station.

Locks 1 to 23 lie on the Newport Canal.

Pound 24

3.58 From L23 to B16 infilled no trace; B16 to B17 bed partially in water overgrown weeds; B17 to B18 400m infilled no trace; Between B18 and 19 the route goes to the Kynnersley Moor and is on a 2 metre high embankment. Canal is infilled on the embankment; A2 to Humber Arm dry bed overgrown; Humber Arm to B20 700m dry bed overgrown weeds and trees remainder is infilled across fields and this length contains the Preston winding hole which is partially in water; B20 to B22 infilled no trace; B22 to B22a 150m infilled remainder dry bed overgrown weeds and trees; B22a to B22b dry bed overgrown weeds and trees; Newport Canal joins with Shrewsbury Canal at Wappenshall Junction; B22b to L25 bed of canal and lock L24 converted for use as storm drain which veers off west just short of L25. Separate storm drain from canal and run it parallel along side. Canal and lock L24 to be reinstated. Structures within pound:

- ◆ B15a & b Bridge removed. They were farm accommodation bridges and are now destroyed. Replacement will depend on farmer's requirements.
- ◆ B16 Bridge removed. Farm access. Lift bridge (M)
- ◆ B17 These bridges have all been removed. They provide access to
- ◆ B18 the moor. Replacement will depend upon farmers requirements
- ◆ B19 Buttery Farm a Lift Bridge (M).

The Strine Brook separates the land east to west between 18 and 19 so a lift bridge replacing 19 and a further lift bridge to replace 17 and 18 will be the minimum requirement in this location

- ◆ A2 Length estimated 10m – Now demolished, previously an imposing masonry/ironwork structure sited west of B19. There is access (Kynersley Drive) cut through the approach embankment on the east side. This needs reinstating and use made of B19 as farm access.
- ◆ B20 Access from Kynnersley to Preston on Weald Moors – Lift Bridge (M). This is dependent upon traffic (Highway Authority) but a fixed bridge (box culvert) requires 2.5m ramps. There are properties on south side. Existing Old Bridge removed and infilled.
- ◆ B21 Bridge removed and infilled
- ◆ B22 Bridge removed and infilled
- ◆ B22a Bridge intact bed channel filled and culvert installed through.
- ◆ B22b Existing bridge at junction with the Trench Arm. Ramps up and over. This bridge has preservation order on it and its condition is such that it would be unadvisable to use for farm accommodation, also these original bridges are too narrow to accept modern farm machinery. As the land along the stretch B21 to B23 is owned by different farmers, each will require lift bridges for access to their land.
- ◆ B23 As for B22
- ◆ L24. Eyton top - Partially infilled – no furniture. Adapted by Telford Corporation as part of drainage water-course. (Ref: 3.58 1st para)

Pound 25

3.59 Canal west of L24 in water and used as a drainage conduit by Telford Corporation. This stops just short of L25 where it is infilled. Structures within pound: (Ref: 3.58 1st para)

- ◆ B24 Bridge removed and infilled – lift bridge (M)
- ◆ L25. Eyton low - Chamber empty. Old guillotine gate and heavy machinery present. All to be replaced.

Locks 24 and 25 lie on the Shrewsbury Canal.

Pound 26

3.60 Pound 26 to the Manse (NW of A5T). B25 (existing) redundant. Was original A442 crossing, road now diverted. New bridge required for New Option No.1 crossing of A442 also replacement for B26 which is demolished. New Option No.2 is a new alignment by-passing the sites of B25 & B26 (See separate description sheets). The Canal is infilled except for short section east of B27. The Canal is infilled from B27 to B28 to B29 and up to A3 (existing) over the River Tern. This last section is on a shallow embankment. Canal is to be diverted onto new alignment with new A3, B30 and additional bridge B30A (See separate description sheet B31 to A4). Canal infilled except for short approach to A4. Canal infilled between A4 to B41. B41 to B43 dry bed overgrown. Structures within pound:

-
- ◆ B25 See above. If option No.1 is chosen this bridge will be demolished.
 - B26 See above. Bratton Lane, bridge demolished and infilled. New bridge required.
 - B27 Bridge demolished
 - ◆ B28 Bridge removed and infilled – lift bridge (M)
 - ◆ B29 This bridge served as both accommodation and towpath changeover and may still be required for this purpose.
 - ◆ A3 Length 50m iron trough aqueduct on iron stub column supports. Invert approx 4 metres above GL. It is of national heritage value. Use option 2 here with canal diversion and a new aqueduct plus a spur of canal, cross the old aqueduct to a marina/turning basin. – In pound 26 east of B30 (B5063).
 - ◆ B30 Bridge removed and infilled. This bridge is re-located using a Canal Diversion – new box culver - under
 - ◆ B30a New bridge on diversion above – lift bridge (M)
 - ◆ B31 Bridge removed and infilled – lift bridge (M)
 - ◆ B32 Bridge removed and infilled – lift bridge (M)
 - ◆ B32a Bridge removed and infilled – propose to omit this bridge
 - ◆ B33 Bridge removed and infilled – propose to omit this bridge
 - ◆ B34 Bridge removed and infilled – propose to omit this bridge but dependant on landowners requirement.

At bridge 32a a footpath crosses. The landowner may agree to one lift bridge to replace 33 and 34 and to a footpath diversion to also use this bridge.

- ◆ B35 Bridge in place
- ◆ A4 Length estimated 25m. Over the river at Rodington. Imposing 3 span brick aqueduct. Demolished – In pound 26 east of B35.
- ◆ B36 Bridge infilled and removed – lift bridges (M)
- ◆ B37 Bridge infilled and removed – lift bridges (M)
- ◆ B38 Bridge infilled and removed – lift bridges (M)
- ◆ B39 Bridge infilled and removed – lift bridges (M)
- ◆ B40 Omit this bridge
- ◆ B41 Footbridge over – removed – replace
- ◆ B42 Bridge removed and infilled – lift bridge (M)
- ◆ B43 Footpath Bridge – removed – replace
- ◆ At this point the original route passes under the Wellington to Shrewsbury railway and then looped around through Berwick Wharf and back under the railway further west at the Manse. The new A5T road which runs parallel south of the railway now passes across the route at these two locations. In order to avoid these two crossings a new alignment by-passing the Berwick Loop is required. (see separate description sheet). Structures within pound around the loop:

- ◆ B44 to B48 B44 exists but is now redundant and 48 exists but may not be required now. 45 has gone and could be replaced by a manual lift bridge. 46 and 47 have gone and could both be replaced with powered traffic light controlled lift bridges. B47 requiring a special skew design.
- ◆ Continuation of the original route from the railway bridge by the Manse: From Rail Bridge to B49 partially in water overgrown with vegetation. B49 to B51 partially in water overgrown with vegetation, O/H power pylons on or adjacent to the bed to be relocated or preferably canal realigned around them. Open country diversion minimal. B51 to B52 partially in water overgrown with vegetation. Structures within the pound:
 - ◆ B49 Bridge infilled & removed – Box culvert ramps or a minor diversion to allow a road improvement, reducing the severity of bends and slope and allowing the necessary box culvert under.
 - ◆ B50 Bridge infilled - only a minor road and a lift bridge will be appropriate
 - ◆ B51 Bridge in poor condition - repair
 - ◆ B52 Bridge removed –before being demolished, was on the main road through Uffington village. It is to be replaced by the Fall and Rise lock solution for access under both this road and the A49T at Pimley.

CULVERTS

- 3.61 There were 50, 2ft diameter culverts installed passing under the canal. Most of these will have disappeared, due to the infilling operation or have deteriorated and collapsed resulting in the bed being cut through.
- 3.62 We have therefore allowed in our costings for 50 new concrete pipe culverts to be positioned as the present day land drainage requirements dictate.

MAJOR OBSTRUCTIONS/DIVERSIONS

- 3.63 There are a number of minor road crossings, which would need lift bridges to accommodate the road traffic. In this section we consider the major road crossings as follows:

The A41T – (In Pound 18)

- 3.64 We have studied the scheme as described in the information supplied by the Trust and we agree with the Trusts preferred option for the crossing of the new A41T which crosses the canal route between B11 and L18. The option involves a minor realignment 150m to the north of the original route where the ground rises and the replacement of lock L18 at present west of A41T with a new lock east of A41T on the new alignment
- 3.65 At the A41T we estimate the cost of the canal diversion option at: £871,100.

The A442 and Bratton Lane Crossings at Sleaford (In Pound 26)

- 3.75 The present situation is that the A442 has been lowered and re-aligned leaving B25 intact and giving access to cottages from the south side. At the Bratton Lane B26 has been removed. At this location we have noted the Trusts proposal for fall and rise locks and commend the depth of thought which has gone into these concept schemes. We consider however that of the two the 'Safety Drain Fall & Rise Lock' is the better solution as this allows boats to pass safely between the two locks thus eliminating potential delays. Use of the 'Semiautomatic Fall & Rise Lock' with a long dropped pound between the two locks, passing beneath both the A442 and the Bratton Lane, we consider would present an unacceptable delay at times of heavy traffic on the canal. (see sketches showing both options). We also consider at this location that the problem of road works and diversions will be exacerbated due to adjacent properties and road junctions.
- 3.77 As an alternative to the use of the F&R lock we have considered possible realignments of the canal and have noted that the original canal runs adjacent to the 55 contour and the 60 contour runs to the south of the Hurley Brook Drain at the point where it crosses the A442. To take advantage of this higher ground would mean crossing the drain in the vicinity of Eyton and again in the area between the two roads, but due to the difference in the water levels of the canal and the normal free running level of the drain the culvert under the aqueduct would need to be of the siphon type which would need Environment Agency approval. In order to avoid these two crossings, which require siphons; an alternative proposed by the Trust, would be to realign the drain further to the south of its present line that runs east to west across the A442. This will then allow a realignment of the canal running north of and parallel with the drain, in a 2m cutting passing under the A442 and then veering away from the drain north-west under the Bratton Lane to rejoin the old alignment in the vicinity of B27. (see Trust sketch showing both options, Appendix 3). A modification would be to divert the Hurley Brook into the canal on the downstream side of Eyton Lock. In this manner the canal would benefit from a reliable free source of water. At times of flood the water would be discharged out of the canal via a new weir at Longdon on Tern.
- 3.78 There appears to be flexibility to minimise the impact upon properties by this route. There is a marginal difference in the overall length of canal. The original B25 can remain in position avoiding any problems with reduced access and possible route infringement of the cottages. The down side in choosing this option is that the facilities provided by the village and canal side Public House would be denied the future users of the canal. In addition the benefits the canal would bring to the community of Long Lane would be lost.
- 3.79 A new lock to replace lock L25 will be required on the re-routed section of the canal, with full by-wash provision. The Hurley Brook drain, during flash flooding, rises quickly to a level of 1.5 metres or more above normal, it will therefore be necessary to separate it from the original canal line. It is proposed that the separated drain on its new line will run parallel and adjacent to the south side of the canal, from the point where it joins the Trench Arm to the point where it veers off from the original canal route east of L25. Over this length, presently used by the drain, the canal will be restored back to its original condition. Water will be pumped from the brook into the Trench Arm to fill and operate the canal. Surplus water can ultimately be discharged to the river

- 3.80 At this obstruction we estimate the cost of the canal diversion option at being in the region of £1,514,685 and the cost of the Safety Drain Fall & Rise Lock option at £3,325,185.

THE B5063 AT LONGDON-ON-TERN

- 3.81 The Trust have described in their information to us a canal diversion here of the B5063 which undertakes local straightening and improvement of the road. This in turn allows a graded rise of the road to permit a diverted canal to bridge through beneath it. A new aqueduct A3 is included to cross the river Tern, followed by a manual lift bridge to cross the Lane to Isombridge and thence re-joining the canal route south of B30. In addition to avoiding a drop lock solution this option will substantially avoid upset to the settlement of Longdon-on-Tern. We have therefore adopted this option.
- 3.82 We recognise that the existing iron aqueduct at this location has considerable historic and heritage value. A superficial inspection shows it to be in a reasonable condition, to be confirmed by a future detailed examination. We therefore propose to include in the restoration scheme at this point, continuation of the waterway along the original alignment and over the existing aqueduct, continuing to a suitable location in the adjacent field and terminating here in a suggested marina/mooring basin/terminal winding hole. This will enable close inspection of the old aqueduct coupled with a visitor interpretation centre. It also provides a moorings centre on the long stretch into Shrewsbury and gives benefits from boater access into Longdon-on-Tern. At this obstruction we estimate the cost of the canal diversion option plus the addition of the restoration of the original aqueduct as described above at £3,651,750. The cost of the canal spur with renovation of the aqueduct is estimated to cost £2,062,500. Whilst Option 2 is estimated to cost £1,589,250.

2 No. CROSSINGS OF THE A5T AND THE RAILWAY

- 3.83 We have looked at the Trusts proposals for this area of the restoration. It is our opinion that the whole length between the approach to the east crossings and the exit from the west crossings has to be considered as a unit in order to affect meaningful comparisons.
- 3.84 It is our opinion that the difficulties of the crossings of the Railway and A5T would involve lengthy approval process with the Highways Agency. This in addition to on going maintenance cost will heavily favour an alternative. We have discussed this option with the Highways Agency's agents AmeyMouchel and a copy of their initial response is shown in the Appendices. (N.B. hard copy only)
- 3.85 We believe a direct route, as proposed by the Trusts option No.1, between the original east railway crossing and the west railway crossing is the best option.
- Our approximate budget costings are:
- a) For restoration as proposed following the historical route (in engineering terms only) £13,370,000. This allows for Fall & Rise Locks at the East and West crossings of the A5T and railway.

- b) Our preferred route is direct between the east and west railway bridges, running north of and parallel with the railway. It would involve 2 lengths of cut and cover tunnels at approximately 1800 and 300 metres in length at a total route cost of £10,235,550.
- 3.86 We have investigated also a full open cut solution and a raised pound solution. We have however rejected these options.
- ◆ The cut and cover tunnel solution is the best alternative for limiting its effect upon the present environment, landscape and land use;
 - ◆ There would be a short term deep excavation during construction. As each section is completed, the excavation would be backfilled and the land reinstated to its present use.
 - ◆ The tunnel sections would have a 120 year guaranteed life and would accept two-way boat traffic.
 - ◆ A large proportion of the surplus excavation would be used to form the proposed canal embankments between Pimley and A5112, thereby minimising disposal costs.
 - ◆ The full open cut solution is simple in canal terms. It does however require a very wide land corridor as a permanency. It generates a large surplus of excavated material which is unlikely to be required elsewhere in the works.
 - ◆ Works could be undertaken using one of the numerous methods of structural retaining walls to minimise the cutting slopes and therefore the land take. These however would involve considerable additional cost.
 - ◆ Research would be necessary to ascertain the planning authority's view regarding the landscape intrusion. A further factor is the need for planting and long term maintenance of the cutting slopes.
 - ◆ The raised pound solution does have the attraction of being the cheapest.
 - ◆ It does also require permanent landscape width corridor which would be approximately half that of the full open cut solution. Problems of planting and maintenance of cutting slopes would be minimised. Landscape and planning permission would still be required.
 - ◆ Our principal concern in this case would be the requirement for four deep locks requiring approximately 4.0m lift each.
 - ◆ The water regime would require back pumping from within the lock chambers onto the high level pounds to keep these filled.
 - ◆ There would also have to be a water by-pass pipeline to keep the natural flow from east to west along the canal.
- 3.88 Between bridges B49 and B51, we have for costing purposes continued on the original alignment.

The A49T to The Flaxmill

- 3.89 We have adopted the Trust's proposals for the Safety Drain Fall & Rise Lock solution to pass beneath the B52 and the A49T. The route then to continue passing beneath the B53 and B54. We have included for the diversion to pass beneath the A5112,

followed by a lock down to pass beneath the A5191. We have then terminated this section with the proposed mooring basin development in front of the Flax Mill.

The A49T to the River Severn at Ditherington

- 3.90 We have then continued (as a separate item in the cost tables) with the work described in 3.89 plus the works necessary to exit above the town weir into the river Severn, i.e. 1400m of deep channel, a lock, a 70m tunnel and exit works into the river. Of the two options put forward by the Trust to join with the river Severn we favour the alternative which passes outside the built up area. However we do acknowledge that the option passing through the urban area could prompt the redevelopment of the area around the historic Butter Market which was the original terminal, boats entering an arch beneath to deliver butter and cheese from the farms along the route. If the alternative route outside the built up area is used it allows the possibility for the Marina at the Flax Mill and the channel leading into it from the north crossing of the A5191, to be at surface level instead of 3.2 meters depth. This will depend on there being sufficient space to install a Fall & Rise lock to pass under the north crossing of the busy urban A5191.
- 3.91 For clarity we repeat again that the costings of works to 3.89 and 3.90 are not additive. The reader must select one or the other for total cost estimates. Please refer to cost tables.
- 3.92 A separate cost item is included in the cost tables for an alternative route *to join the river*. After passing beneath the A49T from Pimley the route continues on an embankment westwards to a junction in the Heathgate area with the northern leg continuing, adjacent to the original line and on to the A5112. The southern leg continues on an embankment near to and parallel with the river as far as the A5112. The northern leg merges onto the original line just prior to passing under the A5112 and then rise up the west lock of the F&R Lock to continue at the higher (original) level to the A5191. To cross the A5191 a Semi-automatic Double Fall & Rise Lock would be installed which will allow this leg to terminate at the marina/mooring basin in front of the Flax Mill at original water level .The southern leg, just prior to the A5112, could lock down to correspond with the normal river level above the weir. It would then pass under the northern arch of the A5112 road bridge over the river to continue parallel with the river, joining with it just above the weir. In order for this system to work the lock will have to be back pumped in order to maintain the water level in the pound above.The disadvantage with this option is the fact that the pound joining with the weir will be unusable during river flood conditions. However, the fact that it would be at original water level at the Flax Mill and not down at the deeper level, necessary with option one, could outweigh this disadvantage. (see appendix 4 showing the scheme pictorially). This is given in the cost table as a separate stand along route item.
- 3.93 For clarity we confirm here that we have included in the various stage cost items for a basic mooring basin at:
- ◆ Newport
 - ◆ Wappenshall
 - ◆ End of Humber Arm
 - ◆ End of existing Aqueduct at B5063
-

- ◆ The Flaxmill
- ◆ River Severn Bank, downstream of the weir.

3.94 We recognised that historically there would be merit in continuing the restoration around the Berwick Loop but one must also recognise the technical problems and the associated costs of crossing under the A5T and the Wellington to Shrewsbury railway line, in two locations. Although the original rail bridges are intact and well maintained they are redundant for the purpose of the canal, as the depth of the water level to pass under the A5 would be below the present rail bridge foundation. A new tunnel located nearby would therefore be required to extend beneath both road and rail. On balance we recommend that the bypass option is accepted as the most appropriate solution.

WATER QUANTITIES REQUIRED

3.98 The estimated quantities of water required to fill the various sections of the canal on completion of restoration are shown below:

Table 3.1 – Water Quantities Required

Section of Canal	Back Pumping	Water Supply to Fill (Mega litres)	Water Supply to Operate (Mega litres per day)
Norbury Junction to Newport (L20)	If required 100 percent of lockage water to be pumped up to the higher pound	43	10
Newport to Wappenshall Junction		65	2.5
Wappenshall Junction to Uffington		140	6.0
OPTION 1 Uffington to “The Flaxmill”		20	2.0
OPTION 2 Uffington to River Severn, Via Morris’		27	3.0
OPTION 3 Uffington To River Severn Via Pimley and Shropshire Way		23	2.0
Telford Humber Arm		10	1.0
Telford Trench Arm		10	3.0
Trench Arm Heritage Section	2.0	0.5	

- 3.99 The figures given in the table for additional water quantities required to operate the canal are based upon entirely theoretical numbers of assumptions.
- a) assume in Summer season day each lock is used 10 times with the time differential between use of adjacent locks being insufficient to run all lockage water to waste through the various lengths of pound.
 - b) Also assume that lockage water would tend to make up normal daily losses due to leakage, evaporation and transpiration.
 - c) Assume from a and b above that each section was to show a net loss of 5 no. lockage/day out of 10 uses.
- 3.100 We have met British Waterways' management team at Norbury Junction and also discussed water supply options with their water resources team in Watford. We have also investigated the use of surface water drains and water well abstractions.
- 3.101 It is our recommendation to commence restoration works from Norbury and work towards Shrewsbury, thereby ensuring a reliable water supply from the Shropshire Union Canal. British Waterways source their water from the Sewage Treatment Works in Wolverhampton. Typically 50MI/day of water is discharged into the canal. A great deal of this water gets used up in general canal operation and as such there wouldn't be a large volume of water to feed a restored Shrewsbury to Newport Canal. However, during the winter, BW will want to discharge excess flood water. There should therefore be the opportunity to fill the restored canal during the winter months. British Waterways have agreed in principal to this proposal.
- 3.102 Once the Canal has been filled with water, there will still need to be considerable volumes of water to manage the general day to day losses mentioned previously. British Waterways have indicated that in principle they may be able to sell some water to the Trust but BW's canal system would have to take priority. A typical cost of water transfer to the restored canal for operation purposes would be of the order of £15 per megalitre and £20 per megalitre. British Waterways' will need to discuss water requirements further once a restoration programme has been established. We recently visited the site after a prolonged dry period and noticed a considerable flow emanating from Telford Town. It appears that a large part of the Telford's northern drainage system discharges in the Trench Arm area. The drainage is alleged to be a combination of surface water run-off and mine groundwater. Whilst we do not have flow records, we would envisage that this discharge could be vital in the future water management for the canal.
- 3.104 We have consulted some of English Partnership's records for the drainage of Telford. We observed a large number of water wells in the Trench Arm area. It is therefore highly likely that borehole abstraction could also play a role in water management.
- 3.105 To help minimise water loss we have recommended that each lock is supported with a backpumping system. This will help distribute water around the canal. Whilst not cheap, ensuring a reliable supply of water will be fundamental to the success of the canal in dry summer months. Where flights of locks are present as at Norbury, as present on the Grand Union Canal, water would be backpumped up the entire flight not raised up single locks.
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- 3.106 A critical factor which has not yet been addressed in this report is the control and disposal of flood water. A 300mm freeboard has been specified by the client for the canal. We have included a by-wash at each lock to carry surplus flood water and land drainage water around each lock.
- 3.107 It will be necessary to quantify, from a detailed flood study assessment, the amount of flood water which will need to be controlled without causing overtopping of the towpath. Design outlets will need to be agreed with the Environment Agency at local rivers and watercourses.
- 3.108 It is usual practise to discharge excess water into adjacent watercourses. The primary sources being the: River Meece, River Tern, River Roden and the River Severn.
- 3.109 Further discussions will need to be held with the Environment Agency but they will certainly require that the canal is capable of routing the 1 in 100 year statistical flood without overtopping the 300mm freeboard. Discharge structures will need to be carefully designed and the overall water management regime will need to be modelled on a computer program to optimise the discharge structures.
- 3.110 Whilst it is beneficial, from a water supply viewpoint, to accept watercourse flows into the canal, quite often it is undesirable due to the limitation imposed by flood control. We have made budget cost allowances for flood control works in our proposals.
- 3.111 The modern BW canal network incorporates water levels control systems which can be remotely operated from Leeds. An operator or waterway engineer can dial up the canals water level control system and see exactly what the canal water level is. During times of heavy rainfall, the discharge structures and sluices can be opened remotely by the touch of a button on the computer. The restored canal will need to include such water level control systems to enable water to be managed.
- 3.112 Particular attention is drawn to any location where a drop lock or rise and fall lock solution is adopted. There is no automatic by-wash around these locations and special additional arrangements need to be established, costed and added to the table.
- 3.113 The statements above will also apply to the diverted route options which avoid the crossing of the A5T and the railway adjacent Shrewsbury.

THE PROPOSED OPTIMUM SEQUENCE OF RESTORATION OF THE CANAL ROUTE

- 3.114 It is considered that the optimum sequence of restoration would be to commence at Norbury Junction and reconstruct the canal through to Newport and then continue on to the Wappenshall Junction.
- 3.115 This would immediately provide the means to draw off canal boats from the national network passing through the existing Norbury Junction.
- 3.116 A reconstruction start at any other location would have no access for conventional canal narrow-boats and boating would be confined to trailed boats and canoes. These do not have the same attraction to the public and therefore the benefit potential would be decreased.
-

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- 3.117 Starting at Norbury and working down to Newport as a first phase will provide 4 miles of navigable canal to an important interim terminus at Newport. Phase 2 would extend to Wappenshall with access to the Trench (Telford) and Humber arms providing a further 6-8 miles of navigable canal.
- 3.118 Finally phases, the connection to Shrewsbury would require a further 15 miles of canal. This section of main route will contain the majority of the major obstacles to be overcome. It will be the most expensive and time consuming. It is additionally preferable to have some completed canal working at this stage to demonstrate success and potential.

THE CENTRES OF PRINCIPAL INTEREST

- 3.119 These are therefore 4 no. centres of principal interest on the route.

Norbury Junction

- 3.120 Norbury Junction is the existing link into the national canal network and as such the immediate provider of through boats generating benefits, turning on to the Newport Canal.
- 3.121 We have noted and examined the Trust's proposal in their literature supplied to us for an alternative junction with the Shropshire Union which would bypasses the first twelve locks down from the original junction at Norbury, nine of which are buried and condition is unknown, the other three being overgrown with vegetation and minus gates.
- 3.122 The proposed junction would be at the Shelmore Embankment 850 metres south of Norbury where the proposed Double Balanced Incline Plane would raise and lower boats 21.5 metres to a new route which would follow the 80 contour to join the original route just above lock number thirteen.
- 3.123 We have examined this proposal and whilst it is recognised that the plane, like the Anderton Lift and Falkirk Wheel, would certainly generate more interest, with correspondingly greater benefit to the S&N. it must be recognised that it would require considerably greater funding and courage to adopt this option in view of the opposition it is likely to arouse, particularly in connection with the problems that have been experienced with the Shelmore Embankment. We therefore advise against this proposal and on balance, at this stage consider restoration of the locks is preferable

- ◆ Financially it would replace twelve locks and by-washes.
- ◆ Cost of restoration (12 lock and pounds) = £3,000,000.
- ◆ Cost of inclined plane = £8,000,000

Newport

- 3.131 A town which has preserved the section of canal passing through the immediate outskirts of its centre. It will provide benefits mutually to town and canal from boating and all other canal activity. There are two possible locations on either side of the town lock which could be readily adapted as a winding hole and a temporary terminal

mooring location for visiting boats. It is suggested that a provisional sum of £500,000 be allowed for this redevelopment.

Costs are included in the main canal estimates.

Trench (Telford)

3.132 The original community of Trench is now part of the new town of Telford which has, since its inauguration, vastly increased in size and currently has a population in excess of 150,000 with an ongoing growth. It has a complex network of highways and the expansion of business outlets radiating out around the centre.

3.133 In terms of a connection to the restored Canal there are two possibilities:

- a) Along the old Trench Arm
- b) Along the old Humber Arm.

a) Along the old Trench Arm

3.134 In this case, the old arm is still partially in existence between Wappenshall Junction and the boundary of the GKN Sankey Works. However the Hadley Park lock SL4 and the Turnip lock SL3, just above the Silkin Way path, have presentation orders placed upon them which would exclude re-widening for navigation. Whilst it would not be impossible to restore and rebuild the length up to the Silkin Way we consider that the resultant benefits would not justify the magnitude of the work and cost involved. The work involved is as follows:-

- i) The excavation and construction of a wider channel 1.5Km long to access narrow boats;
- ii) The total reconstruction of 5 locks (including widening);
- iii) The crossing of the A442 and Wheat Leasows roads which would require Fall & Rise lock solutions.
- iv) Provision of a winding hole/terminal basin north of the Silkin Way.
- v) Reinstatement of the water supply from the Trench Pool, or provision of back pumping.

This would provide a navigable length of 1.2 Km at an estimated cost of £4,459,000.

3.135 In view of the problems outline above it is our recommendation that a short length up to and including Wappenshall lock SL9 is rebuilt for navigation to give access to a new marina on the east side, which would include the development of a waterside village. We estimate the cost (less the village) as £ 1,855,000.

3.136 We also recommend that the pounds and lock structure that remain from here to Turnip lock be reinstated as an Heritage feature to complement Wappenshall Junction, at an approximate cost of £1,155,000.

3.137 We recommend that Wappenshall Junction, buildings; roving skew bridge; and east and west mooring basins, be restored back to their original state, thus preserving the heritage of what are unique features within the national canal network. A sum of £1,650,000 is included for this restoration.

b) Along the Humber Arm

- 3.138 In this case the old arm has been largely infilled but at present it has not been over-built. We recommend that it is restored and a marina built at the end.
- 3.139 The old route had three structures; an accommodation bridge; a winding house for winching mineral trucks along the side of the canal for unloading; and a terminal warehouse. The arm ran 1.2 Km from the junction with the Newport Canal partly upon a decreasing embankment toward the terminus warehouse, at which point the bed is still in water and the warehouse, minus roof, is still in existence. The water level at this point is just below existing ground level.
- 3.140 The works required for restoration of the 1.2 Km section would include:
- i) The reinstatement of the dry bed embankment. The excavation and construction of a channel across the flatter ground, at present filled to just short of the warehouse, and the provision of moorings.
 - ii) Provision of a terminal basin/marina and facilities. Restoration of the canal side warehouse to original condition as an heritage
 - iii) The water supply would come from the main canal and could possibly be supplemented from the Humber Brook.

An approximate cost estimate of these works would be £1,875,000

Conclusion

- 3.142 We do not consider that the Trench Arm or the Humber Arm can feasibly be extended and advanced, beyond the points we have recommended above, in order to get nearer towards Telford Town Centre. The rising terrain and the extent of the barrier created by dense urban development preclude this. However we consider that the proposed marinas will have better accessibility being located in the rural outskirts of the town.

Shrewsbury

- 3.147 We accept and recommend the Trusts proposal for a terminal basin in front of the Flax Mill at Ditherington. Of the two proposed alternatives to join with the river Severn we recommend the one that extends from a junction at Pimley along side the river to the weir. This is in preference to the option that continues from the terminal at the Flax Mill along the route to the later terminal at Morris's Yard and then on through a tunnel to lock down to the river Severn. As a general comment not included in the costs: In the future joining with the river raises the possibility that development of navigation on the Severn may create two rings by allowing navigation up the river to a connection with the Montgomery canal in order to create a ring.
- 3.148 Approximate estimate costs have been included in the main canal route estimates in table 3.
- 3.149 The costs for the last section of the canal into Shrewsbury are essentially a global approximate estimate. Detailed planning with the local authorities will be required to achieve the proposed sections of re-development along the canal route.
-

3.150 Reasonable access to the town centre from the canal will be of considerable importance to both the Town and the Canal.

BUDGET COSTINGS

3.151 Within a feasibility study a number of assumptions must be made and therefore the cost estimates must be treated as budget estimates. The estimates given in this chapter are based upon rates and prices as at March 2003. All estimates should be checked at the time of actually carrying out any particular work by obtaining full commercial quotations.

3.152 Within our work to this feasibility study we have been provided with considerable information by the Canal Trust, schemes, drawings, maps, photographs, levels etc. We have accepted this information as the basis for our report. Checking has been restricted to visual site inspections.

3.153 The costs have been broken down into the following categories:

- Pre-contract work;
- Main contract work;
- Service diversions;
- Water supply costs;
- Land costs;
- Design costs, including site supervision;
- Maintenance costs;
- Operating costs;
- Other costs.

The costs are summarised in this chapter for the different lengths of canal as specified by the client.

Pre Contract Work

Site Investigation

3.154 Site investigation is required in order to determine the ground condition where work is to take place. This is essential in order to carry out an economic design and ensure that a contractor has sufficient information. Without adequate site investigation the sponsor is exposed to the risk of increased costs. We cannot stress too highly the need for adequate site investigation. Such an investigation would be essential in considering any reasons for moving away from the original route.

3.155 In the case of this canal, the work falls into the following general categories:

- Boreholes made at the locations of all new structures and existing structures requiring major refurbishment, to provide the information required to check and assess foundation design requirements;
- Trial pits at suitable locations to check the type and condition of the infill material;
- Piezometers to check the level and movements of the ground water table.

The costings are based on commercial contract rates for this type of work.

Topographical Survey

- 3.156 It is considered that a full topographical levels survey would be required to enable works to be fully designed and to allow the preparation of contract documents to be undertaken. This survey would also provide the basis for the re-measurement of contract works. We anticipate that this survey work would establish cross sections at 30 metre intervals along the canal track, supplemented by any relevant detail. The results would be plotted onto suitable scale drawings. Suitable sums have been included in the costings for a topographical survey carried out by contract.

Main Contract Work

Access to the Site

- 3.157 This has been assumed to be along and within the canal reservations only, with access to be gained to it via all public access crossings of the routes.
- 3.158 Structural Foundations – The cost estimates for new structures in this study are based upon normal spread load foundations, i.e. no allowance has been made for possible poor ground or rock.
- 3.159 Earthworks – The costings include excavation, and haulage of surplus material to tip within a 15 kilometre radius of the site. No tipping charges are included. No landfill tax is included. It is our understanding of the current legislation that canal restoration works are exempt.
- 3.160 Canal Linings – Suitable contract allowances are included for a protected HDPE lining, except where a structural concrete/steel solution is involved.
- 3.161 Canal Pounds – Costs have been included, where appropriate, for restoration works as required.
- 3.162 Canal Locks – Costs have been included, where appropriate, for works to restore the locks.
- 3.163 Bridges and Structures – Costs have been included, where appropriate, for works as generally required.
- 3.164 Back Pumping – (if required) this will be achieved by the installation of a suitable submersible pump in a purpose-built sump located adjacent to the pound at each lock. The pump to be fitted with external discharge pipework leading either to the lock chamber or to the upper pound depending upon the design arrangements.

There would be a control kiosk and an electricity supply for a 9-12kw motor would be required. The pump would be guide rail mounted within the sump to facilitate easy removal for maintenance. Costs for this installation are included in our estimates.

- 3.165 Towpath – Allowance has been made for surfacing with tarmac in urban areas where the existing path is tarmac and with 100mm thickness of compacted quarry scalplings in all other areas.
- 3.166 Contract Preliminaries/Contingency – A 25% margin has been added to the rates and prices for the work to allow for a contractor's overheads on-costs and profit margins. It is also customary practice to add a minimum 20% contingency cost to all feasibility stage budget costings. This has been done throughout the costings. The contingency is intended to cover for items which are not apparent at the feasibility stage but emerge during the transition to full design.

Service Diversions

- 3.167 At this stage it is difficult to predict the full range of diversions etc, which will be needed. We have included budget costs to cover potential work required to the diversion, support and maintenance of statutory: gas, electricity, water and drainage services. There is likely to be considerable work needed in built up areas such as Shrewsbury.

Water Supply Costs

- 3.168 Under current legislation (the Water Resources Act) abstractors of water for the purpose of navigation do not require consents. If, therefore a right of navigation is re-established for the canal it may also be the case that water supply charges do not apply. On the other hand 3rd party compensation costs may arise if the right of other abstractors were prejudiced. These matters require to be legally resolved and this is clearly beyond our brief. We are not qualified to advise on this issue. No water charges are included in our costs. We understand that revision of this legislation is at present under review which may change this situation.

Land Costs

- 3.169 The terms of the brief for this study do not require us to cover this item. However our experience of other canal restorations would indicate that land acquisition will be an insignificant addition to the overall restoration cost.

Design and Site Supervision Costs

- 3.170 It would be necessary to employ professional engineers to carry out the detailed design, negotiations, prepare contract documents and supervise the contract. The level of fees varies considerably depending upon the cost and complexity of the design and work. For the purposes of this study a figure of 6% of the works costs has been assumed for design work, and 4% for site supervision.

Maintenance Costs

- 3.171 A typical budget rate of £8,000/kilometre of canal track/annum has been allowed.

Operating Costs

- 3.172 These costs relate to the requirement for supervision of the waterway in relation to:
- ◆ General monitoring of use;
 - ◆ The safety of the users, and to the general public in specific areas;
 - ◆ The policing of the sections of canal where one way working is proposed to ensure smooth operation;
 - ◆ The monitoring of back-pumping arrangements at locks;
 - ◆ The requirement to close the canal when flood event conditions are such that navigation would be hazardous;
 - ◆ On the assumption that boating activity would be confined to the normal hours of daylight we suggest that it would be prudent to allow for four full-time employees to supervise the canal with transport at a salary cost of £20,000/annum/person. When boating is at a minimum or out of season these operatives could assist with maintenance work.
- 3.173 An arbitrary allowance for possible tipping charges (at present not known) is included in the cost table at 5.0. This issue will only be apparent at contract preparation stage when topographical survey and site investigation is available.

Table 3.2 - Canal Channel to Consultants Proposal

Section of Canal	Topographical Survey	Site Investigation	Contract Cost	Back Pumping	Professional services	Services Diversions	Water Supply to Fill	Water Supply to Operate	Land Costs	Maintenance Costs	Operating Costs	Possible tipping charges
Norbury Junction to Newport (L20)	11.7	90	9239	If required 150 per lock (not included at this stage)	924	100	70	16		52	110 for the complete canal	500
Newport to Wappenshall Junction	18.0	135.7	8545		855	100	108	4		80		700
Wappenshall Junction to Uffington	38.7	291.8	30639		3064	100	230	10		188		700
OPTION 1 Uffington to "The Flaxmill"	1.8	13.5	21100		2110	200	33	3.0		12		500
OPTION 2 Uffington to River Severn, Via Morris'	1.8	13.5	28600		2860	500	45	5.0		16		500
OPTION 3 Uffington To River Severn Via Pimley and Shropshire Way	1.8	13.5	7597		760	75	38	2.0		15		500
Telford Humber Arm	2.1	16.3	1800		180	10	15	1.0		5		300
Telford Trench Arm	2.1	16.3	5389		539	20	15	3.0		10		300
Trench Arm Heritage Section	1.0	5	300	30	10	3.0	0.5		2	50		

Finance: All figures to be multiplied by 1000

Water Quantities in Megalitres. Operation figures refer to lockage losses only. Losses due to leakage, evaporation and transpiration estimated at 100-150 litres/linear metre of canal/day (not shown in Table)

Notes to be read in conjunction with the cost table included in this report.

It will be seen that no total cost figures are included on the cost table..

The reader is instructed as follows:-

1. In the section Wappenshall to Uffington, we have included a figure of £13,370,000 for restoration of the old original route south of the A57.

We have investigated alternatives, all on a direct route east to west, north of this railway.

This route is considerably affected by ground levels and will require a detailed survey.

However, from the information currently available we include here costings for **three** alternatives.

- a. A cut and cover tunnel through the deep sections = £10,235,550.
- b. A full open cut through the deep sections = £8,311,350.
- c. Open cut with a raised pound through the deep section = £7,000,000.

Atkins' preferred option is for option a, the cut and cover tunnel. We have summarised our reasons at the appropriate sections of this report.

The reader is requested to make their own choice and amend the figures accordingly before totalling the results for an overall financial appraisal.

2. Between Uffington and the River Severn or the Flaxmill, we have given individual figures in the tables for three different solutions.

The options relate more to linkages into the centre of Shrewsbury and regeneration opportunities than engineering. The cost differences are however significant.

Our preferred option is to adopt the route to the Flaxmill with a terminal basin development, plus the adoption of the alternative additional route from a junction at Pimley following parallel with the river Severn to join with it just above the town weir.

4. Key Projects

FLAGSHIP SCHEMES

4.1 As part of the canal restoration we envisage a number of key schemes which will act as focal points for users and development hubs encouraging regeneration to a much wider area in the long term. For the purposes of this study we have envisaged several keynote schemes along the Canal which are illustrated in Fig's 6.1 to 6.6 centred around:

- ◆ The Town Lock and Basin at Newport;
- ◆ The Trench Arm & Junction at Wappenshall;
- ◆ The Flax Mill at Shrewsbury;
- ◆ The Wider Ditherington Area;
- ◆ The Buttermarket.

Below is a commentary providing explanation to the drawings:

NEWPORT

4.2 There is a tremendous opportunity for a major canal focus at Newport which would boost the whole area adjacent to the canal and potentially have much greater benefits for the town as a whole. A possible future scheme is illustrated in Fig 4.1.

4.3 The town lock and original wharf warehouse provide exciting opportunities for restoration and a focus for visitors travelling along the canal and visitors to the town. The current car park adjacent to the town lock would provide an ideal location for a canal side piazza and with close attention paid to public realm design the area would provide a valuable and attractive asset to both the canal and the town.

4.4 The old warehouse provides enormous potential to be utilised as part of the canal once again. Potential canal uses could include a shop/café/boat hire/interpretation centre or a mixture of these. The warehouse would require sensitive treatment paying respect to its historic context with fixtures such as windows sympathetically added, supplemented by high quality lighting and fixtures within the building.

4.5 The historic wharf area around the Newport Basin provides an ideal mooring point for visiting boats including those requiring an overnight stay. Washing and waste disposal facilities should therefore be installed nearby.

4.6 There are very strong linkages with nearby facilities and there are very strong development possibilities within the surrounding area. The Cosy Hall community centre which faces the lock could benefit from the restoration as could the two nearby pubs – The Bridge and The Swan. The Swan in could particularly benefit from the development, with potential for a beer garden with canal views.

4.7 There is also the possibility of associated canal-side development, brought about as a result of the restoration. The Water Lane area could particularly benefit as could Salter's Lane where there is currently a mix of commercial and light industrial units

that appear to be under-utilised at present. The site of the present Shell filling station could also provide an ideal canal side development site if the owners were to consider relocation.

WAPPENSHALL JUNCTION

- a) The proposal at Wappenshall comes in three parts:
- ◆ Potential Marina Development on Trench Arm;
 - ◆ Heritage Canal Focus at Basins and Warehouses.
 - ◆ Trench Arm restored as a Heritage feature and linked with Wappenshall.

Marina Development

- 4.8 Wappenshall is now only a short distance from the edge of the Telford urban conurbation and could therefore potentially house a new Marina Village to act as a centre for canal activities as well providing an area of high class waterside housing. Such a development is illustrated in Fig 4.2.
- 4.9 It is suggested that a new marina development could be located in the current field to the south of the present Wappenshall settlement and the Marina could be accessed from the west basin via a short restored section of the Trench Arm through a restored Wappenshall Lock. Vehicular access could be provided from the A442 at Hurleybrook which would avoid traffic problems on the current Wappenshall access road (which is very narrow) and hence minimising disturbance to the existing settlement.
- 4.10 Such a development could be similar to the Braunston Marina on the Grand Union Canal which is a successful hub for canal activity as well as an attractive place to live. The construction of a Marina would give further emphasis to restoration of at least part of the Trench Arm, giving it a purpose as well as a reason to reinstate the junction at Wappenshall.

Wappenshall Heritage Canal Focus

- 4.11 The warehouses and roving bridge at Wappenshall are arguably amongst the most interesting of the structures left from the days of the original canal and their refurbishment would provide a great asset to the whole project. The location is an ideal stopping point for boat users being roughly halfway between Norbury Junction and Shrewsbury and provides a focus in a pleasant rural setting. The Flaxmill (Flaxmill), Shrewsbury.
- 4.12 Our suggestion for the area (as illustrated in Fig 4.3) is that the two warehouses once restored could provide an ideal location for several new uses including canal interpretation, tourist information, boat hire and ancillary uses such as a pub/restaurant. The East and West basins, together with the above mentioned marina provide ample mooring space and locations for associated leisure activities such as angling and canoeing. The current yard also provides a suitable location for parking. It is important that any development is carried out sensitively to respect the rural setting and adjoining residents in Wharf House and The Villa, together with other residences within the settlement.

THE FLAXMILL (FLAXMILL) SHREWSBURY

- 4.13 The Ditherington Flaxmill is a nationally important Grade I listed building and is currently classed as being “at risk” by conservation groups. The Flaxmill was built in 1797 and was one of the first iron framed buildings in the world (a forerunner to the modern skyscraper). The route of the canal passes in front of the structure before carrying on towards its original terminus close to the Severn. However as we have seen in our Engineering section, modern development has made following the original route past the Flaxmill likely to be very difficult so it is suggested that a new terminal basin could be constructed in front of the building providing a major tourist and development hub that could be the building’s saviour. This is illustrated in Fig 4.4.
- 4.14 Although any possible uses of the Flaxmill are subject to much wider considerations (for example its present ownership), it is suggested that the new basin could be constructed between the Flaxmill and A5191 where various light industrial and commercial uses are currently situated. This would provide a stopping point for visiting boats wishing to visit Shrewsbury as well as an attractive setting to carry out further regeneration to an area that is currently in need of rejuvenation.
- 4.15 The Flaxmill itself could provide an exciting new mixed use development that would not only be significant to Shrewsbury, but to national heritage bringing a great symbol of the industrial revolution in Britain back into everyday use. The Flaxmill could provide a number of sustainable uses including residential “loft” apartments, commercial units, together with a setting for canal related activities such as boat hire, chandlery, catering, heritage, interpretation etc.
- 4.16 A major development such as this would inevitably bring investment to the surrounding area and there is the future prospect and potential for relocation of the bus depot site for redevelopment and the rejuvenation of other sites in the Spring Gardens / Ditherington Road area to provide further residential and commercial uses exploiting the canal setting.
- 4.17 It is important that attention is paid to providing high quality public domain within the area and linkages with the town centre are improved in order to maximise tourist potential. However it is assumed that the Flaxmill and Canal Basin would become a valuable tourist attraction in its own right bringing massive direct and indirect benefits to the local economy.

THE WIDER DITHERINGTON AREA

- 4.18 As well as the Flaxmill, the reinstatement of the canal could bring much needed physical regeneration to the wider Ditherington area as illustrated in Fig 4.5, which shows a further marina and associated development on the current industrial land to the east of the A5191 and north of the Flaxmill.
- 4.19 A marina at this location could act as supplementary or alternative to the suggested marina in front of the nearby Flaxmill and will provide an invaluable catalyst to the regeneration of this currently run-down and under-utilised site.
-

- 4.20 Mixed uses could be housed in new buildings around the Marina providing a location for tourism, commerce, retail as well as residential accommodation. A degree of affordable and social housing could be provided in order to meet government objectives as well as provide replacement housing for any possible displacement from the current Spring Gardens Estate.
- 4.21 On the western side of the A5191 the canal could bring about immense regeneration benefits, with possible redevelopment of the current poor stock of 1970's housing, currently fronting the route of the canal. The nearby Comet Public House would also inevitably gain from passing tourist trade and additional numbers of patrons living and working in the locality.

THE BUTTERMARKET AREA

- 4.22 Should the reinstatement of the original Canal past the Flaxmill and onto the River Severn via Shrewsbury prove practical a great opportunity will be provided to improve a large urban area that is currently of poor landscape and aesthetic quality. One area that will particularly benefit is the Beacall's Lane area to the north of the Buttermarket as illustrated in Fig 4.6.
- 4.23 This site is currently occupied by a car park sandwiched between the prison to the south east and the Royal Mail sorting office to the North West. The site is currently a fairly undesirable redevelopment prospect; however with the presence of the canal this is likely to change with the opportunity to facilitate increased activity and residential development.
- 4.24 The site is large enough to accommodate a canal basin for mooring and would provide a good location for canal users to stop and visit Shrewsbury. Between this point and the River Severn there is a requirement for a tunnel and several locks, this area could therefore become a place for boats to wait until it is their turn to pass. The area could also house facilities for canal users as well as provide commercial operations to cater for visitors.
- 4.25 As well as a hub for visitors, this location also has the potential for housing development, the site ideally suited to high density urban style living arrangements consisting of town houses or apartments. The canal presence would boost land values in this location immensely in turn adding to the local economy.

5. Policy Review

NATIONAL POLICY

- 5.1 Government policy on waterways stems from the Integrated Transport White Paper (ITWP) published by the government in 1998 and a follow up document Waterways for Tomorrow published in 2000. This policy feeds into planning policy guidance notes (PPGs) which in turn, informs development plans and decisions on specific planning applications.

Integrated Transport White Paper

- 5.2 The ITWP identified waterways as a sustainable means of moving goods, assisting in reducing the volume of freight travelling by road. The ITWP also acknowledges that inland waterways have an important role to play in providing leisure and tourism opportunities and can provide a catalyst for urban and rural regeneration and expected that local authorities in their development plans will be expected to consider opportunities for new development which are served by waterways.

Waterways of Tomorrow

- 5.3 This document is intended to provide more detail of government policy on waterways. It identifies a number of areas where navigable waterways can contribute such as:
- ◆ Leisure and recreation - almost all the waterways system is used for leisure. This includes boating of all kinds, angling, sport, and informal recreation. Towpaths and other waterside paths provide local and long distance walking and cycle routes, and access to the countryside.
 - ◆ Freight - the inland waterways still carry some freight but only a small amount in national terms. Most freight traffic is found on the tidal inland waterways. On the non-tidal system, freight carrying survives on only a few waterways, mainly river navigations, and the Manchester Ship Canal.
 - ◆ Water supply and drainage - the waterways provide both a source of water and a means of supply. They also play a significant land drainage role. Many canals have become an integral part of the land drainage system and some take storm-water discharges from roads.
 - ◆ Heritage and the natural environment - the waterways system is rich in historic buildings and examples of innovative civil engineering. It is also an important environmental and ecological resource providing wildlife corridors and habitats for several species listed as national priorities under the UK Biodiversity Action Plan.
 - ◆ Regeneration - the waterways provide an important catalyst for urban and rural regeneration. The improvement and restoration of waterways is enhancing the environment and bringing life back to deprived areas.

- ◆ Innovation - the waterways are increasingly being used in innovative ways. Towpaths are being used as routes for telecommunications cables, and proposals for water transfer using canals are being developed.
- 5.4 According to Waterways for Tomorrow the government sees inland waterways as an important asset for future generations to enjoy and is keen to see them maintained and developed in a sustainable way so that they fulfil their social, economic and environmental potential. The government wants to ensure that the many benefits and opportunities they provide are used to the full.

Planning Policy Guidance Notes

PPG1 General Policies and Principles (February 1997)

- 5.5 PPG1 sets out the Government's general policy framework for land use planning. It highlights the themes of sustainable development (para 4-7), mixed use (para 8-12), design (para 13-20), and sets out key policy objectives for transport (para 23), rural areas (para 28-31) and conserving the historic environment (para 32).
- 5.6 The PPG notes the importance of urban regeneration in delivering sustainable development (para 7) and encourages good quality design (para 13), rural development appropriate to the countryside (para 28) and effective protection of the historic environment (para 32). These issues may be relevant to development proposals related to inland waterways.

PPG7 The Countryside - Environmental Quality and Economic and Social Development (February 1997)

- 5.7 PPG7 provides advice on managing the countryside in a sustainable way - that is meeting current needs without compromising the ability of future generations to meet theirs. This entails accommodating necessary change in rural areas while maintaining and where possible enhancing the quality of the environment for local people and visitors (para 1.3).
- 5.8 The PPG explains that it is a government priority to find new ways of enriching the quality of the whole countryside whilst accommodating appropriate development (para 2.14). New development should be sensitively related to existing settlements and to historic, wildlife and landscape resources (para 2.3). The PPG notes that towpaths are one of the resources that increase opportunities for people to enjoy the countryside (para 3.13).

PPG9 Nature Conservation (October 1994)

- 5.9 PPG9 provides advice on the treatment of nature conservation issues in development plans and sets out criteria for development control. It also describes the three main designations under domestic and international law - Special Protection Areas (SPAs) and Special Areas of Conservation (SACs); Sites of Special Scientific Interest (SSSIs); and also lists other statutory controls and non-statutory local and informal designations.
- 5.10 Paragraphs 16 and 23 draw attention to the Habitats Directive which requires EU Member States to endeavour to encourage the management of landscape features
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which are of major importance for wild flora and fauna. These are features which, because of their linear or continuous structure, or their function as stepping stones, are essential for migration, dispersal and genetic exchange. Rivers and their banks are mentioned as an example.

PPG11 Regional Planning (October 2000)

- 5.11 PPG11 provides advice on the preparation, scope and content of Regional Planning Guidance (RPG) (chapters 1-3). It places greater responsibility on regional planning bodies to resolve planning issues at the regional level through the production of draft RPG; and strengthens the role and effectiveness of RPG by advising on, for example, the need for greater regional focus concentrating on strategic issues, and the incorporation of an integrated regional transport strategy. It makes the process more transparent and subject to rigorous testing through the introduction of a Public Examination conducted by an independent Panel.
- 5.12 The PPG also explains how RPG should take account of Regional Development Agencies' work in identifying strengths, weaknesses, opportunities and threats to the regional economy (para 4.2-4.5). It sets out the regional approach to implementing national policy on subjects including transport (chapter 6), retail and leisure uses (chapter 7), culture (chapter 8), rural development and countryside culture (chapter 9) and biodiversity and nature conservation (chapter 10) all of which could be relevant to development proposals related to inland waterways.
- 5.13 Chapter 6 stresses the importance of the regional transport strategy (RTS) as an integral part of RPG. Regional Planning Bodies should consider including in their RTSs the regional priorities for transport investment and management across all modes and offer guidance on measures to increase transport choice (para 6.3).

PPG12 Development Plans (December 1999)

- 5.14 PPG12 sets out government advice on the role, scope, content and preparation of development plans and includes guidance on the importance of integrating sustainable development and transport and land-use policies in development plans. It explains how the planning system can help achieve the objectives of sustainable development in protecting the natural environment and maintaining economic growth and employment (chapter 4).
- 5.15 Chapter 5 advises local authorities when preparing development plans:
- ◆ to have regard to regional transport strategies and the local transport plan so that the development plan underpins the land use issues arising from the transport plan (para 5.3-5.4);
 - ◆ to include specific policies and proposals on the overall development of the transport network and related services, including public transport interchange facilities, inland waterways and harbours (para 5.16); and
 - ◆ to include an indication of the timescale and priorities for proposed transport developments reflecting the specific priorities and timescale set out in the local transport plan. Plans should only include proposals which are firm and with a

reasonable degree of certainty of proceeding within the plan period. They should be identified as such in the local transport plan (para 5.17).

- 5.16 The PPG also states (para 5.22) that planning authorities wishing to safeguard land for a future transport scheme such as a restored canal should do so through a proposal in the local plan, where there is a reasonable degree of certainty of the scheme proceeding within the plan period. It also makes clear that protective policies can be appropriate for waterway connections to existing or proposed manufacturing, distribution, and warehousing sites adjacent or close to the inland waterway network and to coastal ports and that local authorities may wish to safeguard sites for transport related development which might otherwise be lost to other development, such as wharves alongside waterways and ports (para 5.23).
- 5.17 PPG12 proposes that local authorities should consult relevant organisations and individuals in relation to specific issues early in the plan preparation process (para 2.10-2.13). There are no longer statutory consultees for local plans and unitary development plans, although they remain for structure plans. However the PPG lists recommended consultees for development plans, advising local authorities to consider the need to consult British Waterways, canal owners and navigation authorities on all matters relating to inland waterways and adjacent land (Annex C).

PPG13 Transport (March 2001)

- 5.18 PPG13 seeks to integrate land use planning and transport at the national, regional, strategic and local level, in order to promote more sustainable transport choices and reduce the need to travel. It advises local authorities to:
- ◆ in relation to freight, encourage development which is, or can realistically be, served by water and with good, though where possible indirect, access to trunk roads, and allocate appropriate sites (para 45);
 - ◆ promote opportunities for freight generating development to be served by rail or waterways by influencing the location of development and by identifying and where appropriate protecting realistic opportunities for rail or waterway connections to existing manufacturing, distribution and warehousing sites adjacent or close to the rail network, waterways or coastal/estuarial ports (para 45);
 - ◆ on disused transport sites consider uses related to sustainable transport first, before other uses (para 45);
 - ◆ enable the carrying of minerals and spoil by rail or water wherever possible (para 47);
 - ◆ seek to re-use disused wharves and basins, to retain boatyards and other services used in connection with water-based recreation, and to protect and enhance the waterway environment, where these are viable options (Annex B para 12); and
 - ◆ identify and where appropriate protect disused waterways (by allocating the land in development plans and ensuring sites and routes are not severed by new development or transport infrastructure) where there is a reasonable degree of

certainty of a restoration project proceeding, in whole or in part, within the development plan period (Annex B para 13).

- 5.19 PPG13 encourages local authorities to work with everyone involved in the inland waterways industry to develop the potential of inland waterways. In general, proposals for waterside development should enhance the use, enjoyment and setting of the adjacent waterway. Development proposals, local plan policies, or new and improved infrastructure, such as road proposals, should not affect inland waterways adversely.

PPG15 Planning and the Historic Environment (September 1994)

- 5.20 PPG15 sets out the Government's policies for the identification and protection of historic buildings, conservation areas, and other elements of the historic environment (para 1).
- 5.21 Paragraph 2.2 describes the role that development plans play in conserving the historic environment, noting that by including suitable policies in their plans, local authorities can encourage the satisfactory reuse of neglected historic buildings. Paragraph 2.8 advises that plans should also include a strategy for the economic regeneration of rundown areas, and in particular seek to identify the opportunities which the historic fabric of an area can offer as a focus for regeneration. These provisions may be relevant to development proposals related to inland waterways
- 5.22 The PPG provides advice on development control, noting in paragraph 2.12 that it is generally preferable if related applications for planning permission and for listed building or conservation area consent are considered concurrently. Paragraph 2.14 emphasises the importance of ensuring that new buildings are well integrated with historic ones. Paragraph 2.15 stresses the importance of assessing the archaeological importance of development proposals before applications are determined.

PPG16 Archaeology and Planning (November 1990)

- 5.23 PPG16 sets out the Government's policy on archaeological remains on land, and how they should be preserved or recorded both in an urban setting and in the countryside. The PPG provides advice on the handling of archaeological remains and discoveries under the development plan and control systems, including the weight to be given to them in planning decisions and in the use of planning conditions; and sets out the separate controls which exist for scheduled monuments under the Ancient Monuments and Archaeological Areas Act 1979 (para 1).
- 5.24 The PPG notes that detailed development plans should include policies for the protection, enhancement and preservation of sites of archaeological interest and their settings. The proposals map should define the areas and sites to which the policies and proposals apply (para 15). Paragraph 16 states that archaeological remains identified and scheduled as being of national importance should normally be earmarked in development plans for preservation. Paragraph 18 confirms that the desirability of preserving an ancient monument and its setting is a material consideration in determining planning applications whether the monument is scheduled or unscheduled.

PPG17 Sport and Recreation (July 2002)

- 5.25 PPG17 defines open space to mean all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport and recreation and can also act as a visual amenity.
- 5.26 It sets out what is required from local authorities in terms of assessing needs and opportunities within their districts, give guidance on the setting of local standards and sets out general principles on enhancing existing open space and on planning for new open space.

PPG21 Tourism (November 1992)

- 5.27 PPG21 outlines the economic significance of tourism and its environmental impact, and therefore its importance in land use planning (cover page). It states that the planning system should facilitate and encourage development and improvement in tourist provision, while tackling any adverse effects of existing tourist attractions and activity in a constructive and positive manner (para 2.4).
- 5.28 Chapter 4 expects structure plans and local plans to play their part in protecting key tourism assets (para 4.11 and 4.12) and to identify ways in which tourism can contribute positively to other objectives such as economic development, conservation and urban regeneration (para 4.11 and 4.14).

REGIONAL PLANNING GUIDANCE

- 5.29 The main purpose of Regional Planning Guidance (RPG) is to provide a regional spatial strategy within which local authority development plans and local transport plans can be prepared. It provides a broad development strategy for the region over a fifteen to twenty year period and identifies the scale and distribution of provision for new housing and priorities for the environment, transport, infrastructure, economic development, agriculture, minerals and waste treatment and disposal. Its task is not to provide a regional check-list of everything that should be covered in a development plan. By virtue of being a spatial strategy it also informs other strategies and programmes. In particular:
- ◆ by virtue of incorporating a regional transport strategy, it should provide the regional context for the preparation of local transport plans; and
 - ◆ it should also provide the longer term planning framework for the Regional Development Agencies' (RDAs) regional economic strategies.

RPG 11 – West Midlands Regional Planning Guidance

- 5.30 The Regional context of the development plans is contained in the current Regional Planning Guidance for the West Midlands (RPG11). RPG11 is currently under review and is at the Draft stage in development and is due to be approved by the Secretary of State in 2003, the guidance will then replace the existing RPG 11 published in 1998, and will set out the long-term spatial strategy to guide development over the next 20 years. The main purpose of Regional Planning Guidance (RPG) and the Regional Transport Strategy (RTS) proposed within it, is to provide a regional spatial strategy to guide the preparation of authority development plans and local transport plans.
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- 5.31 Policy PA12 sets out the general policy for leisure and tourism in the West Midlands. It states that development plan policies should support further development and success of key regional tourism and cultural assets such as the canal network.
- 5.32 Policy RR4 recognises that leisure and tourism make a valuable contribution both to the economy and quality of life in rural areas, especially those that suffer from declining employment or low incomes. However, indiscriminate development could damage the very qualities of rural areas which make them attractive for tourism and recreation. It states that development plans should identify rural areas where the development of sustainable tourism without damaging the local environment or character.
- 5.33 Policy QE2 encourages Local Authorities, with other agencies and local communities, to develop strategies and programmes that optimise the contribution that the natural, built and historic environment can make to the regeneration of the West Midlands. Reference is made to development plans containing policies that promote environmental improvements as a means of regenerating areas of social, economic and environmental deprivation. Further, they should promote restoration and remediation of derelict and contaminated sites and the reuse of buildings, with particular emphasis being given to sites which promote urban and rural regeneration.
- 5.34 Policy QE4 states that development plans and other strategies should recognise the value of conservation-led regeneration in contributing to the social and economic vitality of communities and the positive role that buildings of historic and architectural value can play as a focus in an area's regeneration. In particular, reference is made to exploring the regeneration potential of the canal network
- 5.35 One of policy QE10 (The Water Environment) aims is to ensure that development plan policies and plans of the Environment Agency and other agencies should be co-ordinated to maintain and enhance river and inland waterway corridors as a key strategic resources, particularly to secure the wider regional aims of regeneration, tourism and the conservation of the natural built and historic environment.

RELEVANT LOCAL AUTHORITIES

Local Authorities

- 5.36 The local authorities along the Shrewsbury and Newport Canal are detailed in the table below, as is the status of the relevant development plan, or plans for that authority.

Table 5.1 - Relevant local planning authorities and development plan status

Planning authority	Date development plan adopted	Local plan review – current schedule
Shropshire County Council	The Shropshire and Telford & Wrekin Joint Structure Plan (1996-2011) – adopted November 2002	
Staffordshire County Council	Staffordshire and Stoke-on-Trent Structure Plan (199-2011) – adopted May 2001	
Telford & Wrekin Council	The Shropshire and Telford & Wrekin Joint Structure Plan (1996-2011) – adopted November 2002	
	The Wrekin Local Plan – adopted February 2000	Consultation begun in June 2003 on the replacement local plan with the Deposit Draft due in January 2004.
Shrewsbury Borough Council	Shrewsbury and Atcham Borough Local Plan – adopted June 2001	The Issues paper for the new Local Development Framework is due in July 2003 with the Deposit draft due in summer 2004
Stafford Borough Council	Stafford Borough Local Plan (1986-2001) – adopted 1998	Review started on the Local Development Framework. Consultation has been completed on a Core Strategy Document. The Deposit Draft is due in 2004.

DEVELOPMENT PLAN ANALYSIS

5.37 The development plan for most non-metropolitan areas is currently split into two sections, the Structure Plan and the Local Plan. Structure plans are intended to set out strategic development policies at county level, whilst Local Plans are more detailed development plans produced at district, borough or city council level.

The Shropshire and Telford & Wrekin Joint Structure Plan

5.38 Shropshire County Council and Telford & Wrekin Council are jointly responsible for preparing strategic planning policy for Shropshire and Telford & Wrekin for the period 1996-2011. The Structure Plan is a wide ranging document which:

- ◆ Establishes the general amount and location of new development
- ◆ Shows how development relates to transport and other services
- ◆ Indicates how a balance will be struck between development and the conservation of the countryside, wildlife and important open space
- ◆ Provides the basis for detailed local planning and co-ordination of services

- ◆ Shows how national and regional policy will be made to work in the area.

The Purpose of a Structure Plan

- 5.39 The Joint Structure Plan sets out the broad planning strategy for Shropshire and Telford & Wrekin. It sets out policies and proposals for the location of development, the amount of new housing and employment land, and strategic policies for the control of mineral working and the treatment of waste. Policies for the protection and enhancement of the environment provide a framework within which development should take place. Policies and proposals for transportation and accessibility provide the essential linkage with land use.

General policies

- 5.40 Policy P15 of the plan articulates that Local Plan policies, development and management proposals should ensure that they minimise any adverse effects on the environment and should have regard for the environmental principles contained within the policy. Any proposals that have environmental effects of more than local significance should be accompanied by an environmental assessment.
- 5.41 Policy P29 stipulates that proposals for tourism, sports and recreational facilities, including recreation in the countryside, should not have detrimental effects on the environment and the amenity of the locality.
- 5.42 The Structure plan has a strong emphasis on the protection of the countryside and land resources. Policies range from general countryside protection, such as trees, woodland and hedgerows conservation, to the protection of sites of special scientific interest, biodiversity and species protection.
- 5.43 Policy P53 contains criteria that stipulate that development should have minimal impacts on water courses and supplies.
- 5.44 Policy P54 asserts that development should not be at risk from flooding or exacerbate flood risk. Any proposals must assess flood risk and where appropriate apply a sequential test for development in areas of risk.

Site Specific Policies

- 5.45 Within policy P30, reference is made to the Shrewsbury and Newport Canal and that Local Plans should ensure that proposals for its restoration are given favourable consideration if the following can be demonstrated:
- ◆ An acceptable integration of recreational use of the waterway with the protection and enhancement of the wildlife and biodiversity of the waterway;
 - ◆ The restoration and conservation of any associated buildings or features of architectural or historic importance;
 - ◆ An acceptable level of impact on the amenity of the local residents; and
 - ◆ The availability of a sustainable water supply.

Shrewsbury & Atcham Borough Local Plan

General Policies

- 5.46 The Local Plan contains general policies applicable to all development throughout the Borough, with an emphasis on encouraging good design. More specific issues and types of development are dealt with by policies in the other chapters in the plan. Policies relating specifically to Conservation Areas and Listed Buildings, where design of development is especially important, are contained in the Historic Environment chapter.
- 5.47 The Council aspires to encourage innovative design, architectural elegance and seeks to encourage good design by having general policies which strive for high standards of design to ensure that all development is appropriate to its setting and surroundings and respects local distinctiveness. All development should make a positive contribution towards improving the overall quality of the environment, whether it is by reducing energy consumption or paying attention to design details and local building materials.
- 5.48 Policy LNC1 seeks to protect the natural beauty and heritage of the countryside. The Plan recognises that even though there are policies that protect sites of recognised conservation or landscape importance the Borough's natural heritage as a whole needs protection. The policy also draws attention to the fact that the countryside contains numerous wildlife corridors, which are linear features that need to be maintained and managed.
- 5.49 Policy TLR2 views tourism as an important tool for diversifying the rural economy. However the policy sets out several rigid criteria that tourist, recreation and leisure proposals must meet, such as, there should be no detrimental impact upon environment and the amenity of the surroundings and the landscaping proposals are designed reinforce the visual, historical and ecological characteristics of the site and its surroundings.

Site Specific Policies

- 5.50 The Council supports, within policy TLR11, the aim to restore the line of the Shrewsbury and Newport Canal and states that favourable consideration will be given to the restoration of the canal as a navigable waterway or as a cycle/pedestrian route. Reference is made to the proposals of the Local Transport Plan to extend existing routes along the line of the old towpath and that sections of the canal from Spring Gardens to Uffington are Heritage Sites (Local Nature Conservation Sites under policy LNC7) which ensures that the canal provides important wildlife corridor links between the urban and rural area.

Wrekin Local Plan

General Policies

- 5.51 One of the principal aims of the Council is to improve the environmental quality of the district. The existing quality of the District varies greatly from area to area. With regard to this the Council recognises that there are sites of poor quality within areas of the highest quality. Thus the Plan aims to enhance the environment through good quality new development and its own development proposals and capital projects.
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Final Report

- 5.52 Policy UD1 is a general design policy that states that development proposals will be expected to reinforce local distinctiveness wherever possible and respect and where appropriate, enhance the character and appearance of the local environment.
- 5.53 Policy UD4 represents the Councils wishes to achieve developments that are functional and emphasize high standards of environmental design. The policy also makes reference to the need for landscape assessments for large-scale developments or those on sensitive sites. However, the Council has produced a landscape design guide that sets out the approach and principles of analysis and design to assist developers.
- 5.54 The Plan acknowledges that water features can have significant visual, educational, recreational, archaeological or ecological value. Policy OL10 maintains that alterations to existing water features will only be permitted if it can be shown that they would not have a damaging effect on these types of values. However, the Council will usually welcome new water features if they do not adversely affect, visually or physically, its surroundings. Further the Council support the aims of the Shropshire Union Canal Society to restore the line of the old Shrewsbury and Newport Canal.
- 5.55 Policy LR3 states that large scale developments for recreational or leisure use in the countryside may be permitted if they cannot be provided in the urban areas, subject to criteria. This could be potentially important to Humber Arm; Wappenshall Junction; Trench Arm; and Longdon. Care must be taken, as “format driven” development is not in itself a justification for development beyond the built up area, but if Telford and Wrekin is to have a marina (or marinas) on the canal with associated facilities these cannot be provided within the built up area as the canal no longer penetrates the town. Wappenshall in particular is close enough to the built up area to form an urban extension..

Site Specific Policies

- 5.56 Within policy OL2, the Council will not permit development which is likely to adversely affect ‘Sites of Special Scientific Interest’ (SSSI). The Newport Canal has been designated as one of the eight SSSIs within the Wrekin District. Nevertheless, the Council may consider exceptions to this policy if the application can demonstrate that the benefits of the proposals would exceed the decrease in the nature conservation value or landscape character of the site. It should be noted that even if planning permission is granted however, English Nature will need to license works affecting a SSSI.

Staffordshire and Stoke-on-Trent Structure Plan 1996-2011

- 5.57 The structure Plan for Staffordshire and Stoke-on-Trent has been prepared jointly by Staffordshire County Council and Stoke-on-Trent City council and was adopted in May 2001.

General Policies

- 5.58 Policy D4 seeks to support a move towards a more balanced rural community and development will be considered if it benefits economic activity and maintains or enhances the environment.

- 5.59 Policy NC1 is a general policy statement with regard to the protection of the countryside. It recognises that the built and natural environment are in a constant state of evolution and that special attention should be paid to safeguarding those elements that contribute to the diversity, character and distinctiveness of the countryside.
- 5.60 Policy NC2 is a statement that identifies what type of development would be acceptable in differing rural landscapes and the areas which require positive investment to maintain or restore the quality and character.
- 5.61 Policy R3 aims to protect the countryside by seeking to restrict recreation related development that could and should be located elsewhere. It also states that where development is considered appropriate, it should, wherever possible, make use of and respect existing buildings, surroundings and the landscape. Further the Plan acknowledges that recreational and environmental initiatives in the countryside may arise as a result of reclamation or restoration schemes.
- 5.62 Policies R7 and R8 relate specifically to the development and restoration of canal facilities. Policy R7 is related to the creation of new canal facilities and recognises that canals contribute to recreational and tourist activities. It acknowledges that many canals are protected by Conservation areas and as such any development should contribute positively to the function and appearance of canals. Policy R8 is associated with the restoration of former canals and states that proposals for the restoration of canals will be supported. The plan appreciates that canal restoration can form the focus for imaginative and wide-ranging urban regeneration schemes.

Stafford Borough Local Plan Review – Issues Paper

- 5.63 The current Stafford Borough Local Plan covered the period from 1986 to 2001 and is now being reviewed and the council is looking towards producing a Local Development Framework. Currently an Issues paper has been prepared in order to highlight the key issues and areas of decision making to be considered in reviewing the current Local Plan and to promote discussion of those issues.
- 5.64 The Issues paper within Stafford considers that the canal network is an important resource as a recreational and tourist facility. The Council states that it has received positive direction from British Waterways and other organisations, including the Shrewsbury & Newport Canals Trust, to restore the infilled Shrewsbury and Newport canal. The paper asserts that Newport & Shrewsbury canal will be protected from development through the Local Plan to assist in conserving the route prior to restoration being undertaken.

6. Ecology

- 6.1 As part of the commission for the overall feasibility study, an investigation into the current ecological condition of the route of the canal was undertaken to identify potential constraints and opportunities for ecological enhancement. The study targeted various locations of ecological interest, to provide information concerning potential impacts and constraints of the project on the existing flora, fauna and habitats within and adjacent to the proposed canal corridor. The proposed restoration will largely take place over its historical route, but with some alterations where the canal route has been permanently altered through, for example, development over the route of the canal. This chapter does not cover the proposed new sections of the canal.

METHODOLOGY

Consultation

- 6.2 A series of consultations were carried out in order to determine the known ecological interest within 500m of the canal route. Consultees were asked for any information on legally protected species and statutory and non-statutory designated sites of importance for nature conservation, as well as any views, concerns or aspirations in relation to the potential restoration of the canal. Details of the consultations and a summary of the responses received are given in the next section.
- 6.3 Following the consultation and data gathering exercise a review of all the information received was undertaken to identify all ecological issues associated with the canal, as well as potential constraints and opportunities.

Photographic Assessment

- 6.4 The Shrewsbury and Newport Canal Trust supplied a CD which contained a photographic survey of the historic route of the canal. This survey was analysed and locations likely to be of ecological interest, such as areas where the canal is still in water and wooded habitats, were highlighted and used to inform the subsequent field survey.

Field Survey

- 6.5 A walkover survey was undertaken between the 23 – 25 July 2003, on targeted sections of the canal route based on the information gathered during the consultation and photographic assessment of the canal. The targeted sites were visited and assessed on their present ecological interest. Records were made of the presence of invasive plant species (e.g. Japanese Knotweed (*Fallopia Japonica*) and the potential for habitats to support legally protected species, such as badger, bats, great crested newt and breeding bird populations.
- 6.6 Where habitats displayed significant floral communities, species lists were recorded. Woodlands (where possible) were initially assessed in order to determine the National Vegetation Classification (NVC) of the existing community as given in

(British Plant Communities, Volume 1, Woodland and Scrub, Rodwell, Cambridge University Press 1991).

- 6.7 Scientific names of floral species are given in accordance with '*The New Flora of the British Isles*', Stace, (Cambridge University Press 1995). The binomial system has been employed in this report, and the scientific names of flora and fauna have been given in italics when first mentioned in the text, but not thereafter.

CONSULTATION

- 6.8 Consultation focused on ecology was undertaken with a number of organisations and groups with an ecological interest in the canal. A summary of the consultee responses is given in Table 6.1 below:

Table 6.1 - – Summary Consultee Responses

Consultee	Information Received
English Nature	Held discussions regarding Newport Canal SSSI and Aqualate Mere Ramsar Site (Also a SSSI and NNR).
DEFRA MAGIC website	Location and citation for Newport Canal SSSI.
Staffordshire Ecological Records Centre	Provided information on Statutory and Non-statutory sites of conservation importance in Staffordshire, together with records of protected/Biodiversity Action Plan species in the vicinity of the canal.
Staffordshire County Council	Directed to Staffordshire Ecological Records Centre (see above).
Shropshire Wildlife Trust	Provided information on Statutory and Non-statutory sites in Shropshire, together with records of protected/BAP species in the vicinity of the canal.
Shropshire County Council	Meeting attended, awaiting information on data holding organisations.
Borough of Telford and Wrekin	Own a section of the canal, and are responsible for administering fishing licenses and maintenance of towpaths and litter collection.
Shrewsbury and Atcham Borough Council (website)	Details of a walk along the Old Shrewsbury Canal at Sundorne, which is managed as a Local Nature Reserve by the Borough.
Shropshire County Bird Recorder	Unable to provide data in the timescale of this project.
Shropshire Botanical Society	Awaiting Response.
Shropshire County Mammal Recorder	Awaiting Response.

EXISTING ENVIRONMENT

- 6.9 For ease of understanding the route of the canal has been split into 55 sites which are identified in Figures 1 to 5, in Appendix 2. The ecological interest of these sites is summarised below.

Section 1 (Woodland and wet lock)

- 6.10 This stretch of the canal meets the Shropshire Union Canal at Norbury Junction and enters a large wet dock covered by a building. The old lock is positioned directly behind the dock building and demonstrates a good assemblage of mosses and liverworts, male fern (*Dryopteris filix-mas*) and hartstongue (*Phyllitis scolopendrium*) prolific among the stonework.
- 6.11 The canal becomes dry after joining a ditch or brook within a small woodland area. This woodland demonstrates a NVC Community W8 characteristics dominated by ash (*Fraxinus excelsior*) with an understorey of bramble (*Rubus fruticosus*) and nettle (*Urtica dioica*). Also present was hawthorn (*Crataegus monogyna*), bracken (*Pteridium aquilinum*), great willowherb (*Epilobium hirsutum*), hedge woundwort (*Stachys sylvatica*), dog's mercury (*Mercurialis perennis*), dog violet (*Viola canina*), and hogweed (*Heracleum sphondylium*).
- 6.12 There is the potential in this section that the canal lock wall and trees may support bats and a population of small birds. Fast water movement through lock will reduce the potential for great crested newt (*Triturus cristatus*) to use for breeding.

Section 2

- 6.13 The canal is dry and in-filled, with current land use being pasture.

Section 3

- 6.14 The canal is evident but dry with tall ruderal vegetation.

Section 4 (Lock with bridge and woodland)

- 6.15 The canal bed is in water, with the existing lock and land adjacent to the site wooded. The lock walls and woods provide niches for fern colonisation with male fern, hartstongue and maidenhair spleenwort (*Asplenium trichomanes*).
- 6.16 The W8 woodland is dominated by ash with some elm (*Ulmus* sp.) and elder (*Sambucus nigra*). Ground flora includes hedge woundwort, ivy (*Hedera helix*), ground ivy (*Glechoma hederacea*), bluebell (*Hyacinthoides non-scripta*), nettle, herb Robert (*Geranium robertianum*) and greater stitchwort (*Stellaria holostea*).
- 6.17 The bridge provides some holes and crevices that have the potential to be used by bats whilst the wood provides good habitat for bird populations. Standing water may also provide some limited potential for great crested newt.

Section 5 (Woodland At Locks 6 To 7 With Wet bed)

- 6.18 Woodland; W8 (as above) with occasional foxglove (*Digitalis purpurea*). Adjacent land use at time of survey is agriculturally improved grass pasture with connected hedge network.

Section 6 (Bed in water, marshy vegetation near lock)

- 6.19 Some woodland (as in section 4) and scattered trees, those in adjacent pasture are large mature specimens with bat roost potential whilst the bridge also demonstrates some bat potential. The area will need to be assessed for great crested newt in areas of standing water. Marginal vegetation is dominated by lesser water-parsnip (*Berula erecta*).

Section 7

- 6.20 The canal is dry and in-filled, with current land use being pasture

Section 8 (Depression along canal corridor, Damp semi-improved grassland)

- 6.21 An area of semi-improved grassland with scattered shrubs including dog rose (*Rosa canina*), hawthorn and gorse (*Ulex europaeus*). Other species present include dominant hard rush (*Juncus inflexus*), creeping thistle and spear thistle (*Cirsium arvense* and *C. vulgare*) red and white clover (*Trifolium repens* and *T. pratense*), Timothy (*Phleum pratense*), sorrel (*Rumex acetosa*) and brooklime (*Veronica beccabunga*) in the wetter depressions.

Section 9

- 6.22 Pasture over corridor, canal dry and in-filled with some woodland.

Section 10 (Canal holding water, adjacent land includes pasture arable and scattered trees)

- 6.23 This description was unverified as the canal stretch holding water could not be located in the field. Adjacent ditches and watercourses may provide some potential to support water vole.

Section 11 (Wooded aqueduct)

- 6.24 Canal depression with semi-improved grassland and scrub. Trees include hawthorn and goat willow (*Salix caprea*). The River Meese is crossed by the aqueduct and sources through Aqualate Mere SSSI, NNR and Ramsar site. The river together with its meandering course, morphology and associated riparian habitat has the potential to support both otter (*Lutra lutra*) and water vole (*Arvicola terrestris*). This river may also be important for fisheries, invertebrates and macrophytes and is especially important due to its connection with the Aqualate Mere.

Section 12

- 6.25 Ponds, marshy and wooded areas offline from the canal corridor.
-

Section 13

6.26 Canal evident, bed dry supporting thistles and scrub.

Section 14

6.27 Canal has a dry bed and scrub, with adjacent pasture.

Section 15

6.28 Canal in-filled through pasture and adjacent woodland and scrub.

Section 16

6.29 The canal is not evident in this section with tall herb and ruderal vegetation present.

Section 17 (Moss Pool)

6.30 Medium sized pond within improved pasture with closely cropped sward by farm and Canada geese (*Branta canadensis*). Pond has wooded banks and little marginal or aquatic vegetation and may support limited fish population. Due to these factors there is a low potential for great crested newt.

6.31 The surrounding woodlands, however, may support breeding bird populations. The bridge present at this location has limited potential for bat roosts in the crevices associated with the structure and brickwork of the bridge.

Section 18

6.32 Canal bed dry with trees and scrub.

6.33 Newport Canal SSSI is a length of disused canal designated for its macrophyte interest and recorded as one of the best localities for aquatic plants in Shropshire.

Section 19 Canal (Eastern Section)

6.34 This section of canal supports a proliferation of yellow water lily (*Nuphar lutea*) before entering a culvert under the road. Thereafter it passes through a narrow concrete channel and over a stepped weir before returning to its natural form.

Sections 20-23

6.35 Work had recently been undertaken on the canal bank (offside from path) in this section. This may have involved the treatment of vegetation by herbicide spraying and turf removal. There had been a large removal operation of filamentous algae from the canal. The marginal plant community forms a narrow strip and comprises common reed, reed canary grass, branched bur-reed, greater reedmace, with galingale (*Cyperus longus*) and flowering rush (*Butomus umbelatus*).

6.36 Aquatic macrophytes are rare with broadleaved pondweed (*Potamogeton natans*) and a pink water lily (*Nymphaea* sp.) Japanese knotweed is present but rare, in

small isolated stands. Fishing points also continue along the canal with access from the path.

Section 24 (Winding hole connected to canal SSSI)

6.37 Very little aquatic or marginal vegetation present.

Section 25 (Overflow/culverted into perpendicular ditch. Canal in-filled beyond, extending into pasture and scrub)

6.38 Perpendicular ditch with scrub and tall ruderals, occasional Himalayan balsam (*Impatiens glandulifera*) was also present. Large mature crack willows were the dominant feature of the area together with grey willow, hawthorn and some osier.

Section 26

6.39 Canal corridor passes through open pasture and arable farmland.

Section 27 (Scrub and Woodland)

6.40 Woodland dominated by large crack willow (*Salix fragilis*), alder (*Alnus glutinosa*) osier (*Salix viminalis*) sycamore (*Acer pseudoplatanus*). The wood demonstrates a few wet glades with reed sweet grass (*Glyceria maxima*) and other vegetation that includes burdock (*Arctium minus*), marsh thistle (*Cirsium palustre*), herb Robert, ivy and wood avens (*Geum urbanum*)

Section 28

6.41 A dry channel which is overgrown, with the unconfirmed presence of Japanese knotweed (*Fallopia japonica*), with trees and scrub and some adjacent arable land.

Section 29 (Arable farmland)

Section 30 (Woodland, adjacent land dominated by arable farmland and agriculture)

6.42 Canal structure evident with damp marshy habitat and some reed swamp (*Phragmites australis*). Wooded edges with some woodland, fenced and possibly managed for game birds. Woodland comprises osier, goat willow, and alder with scattered oak (*Quercus robur*) on field margins. Ground flora dominated by herbaceous species associated with agriculture and disturbance. Sow thistle (*Sonchus arvensis*), cleavers (*Galium aparine*), nipplewort (*Lapsana communis*), coltsfoot (*Tussilago farfara*), nettle and false oat grass (*Arrhenatherum elatius*) with meadowsweet (*Filipendula ulmaria*) prolific in wetter areas. The woodland area provides some suitability for bats.

Section 31

6.43 Scrub and scattered trees with tall herb vegetation. Adjacent land-use dominated by arable and pasture.

Section 32

- 6.44 Channel on embankment with tall herbaceous vegetation and some scattered scrub.

Section 33 (Woodland)

- 6.45 Woodland with willows (*Salix* sp.) ash, alder, elm, sycamore and elder. Ground flora comprises hedge woundwort, red campion (*Silene dioica*), hogweed, broadleaved plantain (*Plantago major*) and some tall grasses.
- 6.46 This area lies in close proximity to a pond that supports fish, with a low potential for the presence of great crested newts. The area may provide suitability for bats and bird populations due to the trees and associated potential roosts.

Section 34 (Trees and scrub along canal corridor)

- 6.47 Alder and ash with some elder and bramble scrub. Ground flora dominated by cleavers and agricultural weeds, creeping thistle, nettle, hogweed, common hemp nettle (*Galeopsis tetrahit*) and rosebay willowherb (*Chamerion angustifolium*).

Section 35

- 6.48 Tall ruderal and scattered trees and scrub.

Section 36

- 6.49 Corridor traverses arable farmland with scrub along route.

Section 37 (Dry canal bed along line of trees with some reedmace (*Typha latifolia*) west of Wappenshall Junction yard)

- 6.50 Trees include Norway maple (*Acer platanoides*), field maple (*Acer campestre*), white willow (*Salix alba*), crack willow and poplar (*Populus* sp.)

Section 38

- 6.51 The Trench Arm of the canal crosses arable farmland with occasional scrub along route.

Section 39 (Tall herbaceous vegetation and scrub. Adjacent land-use dominated by arable farmland)

- 6.52 Dry canal corridor (in-filled) runs alongside Hurley Brook. The brook is well vegetated prior to a large concrete weir before entering culvert under the road. Marginal plants include reed sweet grass (*Glyceria maxima*), ragwort (*Senecio jacobea*), common reed, water mint (*Mentha aquatica*), great willowherb, black knapweed (*Centaurea nigra*) and hedge bindweed (*Calystegia sepium*).
- 6.53 The brook may have some potential for water vole and the wide field margin provides some interest for invertebrates.
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Section 40 (Canal bed adapted as drainage watercourse from Wappenshall to east of lock 25)

- 6.54 The canal passes through Eyton Lock positioned by a residential property and then enters culvert beneath the road and garden of a second household. Hurley brook continues in parallel to the canal corridor with a thin strip of wooded habitat. This becomes more sporadic as it enters agricultural land. There is the potential for water voles to be present within this section.

Section 41 (Short stretch of canal with bed in water)

- 6.55 Section enclosed between sealed bridge and culvert under the road. The water appears to be polluted and discoloured. Area surrounded by hawthorn, ash, bramble and sycamore. The bridge demonstrates some bat potential.

Section 42

- 6.56 Stretch of canal with bed in water positioned between road and railway.

Section 43 (Embankment with tall herb vegetation, scattered trees and shrubs)

- 6.57 Tunnel through embankment demonstrates hollow cavities capable of supporting bats. The embankment is vegetated with elder, ash, bramble and hawthorn in accompaniment to tall ruderals including nettle, hogweed, creeping thistle, ivy and red dead nettle (*Lamium purpureum*). The canal bed demonstrates a swamp community dominated by reed sweet grass.

Section 44

- 6.58 Canal in-filled traversing arable farmland with parallel hedgerow.

Section 45

- 6.59 Tall herbaceous vegetation.

Section 46

- 6.60 Embankment evident. Tree and scrub adjacent to domestic garden.

Section 47 (Embankment with trees and scrub adjacent to arable farmland and pasture)

- 6.61 The embankment had been planted as a shelter belt and comprised a variety of trees including mature oaks, ash, hawthorn, Scot's pine (*Pinus sylvestris*), sweet chestnut, poplar species, rowan (*Sorbus aucuparia*), holly (*Ilex aquifolium*), birch, (*Betula pendula*), pin oak (*Quercus palustris*), aspen (*Populus tremulosa*), willows, dog rose and bramble.
- 6.62 Ground flora consisted of agricultural weeds with some climbing hop (*Humulus lupulus*), rosebay willowherb, great mullein (*Verbascum thapsus*) and reed canary grass.

Section 48 (Canal corridor with tree and scrub cover, bed in water.)

- 6.63 Vegetated canal corridor with some retained embankment structure surrounded by arable farmland and running parallel to road. The embankment vegetated with scattered trees and scrub including alder, ash, oak, sycamore, hawthorn, grey willow (*Salix cinerea*), blackthorn (*Prunus spinosa*) and elder with occasional bramble, black bryony (*Tamus communis*) and nettle.
- 6.64 The canal is bordered on one side by a laid hawthorn hedge next to the adjacent arable farmland.
- 6.65 The canal bed is marshy with some standing water and the ground flora is therefore a mixture of woodland and marginal species including ivy, cuckoo pint (*Arum maculatum*), ground ivy, red campion, hedge woundwort, garlic mustard (*Alliaria petiolata*), common figwort (*Scrophularia nodosa*), yellow flag iris (*Iris pseudacorus*), branched burreed (*Sparganium erectum*), skullcap (*Scutellaria galericulata*), reed canary grass, brooklime, lesser water parsnip and watermint. The woodland may provide potential habitat for bats and bird populations.

Section 49 (Canal re-profiled with bed in water)

- 6.66 A short stretch of re-profiled canal contained within steel piling and lawn banks. No marginal or aquatic vegetation present.

Section 50 (Large Tunnel in Woodland)

- 6.67 Stretch of canal in water entering long tunnel under wooded area. Tunnel in water (No access) with excellent potential to support bats. Woodland includes larch (*Larix decidua*), ash and blackthorn with an understorey of elder and bramble. The field layer comprises male and hartstongue fern whilst the ground flora is dominated by ivy, red campion, herb Robert and hedge woundwort. The woodland has the potential to support a diverse population of small birds. Brown Hare (*Lepus europaeus*) was also recorded on adjacent arable farmland.

Section 51 (Trees and scrub, corridor crossing pasture with bed in water)

- 6.68 The outbuilding and tunnel present high potential to support hibernating bats. Birds nest recorded in outbuilding. The water does not support aquatic or marginal plant species.

Section 52 (Tall herb vegetation and scrub adjacent land use dominated by arable farmland)

- 6.69 Woodland dominated by oak, hawthorn and grey willow. The field layer supports nettle and bramble whilst the ground flora comprises ivy, garlic mustard and ground elder (*Aegopodium podagraria*). The canal bed at this location is in water and dominated by duckweed (*Lemna* sp.) whilst the marginal habitat is dominated by yellow flag iris.

Section 53 (Tall herbaceous vegetation and scrub adjacent arable farmland)

- 6.70 Canal forms marshy wet habitat with lesser water parsnip, reedmace, reed canary grass, meadowsweet, great willowherb, and water cress (*Rorippa nasturtium aquaticum*). Willows dominate the canopy with both grey and goat willow present, tall herbs and ruderals present in adjacent field margins with tufted vetch (*Vicia cracca*) and common fleabane (*Pulicaria dysenterica*).

Section 54 (Canal bed in water)

- 6.71 Canal dominated with duckweeds (*Lemna minor* and other species), margins comprise branched bur reed and reed sweetgrass. Associated trees include ash, sycamore, hawthorn and Lombardy poplar (*Populus nigra*.) The area provides suitable habitat for water voles and should therefore be surveyed for this species.

Section 55 (Large stand of Japanese knotweed)

- 6.72 A stretch of canal in Shrewsbury, approximately 100m long and dominated by Japanese knotweed. The corridor is fully infested, with the stand extending laterally into adjacent land. The stand is seasonally fully grown at approximately 2m high and fills the canal bed with the main stand being 2m wide. A birds nest was present during survey (young heard).

Statutory Designated Sites*Aqualate Mere*

- 6.73 The majority of the canal route in Staffordshire lies within the statutory consultation area for Aqualate Mere RAMSAR/ Site of Special Scientific Interest (SSSI)/ National Nature Reserve (NNR). Refer to Appendix 2 for a citation.
- 6.74 Telephone consultations with English Nature (EN) yielded concerns about the water quality at Aqualate Mere if the restoration of the Shrewsbury and Newport Canal goes ahead. The water from Aqualate Mere comes from the Shropshire Union Canal and the boatyard at Norbury Junction. High phosphate and silt loading comes from these sources, with around 20% of total phosphate in the mere coming from the canal which can cause eutrophication.
- 6.75 While understanding English Natures concerns, the view expressed does not quite square with our understanding of the water supply to Aqualate Mere. The main input into the Mere is the Back Brook which rises near Stockton and flows northwards to Coley Mill, crossing under the A518 when it becomes the Coley Brook and thence into the Mere. There is a relatively insignificant stream called the Wood Brook which flows under the Shropshire Union Canal near to Norbury Junction and then on into the Mere. At Borbury Junction there is an overflow (which will only run when the Shropshire Union Canal has surplus water) into this brook). Water from the dry dock, at present utilising Lock No. 1 on the Newport Canal, is also understood to drain into a small tributary of the Wood Brook, but this is not drained frequently (certainly not daily) and the volume each time is insignificant compared to a stream flowing continuously. There is the possibility that the water drained off from the dry dock could be contaminated from the activities that are involved but these activities will cease when the Newport Canal is restored. There is evidence that the Mere, which
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is glacial in origin, has been silting up for centuries, probably for far longer than the existence of the canal.

- 6.76 EN are also concerned that if Shrewsbury and Newport Canal included spillways that directed water into the Mere, the two should remain hydrologically isolated. There may however be potential for improving water quality in the Mere by directing water from the Shropshire Union Canal into the Shrewsbury and Newport Canal instead of to the Mere. This can clearly be achieved. However, water from the restored Newport Canal should not enter the Mere as all the watercourses either flow the other way or enter the River Meece downstream from its exit from the Mere.
- 6.77 EN have also suggested contacting British Waterways for further information on resolving conflicts between nature conservation and navigation.

Newport Canal

- 6.78 Newport Canal SSSI comprises a length of about 2km of disused canal, designated for its plant communities including swamp and fen and is one of the best localities for aquatic plants in Shropshire (for the full citation refer to Appendix 2).

Attingham Park

- 6.79 Attingham Park SSSI is an ancient parkland immediately to the east of Shrewsbury. It is designated for its assemblage of invertebrates which depend upon the old trees (Refer to Appendix ? for further details).

Non Statutory Designated Sites

- 6.80 There are 4 Grade 1 Sites of Biological Importance (SBI's) in Staffordshire within 500m of the canal route (Refer to Figures 5-10 in Appendix 2 for locations).
- 6.81 There are 9 Wildlife Sites in Shropshire within 500m of the canal route (Refer to Figures 5-10 in Appendix 2 for locations). Two of the Wildlife Sites (Wrockwardine Wood and Central Hall) are to the east of the Trench Arm of the canal, and are therefore unlikely to be affected by the proposals. Details of these sites are not included in the Appendices.

CONSTRAINTS AND OPPORTUNITIES

- 6.82 In undertaking the restoration of the canal there is the potential for a number of adverse impacts upon the ecology and nature conservation value of the canal and its surroundings, as well as opportunities for ecological enhancement.

Constraints

Statutory and Non-Statutory Designated Sites

- 6.83 Adverse impacts on hydrological systems are complex and can be far reaching. The issues of water quality, movement and the effects of the canal restoration on the water table, ground water and watercourses within the catchment should be investigated thoroughly. Particular attention should be focused on potential impacts to Aqualate Mere SSSI, (also raised as a concern during initial consultation with

English Nature). The impacts associated with regular use by canal boats; the associated fuel and oil pollutants, erosion, rubbish and disturbance during operation is also an important consideration.

Badgers

- 6.84 Badgers and their setts are protected under the Protection of Badgers Act 1992. This act consolidates all previous legislation and makes it illegal to deliberately kill, injure or take a badger; dig, ring or mark a badger; disturb one whilst in its sett, or damage, destroy or obstruct its sett. The current legislation does not directly protect foraging areas that are used by badgers.
- 6.85 Shropshire is believed to support an extensive badger population and this was demonstrated during the walkover survey. Badgers were present at three separate locations and much of the wooded habitat on the line of the canal was suitable for this species.
- 6.86 The presence of undisturbed earth embankments combined with broadleaved woodland, close proximity to water and interconnectivity (through the hedgerow system) to larger areas of woodland for forage and dispersal afford attractive habitats for badgers. The canal corridor provides many areas demonstrating these characteristics and is therefore likely to be exploited by badger populations.
- 6.87 Where badger setts will be disturbed or adversely affected a licence will be required from DEFRA. (Department of Environment, Fisheries and Rural Affairs) and it will be necessary to apply mitigation measures.
- 6.88 Further detailed badger surveys are necessary to establish the location and extent of the populations present along the canal corridor and surrounding areas. This information will be required to determine the scale of the impact of the canal restoration and design appropriate mitigation.

Bats

- 6.89 All bat species and their roosts (including transient roosts) are protected in the UK under Schedules 5 & 6 of the Wildlife and Countryside Act 1981 (as amended by the Countryside Rights of Way Act 2000 in England and Wales) and the Conservation (Natural Habitats &c.) Regulations 1994. These make it an offence to intentionally or recklessly damage or destroy any bat roost; intentionally or recklessly obstruct access to a bat roost; deliberately, intentionally or recklessly disturb a bat; or deliberately kill, injure or capture any bat.
- 6.90 The many remaining brick and stone structures (locks, tunnels, pound walls, and bridges) provide valuable roosting opportunities and hibernacula for various bat species. Although the presence of bats was unconfirmed throughout the survey the precautionary principle should be applied and all structures and mature trees capable of supporting bats either as winter, summer or transient roosts should be surveyed by a licensed bat worker. These surveys may involve intrusive roost identification, emergence surveys or the use of an endoscope for cavity searches. Much of the wooded habitat recorded provided excellent foraging habitat and the linear structure of the canal corridor provides flight paths for feeding and commuting and will also require survey for bat activity.

6.91 Where bats are affected by the restoration project, mitigation measures will be required these may include translocation, provision of hibernacula or bat boxes/bricks. A licence will be required from DEFRA and all work will need to be undertaken under the supervision of a licensed bat worker.

Birds (general)

6.92 All birds are protected by the Wildlife and Countryside Act 1981, amended in England and Wales by the Countryside and Rights of Way (CROW) Act (2000).

6.93 Section 1 (1) of the Wildlife and Countryside Act 1981 creates the offences of intentionally killing, injuring or taking a wild bird; taking, damaging or destroying the nest of a wild bird; taking, damaging or destroying the eggs of a wild bird; or possessing a live or dead wild bird or the egg of a wild bird.

6.94 Section 1 (5)(a), as amended by the CROW Act 2000, creates the offences of intentionally or recklessly disturbing any wild bird included in Schedule 1, while it is building a nest or is in, on or near a nest containing eggs or young or disturbing dependent young of such a bird.

6.95 As the restoration project will conceivably involve the removal of large amounts of vegetation this may potentially affect a variety of different bird species. Depending on the type of habitat removed there may be impacts to Red Data Book listed and legally protected birds. For example the removal of improved grassland may directly affect ground nesting birds such as lapwing or skylark which are a priority UK Biodiversity Action Plan (BAP) species, whilst the removal of woodlands and reed swamp may affect a variety of different bird species.

6.96 Particular attention should be drawn to the bird populations present on Aqualate Mere SSSI and there should be close liaison with English Nature with regard to potential impacts.

6.97 Bird surveys are recommended along the length of the canal corridor and within the footprint of the potential embankments. Where structures are to be demolished surveys should be conducted to ascertain potential impacts to bird species (especially relevant to barn owl). Where protected species may be affected, mitigation will need to be applied in accompaniment with appropriate consultation (English Nature, RSPB).

Great crested newt

6.98 Great crested newt numbers are declining nationally due to loss and degradation of suitable breeding ponds and are therefore afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended by the Countryside Rights of Way Act, 2000 in England and Wales) and under The Conservation (Natural Habitats etc.) Regulations 1994.

6.99 The defunct canal has preserved isolated pockets of still water, many within existing lock structures. Together with online and offline ponds these afford varying degrees of potential for breeding great crested newt. The associated scrub, woodland and tall ruderals, (often present where the canal bed is in water) also provide suitable terrestrial habitat for forage and hibernacula of the species.

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- 6.100 In addition to these features the linear structure of the habitats provides some suitability for dispersal of the species and may allow colonisation along the corridor where movement is not impeded by a fragmenting element such as roads or arable farmland.
- 6.101 The restoration of the canal will replace all of these small bodies of still water along the canal corridor and remove much of the existing terrestrial habitat. It will therefore be necessary to conduct great crested newt surveys of ponds and water bodies along the corridor and up to a distance of 500m from the canal footprint (EN Great Crested Newt Mitigation Guidelines, 2001).
- 6.102 Surveys should be conducted by a great crested newt license holder and will primarily identify the ponds potential to support the species and then may be followed by presence / absence surveys. Should great crested newts be present then further population surveys will be required. A licence will also be required from DEFRA in order for the works to commence. The granting of the licence will be dependant on adequate mitigation measures demonstrating that the favourable conservation status of the species will not be compromised and will only be granted with full planning permission or other legal permission.

Invertebrates

- 6.103 There are several areas of potential invertebrate interest including wide field margins, woodland rides, riparian strips and vegetated embankments. The transitional interface (ecotone) between wooded environments and the adjacent land often provided distinct invertebrate interest, this is especially relevant where the canal retains water and species such as damselflies and dragonflies were prolific.
- 6.104 Restoration of the canal will offer opportunities to enhance the route of the canal for invertebrates, particularly those associated with slow moving or standing water and bankside habitats.

Macrophytes

- 6.105 Where the canal bed was recorded to be in water there was little macrophyte interest, often due to the shaded position within lock structures. Aquatic plants, though frequently present were often restricted to the drier more marshy swamp habitat where wet sediments allowed a variety of marginal species to colonise.
- 6.106 Newport Canal SSSI represented the most diverse macrophyte interest as detailed in sections 19-25. The impacts associated with the canal restoration project are likely to be negative on these marginal and aquatic plant communities present in the channel.
- 6.107 A working canal has to be kept relatively clear of vegetation to allow the passage of boats, this obviously conflicts with maintaining the diverse plant community at Newport SSSI. In addition erosion from propeller wash, piling, canal maintenance, pollution and disturbance are all potential impacts in maintaining this diverse plant interest. There may be possible opportunities to neutralise these conflicts by the creation of a backwater system or widening of the canal at this location and the subsequent incorporation of a duel channel with the existing plant communities afforded protection from erosion/wash by central piling.

6.108 A detailed survey of the existing macrophyte interest on the SSSI should be undertaken to determine the full extent of the impacts associated with the proposed restoration. Liaison with English Nature and sensitive design are essential for maintaining the ecological significance and nature conservation interest at this section of the canal.

Water vole

6.109 This species has suffered considerable decline in number through the loss and fragmentation of its preferred habitat. It is protected, under Schedule 5 of the Wildlife and Countryside Act 1981 in respect of section 9(4), which affords limited legal protection. At present, this legislation protects the water voles habitat only making it an offence to damage, destroy or obstruct any structure or place which water voles use for shelter or protection. It is also an offence to disturb water voles whilst using such a place.

6.110 The survey revealed several areas capable of supporting water vole populations which are now vulnerable in England. Numbers of the species have been drastically reduced through predation (often by introduced mink) and habitat modification.

6.111 The canal restoration project may impinge on adjoining water courses and therefore disturb existing water vole habitat. However, the creation of a new water course and additional riparian habitat (If designed and constructed sensitively, possibly using soft engineering techniques) may provide additional colonisable habitat for the species. The restoration project could work towards local and UK BAP targets for the water vole.

Otter

6.112 The otter is afforded protection under the Wildlife and Countryside Act 1981, under Section 9.1 and 9.4, Schedule 5 (as amended as amended by the Countryside Rights of Way Act, 2000 in England and Wales) and under The Conservation (Natural Habitats etc.) Regulations 1994. This legislation makes it an offence to kill injure or take an otter from the wild without a licence; to damage or obstruct a holt; or disturb an otter in its resting place. A licence will be required from DEFRA if the project is found to impact on an existing otter population.

6.113 The otter has been given full legal protection throughout England and Wales since 1978 due to its drastic decline in numbers. Since then the otter has managed to survive in some localities that afford suitable riparian habitat and conditions. Recently, it has been much publicised that the otter has made a comeback with an increase in distribution in the English countryside. However, the population recovery is not complete and the species is far from being as widespread as once it was.

6.114 Instrumental in maintaining and enhancing the recovery of otter populations is water quality and the management of rivers following best practice; this includes issues such as connectivity, hydrology and the sensitive management of riparian habitat and vegetation.

6.115 Otters are present in the Severn catchment and the Otter Survey of England 2000-2002 (Environment Agency) has recorded an increase in otter range on the Middle Severn and the Tern systems. Some of the habitat recorded during the survey

(especially relevant to the area surrounding Aqualate mere and the River Meese) may be valuable to the existing otter population. Therefore otter surveys should be undertaken along the corridor to ascertain the likely impacts of the scheme on the existing population. Impacts on water quality that affect existing watercourses and local fisheries should be considered carefully.

- 6.116 However, the restoration project could feasibly enhance the environment for the existing otter population by providing connectivity (dispersal routes) between river systems and additional colonisable habitat. This may create potential to further the increase in otter distribution within the catchment and may work towards local and UK BAP targets for the species.

Woodlands

- 6.117 The woodlands recorded throughout the survey were mostly narrow linear habitats and often fragmented areas of semi-natural broadleaved or mixed plantation. Much of this woodland may require removal for construction of the canal and this will have associated impacts on the fauna present (especially relevant to protected species: badgers, bats and birds).
- 6.118 The canal corridor passes through some larger areas of woodland (for example section 33) and the impacts of the scheme in these areas are envisaged to be more substantial than on the smaller, more fragmented woodlands.
- 6.119 The woodlands will require further survey to establish the full diversity of ground flora in spring and provide community information that can be interpreted to provide a qualitative and quantitative assessment of the impacts associated with the canal construction.

Invasive species – Japanese Knotweed

- 6.120 Japanese knotweed is listed under Wildlife and Countryside Act 1981 schedule 9, Section 14. This legislation creates the offence to plant or otherwise cause this species to grow in the wild.
- 6.121 Japanese knotweed is a vigorously growing perennial plant native to Japan and Taiwan and is regarded as the most invasive plant in Britain. It is thought to produce no viable seed and the plant is chiefly propagated vegetatively through its underground rhizome system. This root system can extend up to 7 metres from the visible stand and small fragments of the plant, in particular the rhizomes, can produce new plants. Japanese knotweed has been known to emerge through tarmac and can cause damage to buildings and structures whilst also causing deleterious effects on native wildlife by out-competing the typical riparian plant species.
- 6.122 Japanese knotweed is present at several sites along the canal corridor and may represent a considerable constraint to the restoration project as it will be necessary to eradicate these stands prior to construction. This can be achieved by three methods, herbicidal treatment (potentially over a period of 3-5 years), deep burial on site, or removal for disposal to a licensed waste site. Japanese knotweed is also listed under The Environmental Protection Act 1990 (EPA), which classifies it as 'controlled waste' and as such must be disposed of safely at a licensed landfill site according to the EPA (Duty of Care Regulations 1991).
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- 6.123 The largest stand recorded is present in Shrewsbury Town centre, at the end of the canal (section 55).
- 6.124 It is recommended that the Japanese knotweed along the corridor is surveyed and mapped in order to ascertain the full extent of the infestation and design a successful and cost effective eradication programme.

Landscape integrity and habitat connectivity

- 6.125 The line of the canal corridor as it exists today is extremely fragmented and comprised of a variety of habitats including plantation and semi-natural woodland, semi-improved and improved grassland, swamp habitat, open water, arable farmland, amenity use and residential buildings.
- 6.126 These existing habitats form components within the landscape that constitutes a mosaic, thereby interlinking a variety of differing habitats. For example, the pockets of wooded and scrub habitat connect with hedgerows and other areas of woodland to form green corridors that enable the movement of wildlife throughout the area. These are important commuting and foraging routes for a wide range of species and are important in maintaining population dynamics and biodiversity.
- 6.127 The canal corridor covers approximately 25 miles and will form a large single corridor. It is therefore important to consider the scheme on a holistic level to interpret catchment based impacts on watercourses, and those associated with protected species and the fragmentation of existing habitats. This level of interpretation is invaluable in determining the type and severity of the potential impact and also in designing effective mitigations.
- 6.128 A Phase 1 habitat survey conducted in accordance with the Guidelines for Baseline Ecological Assessment (IEA 1995) is recommended in order to provide baseline conditions along the line of the corridor.
- 6.129 This survey will provide an overview of the habitats that will be affected and target further survey work required, whilst also providing information necessary in the process of determining the significance of the features affected and the ecological impacts of the restoration project.

Regulatory Constraints*Environmental Impact Assessment*

- 6.130 The need to undertake environmental impact assessments is governed by European and UK legislation.
- 6.131 The EC Directive on The assessment of the effects of certain public and private projects on the environment (85/337/EEC) came into effect in July 1988 and initiated a formal approach to environmental impact assessment throughout the European Community. The effect of the Directive was to require environmental impact assessment to be carried out, before development consent was granted, for certain types of major project which are judged likely to have significant impacts on the environment.

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- 6.132 In March 1997, European Directive 85/337/EEC was amended by European Directive 97/11/EC. This extended the list of projects which are considered to have significant effects on the environment and which must be subjected to systematic assessment. The Directive provides selection criteria to determine whether projects for which assessment is not mandatory require environmental impact assessment and allows Member States to set their own criteria or thresholds for significance. The EU Directive is transposed into UK law by the Town and Country Planning Regulations 1999.
- 6.133 Proposed works constituting a project which falls within the Annex II of the European Council Directive will require an Environmental Assessment prior to the initiation of any works on-site.
- 6.134 If it is considered that the restoration works would require Environmental Impact Assessment under the Town and country Planning Regulations 1999, a screening opinion obtained from the Local Planning Authority (LPA) will be required, and if a formal Environmental Statement is required this can be a lengthy process and must be included in the planned restoration programme, including a 16 week determination period by the LPA.

SSSI

- 6.135 Section 28, schedule 9 of the Countryside Rights of Way Act 2000, sets out the consultation process for work which may damage the special features of a SSSI, whether working within or outside of the SSSI boundary. The key requirements are that the authority (body applying to undertake the works) must give 28 days notice to English Nature of its intentions before commencing any operation likely to damage any flora, fauna or geological or physiological features for which the SSSI is designated.
- 6.136 If consent is withheld by English Nature or if the authority proposes to carry out the operation otherwise than in the accordance with the terms of English Nature consent, the authority is required to notify English Nature of the date on which it proposes to start the operations (which must be after the 28 day notification period) and how it has taken account of any written advice it received from English Nature.
- 6.137 If planning permission is required the authority shall take into account any advice received from English Nature in deciding whether or not to permit the proposed operations and if it does decide to do so, in deciding what conditions are to be attached to the permission.
- 6.138 If works are undertaken contrary to English Nature advice, all actions must be accountable. Failure to comply can result in a fine not exceeding £20k on summary conviction, or on conviction on indictment to a fine.

Non-Statutory Sites

- 6.139 In the single non-statutory site, potential enhancement opportunities do exist and there will be no significant legal constraints.

Other Opportunities

- 6.140 Although the canal restoration is likely to have some negative impacts on existing flora and fauna through temporary disturbance and permanent fragmentation and habitat loss, it also provides an opportunity to enhance the local environment by creating a green corridor and riparian habitat from the junction with the Shropshire Union canal at Norbury, through to the centre of Shrewsbury. This habitat offers opportunities that could be exploited by a variety of species of conservation importance.
- 6.141 The environmental potential of the project could be realised by a holistic approach and the use of sensitive design and construction techniques.
- 6.142 The design of the profile of the canal should incorporate a shallow area/shelf on the bank opposite the towpath. This should be planted with emergent vegetation to provide valuable marginal habitat for a range of wildlife which depend on shallower water to develop.
- 6.143 Soft engineering options (such as willow piling and revetments, coir rolls and matting) should be exploited wherever possible. The creation of online and offline features such as ponds, backwaters and associated woodlands should be considered as important incorporations to the linear canal design. In addition, a wide riparian strip would be beneficial in integrating the canal and embankments into the surrounding landscape and would also be capable of supporting a variety of species.
- 6.144 Detailed designs of habitat restoration/creation measures should be included at the design stage of the canal restoration project.

WAY FORWARD

- 6.145 The Shrewsbury to Newport Canal restoration project will be subject to a variety of ecological constraints as set out in this report. The project will require an in depth Environmental Impact Assessment necessitating further ecological surveys and the interpretation of impacts on protected species and habitats.
- 6.146 It is important that all designated sites are protected from any deleterious effects of the proposed restoration.
- 6.147 In conclusion, whilst the canal restoration is envisaged to impact on existing flora and fauna, it also provides an opportunity to enhance the local environment by creating a green corridor and riparian habitat that could be exploited by a variety of species. The environmental potential of the project could be realised by a holistic approach and the use of sensitive design and construction techniques.
- 6.148 Soft engineering options should be developed as part of the detailed design of the restoration scheme wherever possible and the creation of online and offline features such as ponds, backwaters and associated woodlands should be considered as important incorporations to the linear canal design.

Recommendations

6.149 In summary it is recommended that the following surveys are undertaken as part of the future planning and development schemes leading to full and complete restoration of the canal route:

- ◆ Phase 1 survey as per *Nature Conservancy Council Handbook for Phase 1 Habitat Survey (1990)*; .
- ◆ Bat;
- ◆ Great crested newts;
- ◆ Badger;
- ◆ Invertebrates;
- ◆ Macrophytes;
- ◆ Water voles.

7. Heritage

- 7.1 In considering the impact of the restoration upon heritage, our prime consideration is the heritage value of navigational structures, as these will need to be renovated or replaced as part of restoration. For the most part, the canal will sit in the footprint of the original canal, and thus wider heritage and archaeological conditions are not an issue. However, there is a brief consideration of the impact of the canal restoration diverts from the original route, and also of canal side structures that are not affected by the restoration works per se, but will benefit from the restoration.

NAVIGATION WORKS

- 7.2 A full audit of the heritage value of the navigation works is presented in Appendix X. The engineering section contains a schedule of all canal structures, and the reader should refer to this for detailed reference.
- 7.3 In the main the canal restoration will affect canal structures, notably the 25 locks, 52 bridges and 4 aqueducts that once served the route. In addition there are some canal side structures that will have their setting altered; two of these are of especial value, these being the warehouse at Newport and the Flax Mill at Shrewsbury.

Taking each type of structure in turn:

Locks

- 7.4 Of the original 25 locks, only nine survive largely undamaged and visible, a further 15 are buried, and one has been converted to a dry dock. Three locks will be redundant in the proposals as the canal may be diverted at these locations.
- 7.5 The two locks on the Shrewsbury Canal section are of particular interest as they had guillotine gates at the bottom. These will become the only original Shrewsbury canal locks on the navigable system (there were once eleven) and in view of the uniqueness of the design efforts should be made to restore them, plus (as an heritage feature) the locks that remain on the un-navigable Trench Arm, to as near original condition as possible. At present the engineering solution for the canal favours mitre gates throughout but an exception will be made at this location and guillotine bottom gates will be fitted to the existing two locks. In addition, observant users will notice the locks are longer than average.
- 7.6 If the option to bypass Long Lane is chosen one of these, Eyton Lower, will be bypassed by the diversion, and thus can be preserved in its existing state; careful consideration of the new lock will be needed, as it would devalue the canal for this to be a perfectly normal lock, but exact replicas are not necessarily good practice as they spoil interpretation. It may be appropriate to build a modern lock (e.g. in reinforced concrete) fitted as per the Shrewsbury Canal with a guillotine gate.
- 7.7 The other 23 locks were a standard design by Telford and unsurprisingly are very similar to the locks on the Shropshire Union Main line, although the Newport locks never appear to have had double top gates unlike the main line locks. To maximise the heritage value of these locks, the remaining examples of furniture should be used

to guide design of new lock gear. Where the buried locks have been partially demolished, efforts should be made to recover the stone or find suitable matching replacements. One infilled lock is not being reused and may provide a source of stone for others.

Bridges

- 7.8 By and large the restoration is sympathetic to surviving bridges as it is the road over them, not the canal, which will have a deleterious effect on them. Of the original 63 bridges 20 survived, nearly all of them between Norbury and Newport; of these 20, five are no longer required by the proposal and they may become either local features or could be relocated to the restored canal where bridges are missing, although historic structures will only be suitable for footbridges in this case.
- 7.9 There is one bridge of outstanding significance; B9, a skew bridge near Meretown, has a skew in excess of 45 degrees, i.e. it is less than 45 degrees from the line of the channel. The curved coursework in the arch is in excellent condition. While no register is kept of such items, it must surely be one of the most skewed bridges ever built (the most skewed was on the Hereford and Gloucester Canal, with a 60 degree skew) and will probably be the most skewed arch bridge on the canal system upon restoration.
- 7.10 The roving bridge 22a which still exists was also built on a skew as was the destroyed bridge 50, but were both under 30 degrees. The interest of these bridges is due to their rarity, and their development as canal architecture evolved. The keystone arch does not lend itself to crossings at anything other than 90 degrees to the channel, as the load is transmitted by the masonry courses (also at ninety degrees to the channel) to the springs or foundations. To twist a bridge such the arch sides are parallel to the canal but the structure is at say 60 degrees to the channel requires the courses to be carefully laid. If they were simply to follow the line of the bridge a lateral load would result and the bridge would quickly collapse. Thus the courses are twisted in the opposite direction to the skew. Over time engineers were able to push this further and further, and B9 is an extreme example. With the development of flat decked bridges, the art was lost as these can easily accommodate almost any angle of skew.

Aqueducts

- 7.11 Of the four aqueducts, only two survive, and these have suffered very different fates. The Aqueducts at Kynnersley and Roddington (A2 and A4) have been demolished. The former in particular is a sad loss, having been a fine example of Telford's finesse with small cast iron aqueducts and ashlar masonry (as per the Shropshire Union Canal over the A5 at Stretton Aqueduct.)
- 7.12 Of the other two, both have considerable heritage value. The Aqueduct at Meretown over the Meese is an unusual structure, carrying the adjacent road as well, and being so low over the river that the three arches take the form of siphons. The canal does not narrow over it, and when restored the user may be unaware they are on an aqueduct. It is, in many ways, an oversized culvert. It is difficult to determine whether it is of local or national significance as information on similar structures elsewhere is scarce: nevertheless, it *is* an outstanding example and also a local monument to

Thomas Telford. The location of this aqueduct next to the skew bridge makes this location one of the most interesting on the canal for the archaeologist.

- 7.13 The Longdon on Tern Aqueduct is an altogether different proposition, and is arguably of international importance. It is not the world's first cast iron aqueduct, but the only predecessor, in Derby, was on a much smaller scale and was scrapped in the 1970's. Longdon was the first cast iron aqueduct with intermediate supports (the Derby example being a short, single span) and developed the technology that led to Pontcysyllte and many other cast iron aqueducts around the country; it is also the forerunner to the modern steel troughs being used in canal restoration. The Longdon Aqueduct is part of a spectrum of development that includes the Iron Bridge, The Flax Mill, and the world's first iron boat (which sailed on the Severn near Ironbridge).
- 7.14 In its current form the aqueduct presents a conundrum: the aqueduct is dry with the approach embankments demolished, and thus it is out of context as there is no canal to carry. Nevertheless, it is very interesting to the dedicated historian in this state, as it is possible to walk in the trough itself and examine the ironwork at close quarters. However, to the general public, the structure has lost its meaning. Thus we have recommended that the aqueduct be rewatered and reused, even though it will need to be bypassed in the restoration process. However, an extensive study of the aqueduct should be made before restoration, to record the structure as it is now, with especial reference to those elements that will be hidden from view once the aqueduct is rewatered.

Canal side buildings

- 7.15 There are three groups of canal side buildings that are of especial interest. These are:
- ◆ The warehouse at Newport
 - ◆ The buildings at Wappenshall
 - ◆ The Flax Mill in Shrewsbury

Taking each in turn:

Warehouse at Newport

- 7.16 The wooden warehouse at Newport dates back to the time of the construction of the canal. It is an unusual example as most wooden structures were later replaced by masonry ones, or abandoned and demolished, thus it is probably of national importance and is also an unusual example of low key, small scale warehousing. There appears to be some local ambivalence to the structure, which is understandable as it is painted black and has no windows at all. Nevertheless any attempt to bring the building into use needs to respect its current form, and while some modifications may be necessary or desirable, suggestions such as replacing one end with glass should be resisted. There was once a second warehouse, but this was in a dilapidated state in the late sixties and was being vandalised. The U.D.C. therefore presented it to the new Ironbridge Gorge Museum where it was rebuilt and repaired as the present carpenter's shop at Blist's Hill. may be possible to replace this other warehouse, and that building could have significant departures to make it more user friendly, leaving the existing structure to serve uses that respect its form.

Buildings at Wappenshall

- 7.17 This group of buildings is not only interesting in their own right but also occupies an almost unique place in canal history: Wappenshall was the junction between the tub boat system of the old Shropshire canals and the standard canal system of the English Midlands. The only comparable location in Britain is at Helebridge Wharf on the Bude Canal, where the barge canal section meets the tub boat system leading to Cornish interior. As such Wappenshall junction is of national importance, and its heritage value must be respected.
- 7.18 The buildings themselves form an interesting group, with one arm of the canal passing under one building and a lane passing through the same building over the canal. Unfortunately, the buildings are suffering the effects of neglect and recent repairs have only served to secure rather than repair the buildings.
- 7.19 It is understood that a proposal for conversion to housing has been submitted by the present owner of the buildings, to which members of the local community and the Trust have submitted strong objections on the grounds of loss of heritage. This historic location should be open to the public and become a local attraction, not made the preserve of those who live there. Such a conversion would also render the arm of the canal through the building unusable; as it is unlikely the residents would welcome boats through here, and would prevent the public seeing details of the interior. In addition, these were wharf buildings, in which human activity would interact with canal and surroundings; residential use would not result in the area being active in this way.

The Flax Mill in Shrewsbury

- 7.20 The Flax Mill is not a canal building as such; it was served by the canal but not otherwise related to its operation. However it is located alongside the probable proposed terminus in Shrewsbury.
- 7.21 The Flax Mill was the first iron framed building in the world and the significance of this development can not be overstated. Until the development of iron frames, buildings were restricted to a maximum of five storeys, as above this the weight of the walls then became too heavy for the lower courses of brick to bear. The development of the iron (later steel) frame meant that the limit of construction was almost literally the sky, as the concept is still the basis of the modern skyscraper. Only the reluctance of people to walk up stairs held up the construction of tall buildings after this, once the elevator was invented the full potential of iron frames could be realised.
- 7.22 The main role of this building is to give a focus to the canal in Shrewsbury; plans for development of the Flax Mill are likely to progress regardless of the plans for the canal, but both have something to offer the other. The canal can give the Flax Mill a fine setting in which its potential can be fulfilled, the Flax Mill offers a focus for a terminal or mooring basin in Shrewsbury itself.

Deviation from the original line

- 7.23 There are locations where the restoration must leave the line of the original canal. This does not have an impact on canal heritage as such; in most cases the original line has little heritage value anyway. However, the canal will then pass through
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ground that may have been undisturbed for centuries, and thus has the potential to disturb sites of archaeological interest. In view of this, it is recommended that an archaeological impact assessment is carried out on these diversions, and that a watching brief is maintained during construction.

8. Economic Benefits

- 8.1 Within this section we shall investigate the likely economic benefits arising from the full restoration of the Shrewsbury and Newport Canals.
- 8.2 The benefits arising from the canal restoration relate to the potential for:
- ◆ Water-based recreation activities, such as hire and privately owned boats, trip and restaurant boats, canoeing and angling;
 - ◆ Land-based recreation activities, such as walking, cycling, horse riding, sightseeing, picnicking and bird watching;
 - ◆ Development opportunities associated with canal restoration, including the provision of facilities for use of the canal;
 - ◆ Expenditure on construction and maintenance of the canal, in addition to the boats and other facilities associated with the use of the canal.
- 8.3 The potential for each of these is significant on the majority of canal restoration schemes. However, the position of the Shrewsbury and Newport Canals is especially favourable due to the following factors:
- 8.4 The canals lead of an already popular part of the cruising network: indeed, there is thought to be a shortage of capacity, both for cruising water and moorings in the area. There are no moorings for private boats available on the canals and rivers leading into the River Severn, and availability is very limited on the four counties ring. Thus there is already a demand for both the cruising space and mooring facilities the canal will offer. This demand will not die in the foreseeable future. There is anecdotal evidence (directly experienced by an Atkins member of staff) of such a lack of moorings that boat owners in the West Midlands are having to base their boats on the Leicester section of the Grand Union Canal. This trend will continue and a net migration of boats from these more distant moorings to new facilities will occur as new facilities are provided.
- 8.5 The canal passes close to Telford, a major centre of population, and to Shrewsbury, an existing tourist venue. Other canals leading to tourist areas are outstandingly popular. The canals leading to Chester, Stratford, Oxford and Warwick are all very busy throughout the Summer and cities such as Peterborough, Ely, Gloucester, Evesham, Skipton and Lincoln all provide popular focuses on their navigations. The proximity of Telford is especially significant, as it is large local populations that swell the informal visitor presence, and with it, the economic benefits. British Waterways often quote the overall number of people who live within five miles of a navigable waterway. Telford and Shrewsbury between them have a population of over 250,000 who do not currently live within five miles of a navigable waterway, but will once the restoration is complete.
- 8.6 Although much of the canal is rural, and in order to retain the character of both the canal and the countryside this must be protected, there are significant development opportunities along the length of the canal, especially for urban extensions to Telford and Shrewsbury. In addition, there is the opportunity for the canal to act as a catalyst for urban regeneration in Shrewsbury.
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WATER-BASED RECREATION

Hire Boats

- 8.7 As with other sectors within the holiday market, the hire boat industry is increasingly being required to cater for short break holidays – a situation that has evolved over the past 20 years. The majority of boatyards offer three day weekend and four day mid-week breaks at around 60% of the price of a full week. This potential has significantly increased the potential of shorter waterways where a week-long cruise covering the whole waterway may be too leisurely for some users.
- 8.8 The canals proximity to the Shropshire Union Canal, the River Severn and the rest of the waterways network suggests that if complete restoration was to occur a large hire boat operation could exist. Assuming 30 hire boats could be supported and let out for an average of 30 weeks per year, with a weekly hire fee of £700 a yield of £630,000 could be obtained.
- 8.9 Local economic benefit will arise from the daily expenditure of holidaymakers using the hire boats. The bulk of this spend will be on food and drink from shops, public houses and restaurants along the route of the canals. A spend per day per boat of £48.92 has been assumed, based on figures from the East Midlands Waterways Boating Survey in 1991. Therefore, the full scheme could generate a total spend of at least £264,168 per year from hire boat users.
- 8.10 Boats that cater for people with mobility impairments are available on some canals. For example, The Bruce Charitable Trust is a registered charity that provides four wide beamed canal boats on the Kennet and Avon Canal for self catering holidays. Narrow beam boats have been piloted elsewhere either for skippered parties or for families with disabled members.

Private Canal Boats

- 8.11 The number of private boats tends to reflect both the size of the population living in the area and the perceived attractiveness of the waterway system. The economic benefits will arise from:
- ◆ **Expenditure on moorings and maintenance of boats** – The average annual expenditure on boat maintenance is assumed to be approximately £1,950 based on data originally calculated by “Waterways World”. This figure includes mooring fees, repairs and maintenance costs. Thus, 300 Private boats moored along Shrewsbury and Newport Canal could be expected to generate approximately £585,000 per annum to local boatyards. It should be noted, however, that the shortage of moorings within the region may lead to a higher income from mooring as market forces push prices higher.
 - ◆ **Daily expenditure by individuals using the boats** – Daily expenditure per boat is likely to be slightly less for private boats compared to hire boats, as local owners are less likely to spend money on souvenirs and visiting attractions. Therefore a daily spend per boat of £38.86 has been assumed, resulting in a total spend of £186,528.
 - ◆ **Expenditure generated by boat owners when making visits to their moored boats but not using them for cruising purposes** – Boat owners make a

number of visits to their boats each year without going cruising. Expenditure per visit is likely to be substantially less than spending whilst cruising. A survey of visitors to the Kennet and Avon Canal (1990) indicated that boat owner's make an average 16 such visits per year and spend an average of £5.45 per day. Therefore, the full scheme could produce an annual spend of £26,160.

- ◆ Both private and hire boats represent potential business opportunities for land owners and businesses within the area. The revenue to these is included in the above figures, but marinas, boatyards and associated facilities need good canal-side sites accessible to the road network. The nature of the canal means that these sites all belong to local landowners and thus represent an opportunity for them to participate in the restored canal.

Visiting Boats

- 8.12 The above figures relate to the revenue accruing to the local economy as a result of new boats serving a new market and based on the canal or in close proximity to it. Careful examination of the figures reveals that these boats alone would result in less than 2000 boat movements a year along the canal, when the expected figure will be nearer 5000, given the level of use of the four counties ring and the Llangollen Canal. These additional boat movements will be from boats not based on the canal but visiting from adjoining waterways. Some boats based on the canal will also make visits to adjoining waterways, but these will be offset by visiting boats to the canal.
- 8.13 Thus there are an extra 3000 boat movements over and above those forecast by boats based on the canal. The cruising time from Norbury to Shrewsbury and return will be approximately 30 hours, or four days cruising, plus many boaters will spend a total of one day visiting places along the waterway, most notably Shrewsbury itself. The canal can not take credit for the cost of hiring or mooring these boats; even if they are new to the system the revenue does not accrue in the canal corridor, but the visitor spend while these boats are on the canal does accrue to the canal corridor.
- 8.14 The pattern of boat utilisation means that while hire boats only make up about ten percent of the total boat fleet, they tend to make around fifty percent of the journeys: thus of the extra 3000 boat visits we assume that 1500 are by hire boats and 1500 by private boats. As each boat will spend five days on the canal the overall extra number of boat days is 7500 for each category. Using the figures of daily spend in paragraphs 8.5 and 8.7 this gives a total annual spend of £366,900 for hire boat crews and £291,450 for private boat crews: a total of £658,350 from visiting boats.

Trip Boats and Restaurant Boats

- 8.15 Trip boats and restaurant boats tend to operate in proximity to centres of population. Thus the Shrewsbury and Newport Canal should provide good opportunities for such ventures, especially from/to centres of Shrewsbury, Telford and Newport. The Shrewsbury and Newport Canal could easily support at least one trip boat and one restaurant and there is likely to be capacity for more than this if the entire route is opened, together with Humber and Trench Arms.
- 8.16 Assuming that boats will achieve a similar pattern of operation and use as that for existing operators on the Kennet and Avon Canal, a trip boat could expect to carry approximately 3,200 passengers per year at an average charge of £3.50 per head, yielding a total of £11,200 for one boat. A restaurant boat could expect to carry
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approximately 1,800 passengers per year at an average charge of £20 per head, yielding a total of £36,000 per annum.

- 8.17 In addition to expenditure on boat trips visitors will also spend money elsewhere in the local area as part of their overall visit. Based on the Kennet and Avon survey this is likely to be around £4.52 per visit. Thus an additional spend of £22,600 may be generated by people taking boat trips.

Day Boats

- 8.18 Self-drive boats designed for day or half day hire are offered by increasing numbers of boatyards on the main British Waterways network. The majority are narrow boat style accommodating up to 12 passengers which are frequently seen by operators as a means of promoting their holiday hire fleets. An alternative is the smaller glass fibre 'picnic-boat' typically powered by silent electric motors and rented for about £35-40 per day.
- 8.19 Typically day boats will be hired as an ancillary part of another business, either an existing boatyard or marina (whether or not holiday boats are hired) or a waterside public house or hotel.
- 8.20 Day boats designed for the mobility impaired are also available on some canals. For example, day trips for groups of people with physical disabilities are available on the Kennet and Avon Canal, through the aforementioned Bruce Charitable Trust.
- 8.21 If a fleet of two narrow boats are provided for an average of 60 days per year with a daily hire fee of £70, a total spend of £8,400 may be expected. As with trip boat users, there would also be some additional spending associated with a day or half-day hire. Assuming an average of 5 people in each boat party, some 600 visits may be generated. With a daily spend of £4.52 per person; a further £2,712 of associated indirect spending would arise from a successfully established day hire boat operation.

Canoeists

- 8.22 It is assumed that the canal will be suitable for canoeists. Canoeists who are members of the British Canoe Union are permitted to use the main canal system managed by British Waterways free of charge and it is assumed that it would not be practical to levy a licence fee on canoeists and other un-powered boats using the Shrewsbury and Newport Canals. Although there may be some potential for leasing un-powered vessels the income would be minimal. However, canoeists will spend money along the canal during their visit. Assuming the amount of spend per visit would be similar to users on the Kennet and Avon Canal, then an expenditure of £3.66 per head will arise. The number of users is difficult to forecast but an estimated 10,000 visits could be expected on the Shrewsbury and Newport canals per annum, producing an associated spend of £36,600 per year.

Angling

- 8.23 It is estimated that coarse fishing attracts some 3-4% of the population, although it is not one of the faster growing sports in Britain. The Shrewsbury and Newport Canals are not likely to provide particularly good fishing conditions in the early years after restoration as it will take time for a stable ecological habitat and fish population to

become established.. However, fishing is already established on the Shropshire Union Canal, where fishing rights are overseen by a number of different angling clubs and there is potential to build on this basis as well as fishermen who already utilise the stretch of canal in-water through Newport.

- 8.24 In the longer term, sympathetic and active management, possibly through leasing the fishing rights to a local angling club, has the potential to increase the value of the canal for angling. However, for the purposes of this study, the use of the canal for fishing and its associated spending are assumed to be limited. Assuming that use is 25% of the level surveyed on the Kennet and Avon canal, then the Shrewsbury and Newport Canals might attract approximately 6,750 angling visits per year, with an associated spend of £22,342.50, based on an average spend per visit of £3.31.

LAND-BASED RECREATION

- 8.25 As well as water-based activities, the canal corridor will provide opportunities for a wide range of informal activities including walking, cycling, horse riding and “gongoozlers” (i.e. sightseers attracted by the canal environment). Such uses rarely attract any direct costs

Towpath Users

- 8.26 Findings from a national survey of over 2,000 towpath users, undertaken by British Waterways in 2000, reveal that:
- ◆ The majority of towpath use is very local – 24% of the sample lived within one mile and 60% travelled five miles or less. Of the 25% who travelled over eleven miles to access the towpath, around half (53%) were day trippers.
 - ◆ A geographical variation exists in relation to the trip type of non-local visitors whereby London and the Midlands attract higher proportions of day visitors, Scotland is more popular for holidays and the south is popular for both short breaks and holidays.
 - ◆ Towpaths attract visitors of all ages, although the 15-24 year age group appears to be underrepresented.
 - ◆ The most popular reason for visiting a towpath is “to walk for pleasure”. This accounted for 33% of all respondents, although holidaymakers seemed more likely to visit a towpath ‘to look around the area’.
 - ◆ The average length of time spent on a towpath was 1-2 hours, with almost 40% staying one hour or less. However, 20% intended to stay for three hours or more.
 - ◆ A similar proportion of people walk to a towpath as arrive by private motorised transport (40% and 38% respectively)
 - ◆ Of those questioned, the average number of visits to a canal or river used by boats was just under 40 per year.
 - ◆ The mean expenditure for all respondents for the day on which they were interviewed was just under £10, although 50% of towpath users spent nothing at all (see Table 6.1*)

(* The mean figures represent the average based on all respondents, including those who spent nothing. This allows the calculation of a gross estimate for spending related to the waterway if an estimate of the total number of visitors/users was available).

Table 8.1 – Mean Expenditure of Towpath Users

	Mean Amount (£)	% Spending Nothing
Eating and drinking in pubs	3.18	76
Eating and drinking in cafes/restaurants	2.10	74
Food/drink/snacks from shops	0.83	81
Car Parking	0.11	90
Admission tickets	0.23	93
Boat trip/cycle hire	0.24	93
Gifts/souvenirs/books	0.85	90
Overnight accommodation	1.83	92
Other activities	1.14	85
TOTAL	£9.96	50%

(Source: British Waterways - Visitor Surveys 2000)

Cyclists

- 8.27 Almost one in ten of those questioned for the British Waterways survey had cycled to the towpath. With regard to this study, the route of the Shrewsbury – Newport Canal is identified within the Shrewsbury and Atcham Local Plan and is proposed to be part of the Sustrans link to the national cycle network as part of the Peak District Family cycling route.

Horseriding

- 8.28 There are a number of bridleways within the vicinity of the canal basin and there is potential for allowing horseriders to share the towpaths. However, it should be noted that economic benefit is unlikely to be great where no provision exists already. It is also important for the client to consider whether horse riding would be a desirable activity given the potential conflict with pedestrians and the design and maintenance implications of providing access under bridges.

“Gongoozlers”

- 8.29 Sightseeing and watching water-based activities is a major attraction to canal visitors. A survey of the Kennet and Avon Canal in 1990 indicated that 30% of leisure towpath users fell into this category. Levels of interest can be enhanced through the provision of interpretive facilities that inform visitors about the built and wildlife heritage of the canal. Special interest groups, such as canal historians, archaeologists and education groups can also benefit from such provision.

Other Activities

- 8.30 Other activities that a canal towpath and adjoining public open spaces can provide for include bird watching, jogging, photography, picnicking and general relaxation.
- 8.31 The Kennet and Avon canal is 86 miles long and visited by an estimated 11 million visitors per year. However, almost one third of users are either on non leisure trips, visiting a specific attraction, or involved in a water-based activity such as angling or trip boats. Therefore, the land-based leisure use per mile of canal is approximately 87,582 visits per mile. It has been assumed that the Shrewsbury and Newport Canals may achieve half the number of land-based leisure visitors per mile than on the Kennet and Avon Canal, therefore giving a figure of approximately 43,791 visits per mile and approximately 1.1 million visitors per year.
- 8.32 Applying the findings from the towpath users survey regarding mean daily expenditure, 1.1 million visitors could be expected to yield an annual spend of almost £11 million. However, we believe this figure to be unrealistic. Based on the Kennet and Avon survey in 1990, we suggest that 30% of people visiting the towpaths for informal purposes would spend an average of approximately £4.50 that would not otherwise have been spent in the local economy. Therefore the full restoration scheme could yield £1,485,000 per year relating to land-based leisure use.

Summary of Benefits

- 8.33 The annual benefits of the scheme are summarised below:

Table 8.2 – Summary of Scheme Benefits

Activity		Sum
Hire Boat Rental		£630,000
Hire Boat Daily Spend	Based on canal	£264,168
	Visiting	£366,900
Private Boat Spend	Upkeep	£585,000
	Daily Spend	£186,528
	Non-cruising visits	£26,160
	Visiting boats	£291,450
Trip and Restaurant boats		£69,800
Day Boats		£11,112
Canoeists		£36,600
Angling		£44,685
Informal Visitors		£1,485,000
	Total	£3,997,403

DEVELOPMENT OPPORTUNITIES

- 8.34 The restoration of the Shrewsbury and Newport Canals will have an important impact on values of existing local property as well as potential development sites.

Existing Property

- 8.35 Research undertaken by Newcastle University (for British Waterways) on the impact of canal side locations in terms of added value indicated that there was a positive

premium associated with the proximity of residential properties to waterways. The extent of the premium varied according to the type of property and its associated environment. Thus new property developments in a pristine waterway environment with a water frontage attract an average premium of 19% compared with similar properties at some distance from the canal or river. The premium for other properties in a waterside development compared with those at some distance away from the water was 8%.

- 8.36 Therefore, the restoration of the Shrewsbury and Newport Canals could result in increased property values along the length of the canals. However, the benefits will accrue to individual property owners and be realised only on resale. Although this effect has been recognised, no attempt has been made to estimate the overall value that may be attached to such properties.

Potential Canal Side Development

- 8.37 The restoration of the canals will enhance the development prospects and value of available development sites along the canal route as a result of the additional premium attached to waterside property. The effect will primarily apply to residential development but such environmental enhancement may also attract in commercial and industrial development. There will also be the opportunity for water related development on some sites for uses such as boatyards and marinas.

Canal Related Development

- 8.38 The development of facilities to serve the leisure and recreation activities that will arise from canal restoration will generate capital investment in the form of boatyards and catering and retail outlets along the canal. It is difficult to estimate the scale of the latter as such investment will be dependent on a number of variables, such as the ability of existing establishments to cope with increased demand and the development opportunities that may arise along the canal routes. Therefore, no estimate of capital investment with regard to catering and retail outlets has been made.
- 8.39 It has been assumed that boatyard capacity sufficient to provide the bulk of the additional moorings for private boats as well as the base for hire boat operations will be developed to meet the anticipated potential demand.

EXPENDITURE ON CONSTRUCTION AND MAINTENANCE

- 8.40 The construction of the canal and canal related development, together with the ongoing maintenance, will generate employment in the area.
- 8.41 The total capital works cost to restore the Shrewsbury and Newport Canals is estimated to be approximately £84 million. Employment benefits arising from this expenditure will arise from direct employment on the site and from indirect employment in the companies supplying both materials and expertise to the project. The development will involve major civil engineering work and it is assumed that much of the work will be carried out under contract by a national construction company. However, it is likely that 80% of the employees will be drawn from the local area.
-

EMPLOYMENT GENERATION

- 8.42 With a total capital works cost of £86 million, it is estimated that 1011 FTE direct jobs would be generated, with an 80/20% split in favour of the local area workforce.
- 8.43 Indirect employment will also be significant as it is likely that many of the building products and materials will be supplied locally. A further 2558 FTE indirect jobs could be generated, half of which are likely to be drawn from the local area. It is also estimated that approximately one third of the construction cost for materials and plant will be fed back into the local economy.

MAINTENANCE COSTS

- 8.44 It is assumed that maintenance costs will be met by revenue raised from the operation of the canal. The bulk of this is licence revenue from the additional boats licensed in the area as a result of the new navigation. However, there is other revenue available to the operator, in the form of rental of canalside property, development of canalside sites (although if the operator of the canal intends to do this, those sites will have to be purchased at commercial rates), the sale of water, drainage charges, etc.

COST BENEFIT ANALYSIS

- 8.45 The benefits identified in this report have been set against the cost to provide an initial indication of value for money. This is done by using recognised techniques for cost benefit analysis. This is not simply setting the capital costs of the scheme against the annual benefits. To do this would be the equivalent of getting an interest free loan to undertake the project. In practice, we have taken the capital costs for each of two scenarios and compared them with the benefits over a thirty year period.
- 8.46 The critical factor for this type of work is the discount rate. This is the rate at which future year costs are discounted compared to present day costs. The principle of this concept can be described in two ways. The first is to pose the question, which is worth more, £1,000 now or the same amount this time next year? The answer is clearly that the money now is worth more, as it could be invested to yield a greater sum by next year. Alternatively, if a sum of money was borrowed, how much would need to be raised to pay it back? Clearly a loan of £10 million could not be repaid with 10 annual payments of £1 million due to the interest accrued. Therefore the value of future expenditure and future monetary benefits is reduced compared to present day values. The rate at which future year values are discounted is known as the discount rate.
- 8.47 For this exercise we have adopted a discount rate of 3.5%, the rate used by the EA in their flood alleviation scheme and quoted in the treasury guidance. We have chosen this rate, rather than the higher 8% used for highway schemes, as the EA model compares monetary costs with monetary benefits, whereas the highway COBA model includes assigned monetary values for non-monetary benefits such as the value of time. Thus the EA model is directly comparable with the monetary costs and benefits used in our model. The effect of this is that for each future year the value of any cost incurred or benefit gained is reduced by 3.5% per annum.

- ◆ To make the model more realistic we made the following assumptions:
- ◆ That construction would be phased over ten years;
- ◆ 50% of construction cost would be spent in the local economy;
- ◆ No benefits from use would accrue until year five when the canal would reach Newport;
- ◆ Benefits would be 20% of forecast in year 6 and building up to 40% in year 10 and then accelerating to 60% in year 11, 80% in year 12 and 100% in year 13;
- ◆ The cost benefit model runs for 30 years from opening.

8.48 The results of the model are given in Table 8.3 below:

Table 8.3 - Cost Benefit Analysis

Item	Value
Capital Cost	£86,000,000
Annual Benefit	£3,975,000
Net Present Value	£5,815,600

- 8.49 The Net Present Value is a technical term indicating the value of the project today. This takes into account the lower value of costs and benefits in future years. A positive net present value indicates that over the period being considered, the scheme has realised more in revenue than the costs of implementing the scheme, and thus any value over zero indicates that the scheme has yielded more than it has cost. This break even figure is usually adequate to satisfy any funding agency that does not have economic development as its key objective. A positive net present value is useful to funding agencies that do have economic development as their objective, as it shows that the contribution of the canal to the economy is greater than the cost of the project.
- 8.50 It can be seen that the scheme has a positive value from the cost benefit model, and is thus value for money in absolute terms. The annual benefits will generate 88 FTE jobs per year, this is based on one third of the revenue to the local economy being spent on salaries, with the average salary per FTE job being £15,000. These jobs are based on the annual benefit, not the net present value, therefore these jobs would occur even if the net present value was zero or negative.
- 8.51 Many of the costs included in the cost benefit analysis may be paid for from sources that do not seek an economic return, such as the Heritage Lottery Fund. In this case these costs do not need to be included in an analysis, but at present they are, overstating the capital cost that must be justified.

Further Comments on Economic Benefits

- 8.52 The above analysis provides a bald estimate of the increase in local revenue and employment as a result of the restoration of the canals. This simple cost benefit model provides a base measure to demonstrate that the scheme “washes its face” in

economic terms. There are many more sophisticated cost benefit models that could be derived for the canal that would estimate concepts such as consumer surplus and producer surplus, and would refine the above figures. Producer surplus in particular varies little from the above figures, as we have counted the money spent in the local economy only once, whereas producer surplus estimates the margin of revenue over cost at each stage. For example, our model might state that a pub meal costs £10, whereas using producer surplus the publican might only gain £2 (the producer surplus) because the meal has cost £8 to provide. However, that £8 is spent by the publican on materials, rental and wages and most remains in the local economy to be recycled again.

- 8.53 Consumer Surplus quantifies the difference between what an individual does pay for something and what they might be willing to pay. This is only relevant if preparing an application to HM Treasury as they consider this in their funding decisions. Consumer Surplus is most relevant where individuals pay nothing for a facility, such as a towpath walk. Including this figure can add considerably to the benefits achieved.
- 8.54 Finally, the model does not consider the long life of the canal. The design life of a canal is in practice at least 100 years, even 200 years without spend other than on maintenance. As a result, the canal has a residual value at the end of the modelled period which can be deducted from the cost side of the equation. Again, this would increase the overall economic benefit.
- 8.55 The value of the regeneration elements should also not be underestimated, although difficult to quantify. If the canal provides a catalyst for regeneration in parts of Shrewsbury, there are models that will allow part of the value of this regeneration to be included. This is likely to add millions of pounds to the economic benefits provided.
- 8.56 Against this, these more sophisticated models generally require an assumption to be made regarding displacement. For example, it would need to be demonstrated that holiday boaters have not been diverted to other waterways nor have they moved from a different type of holiday which would have been spent in the same locality. This is extremely difficult to demonstrate, although the lack of capacity in the local market, and the tendency for boat owners in particular to holiday on local waterways (when they are unlikely to rent a local holiday cottage) suggests displacement is minimal.
- 8.57 To include the above an alternative cost benefit model would be required. This can be prepared by Atkins or other consultants if so desired.

9. Funding Sources

9.1 The restoration of the Shrewsbury and Newport Canals would involve substantial capital investment due to the considerable civil engineering works required. In order to ensure work may proceed, funding would need to be assembled from a wide range of sources. Potential funding sources include:

- ◆ European Structural Funds;
- ◆ Heritage Lottery Fund;
- ◆ English Heritage
- ◆ The Waterways Trust and Small Grants Scheme;
- ◆ The Inland Waterways Association, National Waterways Restoration and Development Fund;
- ◆ The New Opportunities Fund;
- ◆ The Countryside Agency;
- ◆ Local Authority Resources;
- ◆ Private Sector.

EUROPEAN STRUCTURAL FUNDS

9.2 There may be some potential to secure funding through the LEADER+ initiative. This is a six year initiative (2000-2006) funded by the European Union (through the EAGGF – European Agricultural Guidance and Guarantee Fund) and administered by the Government Offices in each of the English regions. It is aimed at encouraging rural groups and bodies to develop the longer-term potential of their area through high quality, original strategies for sustainable development. These strategies show new ways of:

- ◆ Enhancing the natural and cultural heritage;
- ◆ Reinforcing the economic environment to aid job creation; and
- ◆ Improving the organisational abilities of the community.

REGIONAL DEVELOPMENT AGENCIES

9.3 The Regional Development Agency for the entire Canal is the West Midlands Regional Development Agency, known as Advantage West Midlands. In other parts of the country Development Agencies have made significant contributions to Canal Restoration, most notably towards the Rochdale and Huddersfield Canals (North West RDA) and the Cotswold Canals (South West RDA). The East Midlands RDA and East England RDA are also interested in funding works on the Fenland Rivers.

9.4 It is for each development agency to determine its own funding priorities, and understandably Advantage West Midlands are concentrating many resources on the Black Country. The areas of this canal that are going to be of most interest to the Advantage West Midlands are those through Shrewsbury and in the vicinity of Telford and Newport. The process of getting funding from Advantage West Midlands will be as much political as technical.

HERITAGE LOTTERY FUND

- 9.5 The Heritage Lottery Fund uses Lottery money to give grants to support a wide range of projects involving the local, regional and national heritage of the United Kingdom. The aim is to help groups and organisations of all sizes with projects that aim to:
- ◆ Care for and protect heritage;
 - ◆ Increase understanding and enjoyment of our heritage;
 - ◆ Give people a better opportunity to experience heritage by improving access; and
 - ◆ Improve quality of life by benefiting the community and wider public.
- 9.6 These aims are grouped into four strategic priorities that guide Heritage Lottery Funding policy and underpin its decisions on funding. These priorities are: Heritage Conservation; National Heritage; Local Heritage; and Heritage education and access. It is recognised that 'heritage' covers a range of things, people and places, from photographic collections to sites linked to industrial, transport and maritime history.
- a) In order to be eligible to apply for a grant the following criteria must apply:
- ◆ The applicant must be a not-for-profit organisation;
 - ◆ The project must be concerned with heritage;
 - ◆ The grant must be at least £5,000 (although other grant schemes exist for smaller projects);
 - ◆ The applicant must be able to raise at least 10% of the project costs from other sources (25% for projects costing over £100,000).
- 9.7 Grants will be awarded for work designed to care for our heritage and help people experience it. For example, making it easier for people to gain access to and enrich their experience of heritage. However, grants will not be awarded for work that is usually the responsibility of the local authority, for example routine repairs and maintenance in public buildings. Other exceptions include general running costs (such as staff costs and fuel bills) and loan repayments.

Capital Grants Programme

- 9.8 The Main Grants Programme provides funds for projects where the main costs are for capital expenditure on physical works or purchase, with the aim of preserving and enhancing access to features of heritage importance. There is no upper limit on the cost of projects that may be considered. The key assessment criteria are as follows:
- ◆ Importance of the project to the heritage;
 - ◆ Conservation benefits of the project;
 - ◆ Access benefits of the project;
 - ◆ Additional public benefits;
 - ◆ Quality of design of the project;
 - ◆ Financial need and viability;
 - ◆ Strengths of the organisation.

- 9.9 Where a capital project fulfils the above criteria, the Heritage Lottery Fund will consider assisting with costs relating to, for example:
- ◆ Conservation, repair or restoration works to any kind of physical heritage asset;
 - ◆ Surveying and recording land, sites and buildings as part of a project to carry out restoration, repair or enhancement;
 - ◆ Project development costs, in certain circumstances.
- 9.10 More specific guidance as to funding eligibility is provided in Special Guidance. This identifies the detailed criteria and priorities for funding within the different categories of heritage project.

Revenue Grants Programme

- 9.11 The revenue grants programme supports projects aimed at widening understanding, enjoyment and access to heritage and where the main costs are non-capital expenditure, i.e. the costs of people, services, equipment and materials. The programme tends to support self-contained, fixed term projects for up to three years, where the sustainable benefits are expected to continue beyond the period of lottery funding.

Size of Projects

- 9.12 Applications for grants tend to be between £5,000 and £100,000. Larger projects will be considered if they are able to demonstrate their benefits at a national or regional level or if they are 'umbrella' projects that involve a number of different organisations. Applications for major projects (i.e. over £500,000) must go through a two stage application process, which alleviates the need for applicants to carry out full-scale project development prior to submitting their application. The Heritage Lottery Fund advises applicants for major capital projects to consider whether their project could be phased, so that the Heritage Lottery could possibly assist with a significant single phase even if unable to assist in any later phases. Grants of more than £1 million are decided by the Heritage Lottery Fund Trustees on a twice-yearly basis, with Stage 1 application deadlines in June and December.
- 9.13 The Heritage Lottery Fund expects all organisations in receipt of a grant, whether for capital or revenue projects, to obtain competitive tenders or quotes for works and service contracts. Where lottery funds comprise over 50% of the costs, all applicants must follow the European Union Procurement Regulations.
- 9.14 An example of a beneficiary of Heritage Lottery Funding is the Midford Aqueduct on Somerset Coal Canal, which received a grant of £795,100 to make repairs and to improve the conservation and public access of the area. A more recent example is the Chesterfield Canal in Sheffield, which was awarded a grant of £971,000 in 2002 to assist with the restoration of 3.5 miles of canal, including a number of historic canal structures. It is hoped that the re-opening of the canal and associated access will lead to a growth of visitors in the area.
- 9.15 There are several grant-giving schemes designed for different types and sizes of project.
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Larger Heritage Grants

- 9.16 Support is given to projects that relate to the national, regional or local heritage of the UK. To qualify for a grant the project should:
- ◆ Conserve and enhance diverse heritage;
 - ◆ Encourage more people to be involved in their heritage; and
 - ◆ Make sure that everyone can learn about, have access to and enjoy their heritage.
- 9.17 All projects must also ‘make sure that everyone can learn about, have access to and enjoy their heritage’. Heritage in this instance includes many different things that have been, and can be, passed on from one generation to another. Among these are:
- ◆ Historic buildings;
 - ◆ Records and collections held in museums, archives and special libraries or photographic collections;
 - ◆ Oral history;
 - ◆ Language heritage projects;
 - ◆ The countryside and habitats and ‘priority species’ listed in the UK Biodiversity Plan;
 - ◆ Designed landscapes; and
 - ◆ Objects and sites that are limited to our industrial, maritime and transport history.
- 9.18 Application conditions for grants are the same as for the other grants. However, if asking for a grant of £1 million or more at least 25% of the project costs must be provided from the applicant’s own or other sources.

LOCAL HERITAGE INITIATIVE (LHI)

- 9.19 The Local Heritage Initiative (LHI) is a 10 year national funding scheme designed to help local groups investigate, explain and care for their local landscape, landmarks, traditions and culture. The LHI is run by the Countryside Agency with funding from the Heritage Lottery Fund and the Nationwide Building Society.
- 9.20 Local Heritage refers to:
- ◆ **Archaeological Heritage** – locally important visible features, such as hill forts, burial mounds, moats, field systems, ridge and furrow, standing stones and ancient village sites;
 - ◆ **Natural Heritage** – locally characteristic landscape features and wildlife habitats, such as hedgerows, copses, pollards, orchards, small heathland areas, hay meadows, water meadows, reedbeds, ponds, streams and springs;
 - ◆ **Built Heritage** – locally distinctive built heritage elements and small features, like field barns, pumps, wells, gates and walls, bridges, railings, milestones, architectural details, cobbles, memorials, village greens or traditional signs;

- ◆ **Customs and Traditions** – historic and cultural associations with the land and activities for local people; and
 - ◆ **Industrial Heritage** – physical features related to locally important industries, such as chimneys, lime kilns, packhorse trails, wagonways, canals, quarries, mineral pits, spoil heaps, mills, smithies and coopers.
- 9.21 The Local Heritage Initiative can fund a range of heritage projects, but all must demonstrate the following characteristics:
- ◆ Local – be started, supported and carried out by local people;
 - ◆ Heritage – be about the richness and distinctiveness of the locally important heritage assets and involve investigating, explaining and caring for them; and
 - ◆ Initiative – offer clear public benefits and include proposals for the long-term care of the local heritage assets or future actions after the project has finished.
- 9.22 New or existing community or voluntary groups can apply for a grant and, to be eligible, groups must have both a formal constitution and an open bank or building society account. Local groups can apply for a grant towards costs associated with:
- ◆ Investigation of their local heritage, leading to an explanation and presentation of information discovered;
 - ◆ Materials and labour for a programme of community-led action, based on any previous investigation and explanation work, e.g. conservation or restoration of heritage assets;
 - ◆ Work to help public access, enjoyment and appreciation of heritage assets and their cultural or historic associations;
 - ◆ Specialist advisers to help with the project;
 - ◆ Charges such as archive costs;
 - ◆ Activities to involve the wider community, especially young people;
 - ◆ Production of information;
 - ◆ Essential equipment to make projects efficient and effective (max 50% costs);
 - ◆ Training for volunteers;
 - ◆ Provision for long-term care of the project and assets, e.g. securing a legal management agreement; and
 - ◆ Legal advice and volunteer insurance costs specifically associated with LHI projects.
- 9.23 Standard grants range from £3,000 to £25,000, with the remaining 40% to be made up from cash, in-kind donations, volunteer labour, or a combination of these. Groups are encouraged to apply for more complex, phased projects and, in exceptional circumstances, higher rates of grant aid and advance payments may be offered. In addition, Nationwide offers awards up to a value of £5,000 to assist projects that otherwise would not be able to proceed.
- 9.24 Examples of canal-related projects that have secured LHI funding include:
- ◆ Pockington Canal, West Yorkshire - £15,004 LHI grant to restore the top lock.

- ◆ Lichfield and Hatherton Canal, Staffordshire - £7,313 LHI grant to renovate the footpath and provide interpretation on site of the canal's history.
- ◆ Trent and Mersey Canal, Stafford - £18,756 LHI grant to restore a section of footpath and a bridge parapet and to produce interpretative material and hold events; also, a £4,524 Nationwide grant towards providing disabled ramp access onto the canal.
- ◆ Welford Canal, Leicestershire - £13,282 LHI grant to investigate, record and interpret the industrial heritage of the canal. Proposed works also include improving the site to allow full public access, constructing a footpath, developing a heritage trail and providing way markers and interpretation boards. Professional training in a range of techniques is being provided by both British Waterways and the British Trust of Conservation Volunteers (BTCV).
- ◆ Wey and Arun Canal, West Sussex - £15,000 LHI grant and £5,000 Nationwide grant to restore the Drungewick Missing Link, increase public awareness of this heritage asset and to provide on site information boards.

YOUR HERITAGE

9.25 Your Heritage provides a quick and easy application system with decisions made usually within 3 months. Support is given to a wide range of projects involving the national, regional and local heritage of the United Kingdom. To qualify for the grant the project must either:

- ◆ Care for and protect heritage; or
- ◆ Increase understanding and enjoyment of heritage.

9.26 The project must also:

- ◆ Give a better opportunity to experience heritage by improving access; and
- ◆ Help improve people's quality of life by benefiting the community and wider public.

9.27 Applications for a grant can be made if:

- ◆ The organisation is not-for profit;
- ◆ A project is concerned with heritage;
- ◆ A grant of between £5,000 and £50,000 is required; and
- ◆ The organisation can raise at least 10% of the project costs from other sources either as cash or as non cash contributions.

AWARDS FOR ALL

9.28 Awards for All operates at a local level and provides grants of between £500 and £5,000 to small community groups, including new groups. Decisions can normally be made within 12 weeks of an application being received and up to 100% of project costs can be funded. The aims of Awards for All are to:

- ◆ Encourage more people to appreciate and understand heritage;
- ◆ Help local groups introduce people to heritage for the first time;
- ◆ Extend people's experience of different types of heritage; and

- ◆ Increase people's skills in practical activities – such as conservation, recording and interpreting the heritage.

YOUNG ROOTS

- 9.29 Young Roots is a new grant programme funded by the Heritage Lottery Fund and managed in partnership with The National Youth Agency. Following a successful pilot scheme in the Yorkshire and Humber region in October 2000, the initiative was launched on a UK wide basis at the end of October 2002. It is aimed at encouraging young people (aged 13-20 years) to find out about and celebrate their heritage, build skills, confidence and community involvement. Approximately £20million will be available for the scheme over the next four years, supporting some 240 projects in its first year.

SUMMARY

- 9.30 The most likely fund for heritage lottery funding is the major grants programme, although if BW are successful with their Cotswold Canals bid this source may be questionable for five years, and will be ruled out all together if BW are partners in this restoration. The major focus of heritage funding is likely to be on the canal from Norbury to Newport, where a substantial amount is intact, for the scheme at Longdon on Tern Aqueduct, and for the retention of buildings at Wappenshall (this would be dependent upon the subsequent operations being not for profit, and thus couldn't include the pub/restaurant element. The Wappenshall and Longdon projects need not coincide with the phased restoration of the canal and thus need not involve BW.
- 9.31 As previously stated these first three sources are likely to provide the bulk of the funding. As such, a phased funding approach is required as these agencies (with the exception of European Funds) unlikely to be able to commit single grants sufficiently large to allow restoration in one phase. This is the approach now being pursued on the Cotswold Canals.
- 9.32 The remaining grants are much smaller in scale, but can usefully make up match funding or fund early advance projects.

TOWNSCAPE HERITAGE INITIATIVE

- 9.33 The Townscape Heritage Initiative provides grants of between £250,000 and £2 million for projects that are led by partnerships of local, regional and national interest, to regenerate the historic environment in towns and cities. The Initiative is aimed at repairing buildings that make up the special architectural character of historic urban areas, with a view to bringing derelict and under-used historic buildings back into practical use. Projects should involve and benefit the wider community in addition to those directly concerned with grant-aided properties and priority is given to townscapes in socially and economically deprived areas.

THE WATERWAYS TRUST SMALL GRANTS SCHEME

- 9.34 Grants awarded are unlikely to exceed £5,000 and should represent a minimum of 20% of the total cost of the project. Grants may be considered for a phase of a larger project.
- 9.35 Eligibility for funding is based on a project fulfilling the following criteria:
- ◆ Waterway related;
 - ◆ Provides lasting environmental enhancement;
 - ◆ Encourages involvement in the waterways; and
 - ◆ Involves and benefits the community.
- 9.36 The Waterways Trust is especially keen to assist projects where the award is being used to attract further funding, i.e. from local sponsors or where the scheme involves volunteer effort or gifts in kind. Applications are considered only twice per year (winter and summer) but can be received any time.
- 9.37 Projects supported by the Waterways Trusts Small Grant Scheme have included
- ◆ £1,500 towards a feasibility study on the Great Western Canal;
 - ◆ £2,500 to the Shropshire Union Canal Society towards the restoration of Bryndyrwyn Lock and Montgomery Canal; and
 - ◆ £7,500 to the Waterway Craft Guild for the restoration of the Shropshire Union Canal Flyboat Saturn.

NATIONAL WATERWAYS RESTORATION AND DEVELOPMENT FUND

- 9.38 The Inland Waterways Association (IWA) supports the restoration of derelict waterways in a number of ways from lobbying to providing volunteer labour and financial aid. The National Waterways Restoration and Development Fund provides grants, ranging from a few hundred pounds to £100,000 or more in exceptional cases, to assist with projects such as hands-on restoration schemes and helping to finance feasibility studies.
- 9.39 Grant awards tend to be up to £20,000 and are available to organisations that promote the restoration of inland waterways. Applications over £2,000 should demonstrate that the grant would apply to one of the following types of project:
- ◆ **Construction** – especially work relating to restoration of Navigation;
 - ◆ **Administration** – for example, part funding a project officer;
 - ◆ **Professional services** – such as funding or part funding a feasibility study;
 - ◆ **Land Purchase**;
 - ◆ **Research on matters affecting waterway construction** – including original research and literature reviews; and
 - ◆ **Education** – for example, providing promotional information to local authorities or agencies.
- 9.40 An application over £2,000 should also demonstrate the extent to which it satisfies at least one of a number of conditions specified by the IWA. These conditions are:
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- ◆ The grant would unlock a grant several times larger from another body;
- ◆ The grant would not replace grants available from other sources;
- ◆ The project does not qualify for grants from major funding agencies;
- ◆ The grant would enable a key project to be undertaken which would have a significant effect on the prospect of advancing the restoration and gaining funds from other sources for further restoration works;
- ◆ The result of the project would have a major influence over the progress of a number of other restoration projects; and
- ◆ The Restoration Committee would have a major influence on the management of the project, including the monitoring of expenditure.

THE NEW OPPORTUNITIES FUND

- 9.41 The New Opportunities Fund provides lottery funding for educational, health and environmental projects which help create lasting improvements to quality of life, particularly in disadvantaged communities.
- 9.42 By 2004, the New Opportunities Fund aims to commit £99 million UK-wide to projects that: enhance the quality of life of local communities; expand community sector waste reuse, recycling and composting; and develop renewable energy generation.
- 9.43 Quality of life projects that may be supported include those that improve elements of local heritage value and projects that complement the work of the Heritage Lottery Fund.

COMMUNITY ARTS FUNDING

- 9.44 Community Arts are funded through a plethora of different sources and may well be funded as a subsidiary to some other initiative. Grants may be available for public works of art such as sculptures, designed perhaps to reflect the heritage of the canal. The community could be involved in the design of interpretation boards, waymarkers, and seating, for example, so as to give them an element of ownership of the restoration scheme.

ENGLISH HERITAGE

- 9.45 English Heritage has indicated that it is only able to consider grant aid for canals in England if the canal itself lies within a designated conservation area. Grant aid may also be available for individual canal structures located outside of conservation areas if they are listed at Grade I or II*.

SUSTRANS

- 9.46 Sustrans fund development of the national cycle network, and part of the network already follows the route of the canal, with the potential for more to do so. As a general rule Sustrans will only fund the cycle route element but this can include purchase of the canal track for subsequent use for navigation. Sustrans do not retain

the cycle track, but dedicate the track and the land to other bodies, often the local highway authority.

SPORT ENGLAND

- 9.47 Sport England have not so far granted funds to a canal restoration scheme, but it is clear from their guidelines that they may be eligible where it is clear that the canal contributes to the provision of local sporting facilities.

LOCAL AUTHORITY RESOURCES

- b) Due to limited resources, the Local Authorities are unlikely to provide large grants for the complete restoration of the Canal. However the assistance from Shrewsbury and Atcham Borough Council, Staffordshire County Council and Stafford Borough Council in providing grants for the funding of this feasibility study suggests that they may be able to part-fund certain aspects of the project and are likely to serve as the channel through which many alternative sources of funding may be secured.

PRIVATE SECTOR

- 9.48 Opportunities for private sector funding include business sponsorship and Section 106 contributions on private sector developments. Section 106 agreements entail the developer of any development requiring planning permission providing infrastructure as part of the development. The infrastructure will usually, but not always be part of the development, but it must be related to it. Parts of the Rochdale Canal and Huddersfield Narrow Canal were restored using Section 106 agreements, and part of the Hereford and Gloucester Canal has been reinstated using this approach. (Note: Section 106 refers to the Town and Country Planning Act 1990).

10. The Way Forward

- 10.1 The fundamental conclusion of this report is that the Shrewsbury and Newport Canals should be reopened from Norbury Junction to The Flax Mill in Shrewsbury, and that a link with the River Severn in Shrewsbury should be formed. At present we recommend that this link should be outside the urban area, but the option remains to develop a link as initially proposed by the trust. The project as a whole is worthwhile; it will link a significant tourist destination to the main canal system, open up a little visited corner of Shropshire to a wider audience, and provide a valuable amenity in the area of Telford New Town. The proposed canal restoration has strong links with other heritage assets in the area, from the world famous Iron Bridge to the smaller works of Thomas Telford which are spread around Shropshire, and of which the canals are a part.
- 10.2 However, achieving the restoration will take time, not least because of the scale of the capital; that must be raised to realise the proposals. There is also much to be done before any contracts can be let for restoration of sections of the canal. Canal restoration is a long process, most successful restorations involve many years of behind the scenes planning before making apparently rapid progress on the ground. The preparation of this report, and its recommendation that the canals be restored, is a major landmark on progressing the scheme, but much remains to be done:
- 10.3 Although this report contains recommendations on technical means to implement restoration of the canals, these are only to feasibility level and can not yet actually be implemented. The Shrewsbury and Newport Canal was listed as a long term project in the 1998 IWAAC restoration priorities review. This reflected the lack of development of the proposals at that time. Although another review is awaited, the Waterways Trust have not made a priority of the Shrewsbury and Newport Canal, and this again reflects the amount of development work required before restoration can begin in earnest.

ENGINEERING

- 10.4 This report demonstrates that restoration of the canal is practicable. However there are a number of key stages to complete before the scheme could be passed to a Contractor for Construction. The list below is not exhaustive but give a useful checklist of the main aspects that will need attention:
- ◆ Appoint a Client project manager.
 - ◆ Detailed topographical survey of the canal corridor and diversion routes.
 - ◆ Ground Investigation of soils along the canal route.
 - ◆ Laboratory testing for soil properties and contamination.
 - ◆ Service investigations
 - ◆ Detailed structural assessment of all structures.
 - ◆ Consultation with English Heritage regarding renovation of historic structures
 - ◆ Consultation with the Environment Agency regarding discharge of canal water into watercourses.

- ◆ Consultation with the Highways Agency and the Councils regarding road diversions etc.
- ◆ Detailed surface water flood analysis.
- ◆ Investigation of the existing surface water network; especially Hurley Brook.
- ◆ Consultation with British Waterways regarding water abstraction and canal management.
- ◆ Agreement of the final route.
- ◆ Establishment of the canal construction easement strip.
- ◆ Division of canal route into manageable contract sections
- ◆ Setting aside land for contractors compound areas.
- ◆ Land purchase and access agreements.
- ◆ Appointment of Planning Supervisor (CDM Regulations).
- ◆ Detailed engineering design.
- ◆ Gain planning approvals and consents.
- ◆ Production of tender documents.
- ◆ Seek tenders.

10.5 By restoring the canal in stages, there will be a rolling programme allowing many of the activities to run concurrently. Gaining funding for the early stages of investigation will be important to continue the momentum that the scheme has already achieved.

NON ENGINEERING ISSUES

10.6 The first and most important issue is to confirm the preferred line of the restoration and to ensure that this is protected from invasive development by the various development plans along the route. This will then allow the canal to be incorporated into development briefs along the route, this will be especially helpful around Shrewsbury, where redevelopment in the urban area, and urban extensions around Ditherington are related to the canal line.

10.7 Other key items that should be moved forward are:

- ◆ Environmental Scoping Study
- ◆ Archaeological Assessment (especially of proposed diversions)
- ◆ Land assembly
- ◆ Development of funding packages

POLITICAL PROGRESS

10.8 The Trust have made great strides in terms of generating support from local politicians and local residents for the proposals; with the recommendations of this report (the funding of which indicates the level of political support among the local authorities) mobilising greater political support should now be a key objective. The first requirement is that all local planning authorities protect the line of the canal within their area from predatory development that obstructs the proposals. This is only a starting point however, ideally all the local authorities, down to the parish councils on

the route, should be encouraged to actively and visibly support the proposals. This need not be expensive; a willingness to participate in radio and TV interviews supporting the restoration will be significant. The primary objective is to persuade any funding agency or regulatory body that this scheme is felt to be desirable (rather than just acceptable by local authorities, parish councils, land owners and local residents, and that the proposals are popular with all these groups.

- 10.9 A further element that should be developed is the linkages with local training and educational establishments. The restoration process has much to offer in the training and development of the local workforce, as a range of skills are needed in the restoration, including less common skills such as stonemasonry, along with non-construction work such as field surveys for ecology. By bringing education and training establishments on board more support can be generated for the scheme and costs saved by “on the job” training.

COMMENTARY

- 10.10 The restoration is a major undertaking, and a realistic timescale of perhaps ten to fifteen years should be contemplated for its completion. There is much development work to be done, but as no funding is yet in place there is time for this to be undertaken. In particular, there are some complex and expensive arrangements between Wappenshall and Shrewsbury, and in many ways these divide the restoration into two natural segments, as the lead time for through navigation between Wappenshall and Shrewsbury is likely to be significantly greater than for Norbury to Wappenshall. The proposed Marina at Wappenshall may indeed be an interim terminus for the whole canal.
- 10.11 That said, assuming issues of water supply and drainage can be resolved there is no reason why isolated lengths should not proceed in advance of the rolling restoration from Norbury to Shrewsbury. This is especially true of Shrewsbury where much of the canal route is related to Development and Regeneration. There are many examples around the UK of isolated restored lengths of canal. At Moira, on the Ashby Canal, around one mile with a new lock has been reinstated well ahead of the main canal system reaching this point, while in Lisburn, Northern Ireland, a lock and canal section have been restored as part of the regeneration of the town and the completion of new civic buildings. Other isolated lengths of canal tend to be more rural, but can nevertheless play a useful role; one length of the Montgomery canal around Welshpool even supports a trip boat and a small hire fleet.

MANAGEMENT

- 10.12 Along with political progress, it is now time to encourage local authorities and others to take an active role in developing the restoration scheme. This really needs a full time officer to promote and develop the restoration from here on. As five local authorities are involved it seems desirable for these authorities (plus other bodies such as BW) to work on a coordinated single position and for this manger to be seconded to one of these authorities. Such a partnership arrangement is the key model used by the Rochdale and Huddersfield Canals, and currently operating on the Cotswold Canals (although in this case the officer is seconded to BW).

RECOMMENDATION

10.13 We recommend that:

- ◆ The full restoration of the canals be pursued
- ◆ The Local authorities (and BW) form a partnership, possibly informally, with the trust
- ◆ The Local authorities (and BW) between them provide a project manager
- ◆ That the works identified above are progressed to achieve full restoration

10.14 While not specifically a recommendation, we feel it likely that an interim terminus at Wappenshall will result from the phasing of restoration, and this should be considered in developing proposals.