

## CHAPTER FIFTEEN

### REMAINDER WATERWAYS

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(and the other Chapters mentioned therein, as regards certain specialised aspects) but some points having more particular application to Remainder waterways need to be borne in mind in the review of possible methods of treatment that follows later in this Chapter.

## Remainder Waterways

### 15.1 Introduction

15.1.1 We are required under paragraph 18 of the Terms of Reference to advise, in respect of each Remainder waterway, on the annual operating and maintenance costs associated with the most economical treatment taking account of the obligations under Section 107 of the Transport Act 1968 and any firm contractual obligations relating to the particular waterway. Where elimination seems a possible course of action we are to provide an assessment, for any length or part of a Remainder waterway, of the likely costs of elimination taking account of interest on the capital involved. In the case of a waterway to be retained the treatment is to be consistent with requirements of public health and the preservation of amenity and safety.

15.1.2 Remainder waterways comprise all those of the Board's waterways that are not specified in Parts 1 and 2 of Schedule 12 of the Transport Act 1968. No Order has been made under Section 104 (3) of the Act, adding to or removing from the Schedule any waterway, so that the resultant list of individual Remainder waterways is as set out in Table 4.3 at the end of Chapter 4.

15.1.3 Certain river navigations designated as Commercial waterways in Schedule 12 of the 1968 Act include sections of artificial navigation channel which by-pass meanders or loops in the natural course of the river. Lengths so by-passed which are not specified in the Schedule cannot be regarded as "main navigable channel" but might possibly be included in the Remainder category. They carry the natural river flow and elimination is not feasible, nor does any course of treatment appear to be called for other than to leave them as they are. The Board's obligations for them, if any, are minimal; they have no separate accounting codes and we do not consider it necessary to make any specific recommendation with regard to them.

15.1.4 The category of Cruising waterways includes some which, at the time the 1968 Act was being passed, were officially closed to navigation (such as the Llangollen Branch of the Shropshire Union Canal), whereas others which were navigable were omitted and are therefore Remainder waterways. On some lengths of unnavigable waterway voluntary working parties were actively engaged in restoring them to navigation, in some cases with the aid or encouragement of local authorities. In the circumstances the Government made a concession during the Lord's Report Stage of the Bill, the Lord Chancellor repeating a BWW undertaking that certain lengths of canal would be protected for a period of three years from November 1968. The Board was to take no positive action during that period, without the Minister's Consent, which would inhibit eventual restoration. As this period has expired we have made no modification to the full list of Remainder waterways on this account.

### 15.2 The Legal Position

15.2.1 The general position has been discussed in Chapter 3

15.2.2 The Board is empowered by Section 109 of the Transport Act 1968 to enter into agreements for the maintenance by or transfer to local authorities, statutory bodies and other competent bodies "having public or charitable objects", of Remainder waterways; agreements providing for transfer may include provision for securing that the waterways are made available for public use.

15.2.3 Section 111 of the same Act provides that Section 16 of the Countryside Act 1968 shall apply to Remainder waterways. This allows local authorities to enter into access agreements and to make access orders. Under Section 114 of the Transport Act 1968 a local authority may assist any other person (whether financially, by the provision of services or facilities, or otherwise) in maintaining or improving for amenity or recreational purposes, including fishing, any waterway situated wholly or partly within its area or near at hand.

15.2.4 Under the various enabling Acts there is generally an obligation to maintain a stock-proof fence on the towpath boundary. On some canals a similar provision applies to the offside, where land verging the waterway is in the Board's ownership. Otherwise the water's edge forms an adequate barrier on the offside so long as the canal is in water. If dewatered, it may become necessary for the Board to perpetuate the barrier by erecting a fence on the offside or by extending offside cross fences to the towpath fencing.

15.2.5 In some cases an obligation to supply riparian land owners with water from the canal was contained in the original enabling Act; this is usually for watering cattle but sometimes for industry. On this account some closure Acts and other statutory powers of like effect have been made subject to an obligation to retain a specified depth of water in the canal. Such provisions, safeguarding the rights of other parties, are still effective and are not affected by Section 107 of the Transport Act 1968.

15.2.6 The reception of surface water, sewage effluent and land drainage under terminable agreements need not present any difficulty when considering the elimination or disposal of a Remainder waterway but there are numerous cases where the waterways receive surface drainage without prospect of relief. The effects of such burdens are discussed in Chapter 3 and paragraphs 15.3.3 and 15.10.4 of this Chapter.

15.2.7 The Board's duty to prevent escape of water from their waterways, and their degree of liability for any damage that such an escape may cause, was mentioned in paragraph 3.4.3 and need not be enlarged upon here; obligations in this respect exist wherever a canal is retained in water. Equally so the Board will continue to be liable for any damaging consequences to other parties arising from withdrawal of support, whether by erosion from water, slips or other earth movements, or the collapse of tunnels. Such liabilities are quite independent of the category of the waterway and are considerations that may materially affect the comparative economy of different methods of treatment of Remainder waterways.

15.2.8 The possibility of an unused waterway becoming a public nuisance is evidently contemplated by the words of Section 107(2)(a) of the Transport Act 1968 ("...the



Plate 15.1 The Brownslover Arm feeder to the Oxford Canal (North) showing lack of bank protection. (PFP)

requirements of public health and the preservation of amenity ...."), reinforced by the provisions of Section 108 which enable a local planning authority to require the Board (as owners of the Remainder waterway) to abate or remedy any conditions prejudicial to health. Clearly the Board are bound to have strict regard to possible consequences of this kind when considering methods of treatment.

15.2.9 Considerations relating to rights of way over certain accommodation bridges and towing paths were mentioned in Chapter 10. The latter may cause difficulty where elimination or disposal of a length of canal is contemplated but demolition of a bridge need not interfere with a right of passage if ground level access is substituted. Any public road bridges affected by a closure could be transferred to the highway authority or be replaced by filling with or without culverts as appropriate.

15.2.10 One other consideration that may assume special importance if a Remainder waterway is retained in the Board's ownership but not used for navigation, is that of avoiding danger to persons having access thereto. Although the Board would have no duty to ensure the safety of trespassers it would probably be very difficult in practice to distinguish between trespassers and lawful visitors. The risks to young children playing on canals provide problems to which there is often no easy solution.

### 15.3 Planning Requirements

15.3.1 The General Development Order 1973 grants deemed permission only for the improvements, maintenance or repair of Remainder waterways, or for works used in connection

therewith. Where a change of user is contemplated, as for example the elimination, filling in or development of a canal for other purposes, then specific planning permission is required unless the work is undertaken under statutory powers. It is possible for the Board (or for certain other bodies by agreement with the Board) to seek permission from the planning authority, and if permission is granted the work must be carried out in accordance with any conditions laid down by the authority.

15.3.2 In the case of a proposal to convert a navigable waterway into a water channel the planning authority may wish to impose conditions as to the treatment of locks, making the channel safer by reducing the depth of water and possibly the piping of sections with subsequent filling and levelling of the surface.

15.3.3 In any case requiring planning permission it is likely that the scheme would have to provide for the continuance of all the local authority's drainage discharges and those of highway authorities. Where new arrangements must be made for the ultimate disposal of such discharges to natural watercourses the consent of the Regional Water Authority will be necessary.

15.3.4 Planning considerations may determine the extent to which elimination of a canal need be taken. Various possibilities are discussed in paragraph 15.8.2, but in general it is likely that the more urban the character of the neighbourhood the more complete the elimination would have to be. The site value of an eliminated canal is dependent upon the nature of the permitted development but in view of the provisions of the Community Land Act we shall assume that the BWB would not benefit from potential high site values.

15.3.5 Possible purchasers of longer or shorter lengths of waterway would include:

- (a) owners of adjacent industrial premises seeking land for expansion,
- (b) agricultural estates willing to absorb a site hitherto severing their property,
- (c) local authorities requiring to construct roads, provide playing fields or to take over lengths of canal in water for amenity purposes,
- (d) Regional Water Authorities, for land drainage or flood prevention.

In all such cases the Board would no doubt have to dispose of their property on terms, including planning conditions, that would be unlikely to bring them much financial benefit.

15.3.6 A reservoir associated with a Remainder waterway that is eliminated, or otherwise treated so as not to require the use of the stored water, would become redundant but would still be a liability. Possibly the Regional Water Authority might wish to take it over for water supply purposes. However, many reservoirs have a value in offering scope for sailing, angling and other amenities and there are precedents for transference to a local authority on mutually satisfactory terms.

### 15.4 Inland Waterways Amenity Advisory Council

15.4.1 The Inland Waterways Amenity Advisory Council was set up under Section 110 of the Transport Act 1968 and its functions inter alia are:

- (a) to advise the Board and the Minister on any proposal to add to or reduce the Cruising waterways,
- (b) to consider and to make recommendations on matters of amenity or recreation affecting Cruising and Commercial waterways.

15.4.2 The Council must be consulted before the Minister makes an order (under Section 104 (3)) adding to or reducing the Schedule of Cruising waterways, or transferring a waterway from the Commercial to the Remainder Category, or an order (under Section 105(3)) modifying the maintenance obligations for a Cruising waterway on account of changes in the size, design or type of vessel.

15.4.3 The Council reported to the Minister on Remainder waterways in 1971 and twice in 1974. The 1971 Report covered some twenty waterways and recommended that all those subject to the Lord Chancellor's statement (apart from the southern end of the Sheffield and South Yorkshire Navigation) be promoted to Cruising status, after restoration where necessary.

15.4.4 The first of the 1974 Reports was limited to 232 navigable kilometres and strongly recommended that they be upgraded to the Cruising category. For the first group maintenance agreements had already been concluded:- Ashton and Lower Peak Forest Canal (22.6 km, agreement pending), Erewash Canal (17 km), Grand Union Canal, Slough Arm (8 km), Monmouthshire & Brecon Canal (52 km), Calder Canal (28 km). The second group lacked agreements:- Birmingham Canal Navigations (92 km, being priorities 1, 2, 3.1 and 3.2 of the 1970 Working Party Report, see paragraph 15.5.3), Grand Union Canal, Welford Arm (3 km), Kennet & Avon Canal (9 km, Hamstead Lock to Hungerford). The Board was unable to support the Council's recommendations for the second group "owing to their limited liability".

15.4.5 The second Report of 1974 dealt with the Forth & Clyde and Union Canals. The Council considered that these had a wide potential for recreation, leisure and commercial needs, and urged that a detailed Scottish Lowlands Waterways Study should be carried out. No action has been taken to implement any of these recommendations.

15.4.6 In September 1975 the Council submitted to the Secretary of State a further Report entitled "Priorities for Action on the Waterways of the British Waterways Board". It contained recommendations relating to all classes of waterway and while accepting that in any period of grave economic difficulty the Remainder waterways cannot claim to have a high priority for new expenditure, they asked that "nothing further should be done or permitted to be done or tolerated by default to the nation's Remainder waterways which would be contrary to their ultimate restoration for navigation". It has not yet been possible to consider the implications of this recommendation.

## 15.5 *Development and Disposals*

15.5.1 Redevelopment of waterways has been a gradual process and the BWB had already done much in this respect by the time the 1963 Act was passed. A Development Section was established at Leeds as early as 1960 (in the Northern Estate Office) with the object of redeveloping or preparing redundant waterways for disposal. The work undertaken covers a wide range from physical surveys, consideration of engineering and legal problems, discussions with local authorities on planning

and other aspects, up to the preparation of a scheme for submission to the Board. If approved, the Section takes the work forward until completion.

15.5.2 Since 1968 the Development Section has been primarily concerned with Remainder waterways in the north of England and in Scotland; similar work is done in the south by the Estate Offices and in both cases the Amenity Services division is closely involved. In many cases working parties or study groups are set up in conjunction with local authorities and other interested bodies; this procedure facilitates consultation with all concerned and ensures that as far as possible recommended courses of action are supported by those likely to be affected. The work of some typical groups is outlined in the following paragraphs. It will be seen that while much useful work has been done in consequence, not all the recommendations have been carried into effect. Nevertheless the record is indicative of the wide range and ample depth of the detailed studies undertaken.

15.5.3 The Board set up the Birmingham Canal Navigations Working Party in July 1969 to consider and report on the future of the Remainder waterways of the BCN, and to make proposals. The Working Party submitted their Report in December 1970, a well-illustrated document dealing briefly but adequately with the very complex system, in which they drew up a priority list on the basis of popularity and potential for recreation and amenity purposes. This may be summarised as follows:-

| Priority | Canals  | Approximate length km |
|----------|---|-----------------------|
| 1        | Wyrley and Essington, Daw End, Rushall, Tame Valley Canals and various short branches | 65                    |
| 2        | Walsall Canal and Old Loop of Main Line   | 20                    |
| 3        | Dudley Tunnel and Halesowen branches, Titford Canal, etc.                             | 17                    |
| 4        | Various short branches and loops  | 16                    |

The first three of these priorities corresponded to waterways covered by the Lord Chancellor's statement. The Working Party's recommendations were:-

- (a) That priorities 1 and 2 be given early consideration for promotion.
- (b) That no action be taken, without the Minister's consent, to prevent restoration of priorities 1 to 4.
- (c) That restoration and amenity proposals, including financing, be discussed further with local authorities.
- (d) That pollution and rubbish dumping be dealt with more effectively.
- (e) That local authorities pay more for the land-drainage and fire-fighting functions.
- (f) That piping and filling be allowed to continue in the non-priority lengths.

15.5.4 Another Study Group was set up, for the Leeds and Liverpool Canal, in October 1969, consisting of four members:

from the BWB and six from the four councils involved. Their brief was to prepare and cost plans for the future of the Remainder length (and its eventual promotion to Cruising status) and for increasing safety. An earlier working party set up in 1965 had concentrated on the prevention of accidents to children; the fencing was subsequently improved. A technical working party set up in 1966/7 studied the cost of replacing the land drainage and water supply functions if the canal were to be physically eliminated. The Study Group reported in May 1972 and their recommendations may be summarised as follows:

- (1) That the canalside environment be improved before public access would be allowed under supervision, then recreational use should be encouraged, and finally promotion to Cruising status urged. This would take around 5 years in the suburban half, well over 10 in the urban half.
- (2) That inadequate barriers be replaced by high security fencing, eroded portions of towpaths and banks to be made safe, and further consideration be given to benching.
- (3) That pollution and litter be dealt with, and regular dredging be continued.
- (4) That Council members might wish to test public opinion before the policies are implemented.

15.5.5 Four major canals, the Montgomery, Grantham, Forth & Clyde and Union, are at the present time being studied by joint working parties drawn from the BWB and the local authorities concerned. Their Terms of Reference are typically:-

"To consider and make proposals for the future of the canal, having regard to the facilities and the potential which the canal can provide for recreation, amenity, water supply and land drainage, and to the requirements of health, amenity, safety and economy; to make, so far as they are able to do so, a preliminary estimate of costs of the proposals thus developed; and to report to the Authorities concerned and to the British Waterways Board".

The working parties were provided with information by the Board's Development Section in the form of preliminary reports. These contained a general description of the particular canal, a proposed Amenity Scheme, and a statement of alternative treatments, with costs. The general description included relevant history and legislation, schedules of structures and their condition, sections on water feeds and abstractors, mining and other development, in addition to a description of the present state. The Amenity Scheme, illustrated by maps, sought to make the most of the amenity and farming potential of the canal as it stood, without ruling out eventual full restoration. All four canals present major obstacles to full restoration in the form of infilled lengths, dropped bridges, dry lengths and unworkable locks. The Development Section has produced interim reports incorporating the views of the Working Parties which may be summarised as retention in water (with safety measures in high risk areas of the two Scottish Canals) and development of amenity facilities.

15.5.6 Smaller-scale working parties have been set up for the Chesterfield (two) and the Lancaster Canals. That on the Leeds & Liverpool Canal is dormant. In the south (where the Development Section does not operate at present) there are similar working parties for the Kennet & Avon Canal, studying the lengths in Wiltshire and Berkshire, but excluding the



Plate 15.2 *Burgadin Locks on the Montgomery Branch of the Shropshire Union Canal (PFP)*

Devises flight of locks.

15.5.7 In addition to this work on potential redevelopment the Development Section has made substantial progress with the disposal or elimination of a number of redundant waterways, although a small amount of work is outstanding on the Manchester, Bolton & Bury and the St. Helens Canals. Since 1968 the BWB have disposed of more than 160 km of waterway. Transfers to other authorities covering some 45 km include:

- (1) Monmouthshire & Brecon Canal; the Monmouthshire length and Crumlin Arm (17.5 km) to various District Councils for redevelopment. The Board retain rights to transport of water and sales but the Councils are responsible for water-channelling or piping as necessary.
- (2) Grand Western Canal: transferred intact (17.5 km) to Devon County Council for amenity, including light boating.
- (3) Cromford Canal; the upper section (8 km from Ambergate to Cromford) to Derbyshire County Council for amenity, including light boating.

15.5.8 Substantial sales totalling some 110 km have been made piecemeal on the following Remainder waterways:- Ashton Canal, Birmingham Canal Navigations, Chesterfield, Cromford, Lancaster, Manchester Bolton & Bury, Nottingham and St Helens Canals, Shropshire Union Canal (Newport, Trench and Shrewsbury Branches), Swansea Canal. No navigable lengths have been sold. Lengths on the Swansea Canal

were transferred with retention of right of water transport; similarly on the Monkland and part of the Glasgow Branch of the Forth & Clyde. Lengths of the Birmingham Canal Navigations were first piped and filled by a waste disposal firm under agreement. Some lengths of the Shropshire Union branches were merely dewatered and piped for drainage before return to agriculture, and similarly on the Lancaster Canal. Some lengths of the Manchester Bolton & Bury Canal were transferred as they stood, but generally northern disposals were piped and filled before sale.

15.5.9 The rate at which Remainder canals are dealt with is limited by the budget of the Development Section, by the lengthy processes of negotiation with planning and other authorities, and has also been affected more recently by the changes in local government. As a result, the tendency has been to concentrate on the canals whose treatment was more straight-forward and to leave over the more complicated cases such as the four mentioned in paragraph 15.5.5. At the same time, however, the BWB have also been concerned with a number of cases of restoration, particulars of which are given in the next Section. It seems clear to us that, bearing in mind the limited resources that can be devoted to the task, the Board has in no way been slow to observe their obligations in dealing with Remainder waterways.

## 15.6 Restorations

15.6.1 Some 140 km of Remainder waterways, previously unnavigable, have been restored and reopened for Cruising since 1968. The seven waterways involved are:-

- (1) *Ashton and lower Peak Forest Canals*: 22.5 km of main line completing the "Cheshire Ring" were reopened in 1974 after restoration by the BWB under an Agreement of 1971 between the Board and Manchester Corporation, Cheshire County Council and several other local authorities, with contributions and voluntary work from the inland Waterways Association and the Peak Forest Canal Society. A maintenance agreement is being negotiated.
- (2) *Birmingham Canal Navigations*: a 3 km length of the Halesowen Arm of the Dudley No. 2 Canal, and the 3 km of the Titford Canal and Portway Arm were restored to navigation in 1974 after dredging at the cost of Warley Borough Council. A maintenance agreement is being negotiated.
- (3) *Grand Union Canal, Welford Arm*: this 3.0 km feeder was restored by the BWB for its maintenance craft in 1968, jointly with the Old Union Canals Society.
- (4) *Kennet & Avon Canal*: a total of about 42 km has been restored since 1968 by joint action of the BWB and the Kennet & Avon Canal Trust. The lengths involved are some 2.5km above Sulhampstead, 9 km west of Newbury, and 30.5 km east of Devizes. The work is financed by the Trust, with the aid of contributions from the IWA and the County Councils.
- (5) *Monmouthshire & Brecon Canal*. 52 km of the old Brecknock & Abergavenny Canal, previously navigable by light craft only, were restored by the BWB and reopened for cruising in 1970 under an Agreement of 1968 with the Monmouthshire and Brecknock County Councils. As this length lies within the Brecon Beacons National Park, the Councils were eligible for a

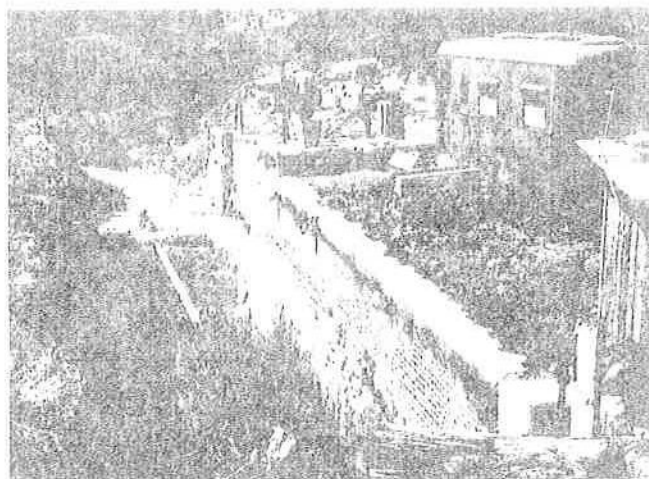


Plate 15.3 Volunteers at work during restoration of the Crofton flight of locks – Kennet & Avon Canal. (PFP)

75% government grant.

- (6) *Shropshire Union Canal, Prees Branch*: the lower 2.5 km have been restored jointly by the BWB and the owner of Whixall Marina to which it gives access.
- (7) *Caldon Canal*: the 13 km from Hazlehurst to Froghall were restored by the BWB and opened to cruising in 1974, under an Agreement of 1971 with Stoke Corporation and Staffordshire County Council, with the aid of volunteer labour from the Caldon Canal Society.

15.6.2 Restoration work has improved some 40 km without increasing the mileage available for cruising. The four waterways involved are:-

- (1) *Birmingham Canal Navigations, Dudley No. 1 Canal*: the 4 km Dudley Tunnel line was reopened in 1973 after a joint restoration by the BWB and Dudley Borough Council, with contributions and volunteer labour from the Dudley Canal Trust. A maintenance agreement is pending. The tunnel has restricted headroom, and fossil-fuel engines may not be used.
- (2) *Erewash Canal*: the 17 km from Long Eaton to Langley Mill, while never unnavigable, have been restored by the BWB to full Cruising standards under an Agreement of 1972 with Derbyshire and Nottinghamshire County Councils. The Erewash Canal Preservation & Development Association contributed volunteer labour, and have also leased and restored the Great Northern Basin and the short length of the old Cromford Canal giving access to it at Langley Mill.
- (3) *Shropshire Union, Montgomery Branch*: an isolated 2.5 km length in Welshpool was restored in 1973, the work being paid for by the Variety Club of Great Britain with the Shropshire Union Canal Society.
- (4) *Caldon Canal*: 15 km, previously navigable, were restored to full Cruising standards under the Agreement mentioned in item (7) of paragraph 15.6.1.

15.6.3 Restoration work is currently under way over a further 67 km of canal. The five waterways involved are:-

- (1) *Bridgwater & Taunton Canal*: this 23 km waterway, now isolated from the River Parrett and the Bristol Channel, is being restored by the BWB with a contribution from the Somerset County Council; a maintenance agreement is being negotiated. The scheme caters for light craft only, as the bridges have restricted headroom.
- (2) *Grand Union Canal, Slough Arm*: the 8 km arm, while never unnavigable, is being restored by the BWB to full Cruising standards under an Agreement of 1974 with local authorities.
- (3) *Kennet & Avon Canal*: work is being carried out over an 11 km length between Hungerford and Crofton, which will complete the restoration between Devizes and Newbury, and over a 3 km length near Bradford-on-Avon. The BWB and the Trust are working on the same basis as for item (4) of paragraph 15.6.1.
- (4) *Pocklington Canal*: the lower 12 km are being restored by the BWB, with a financial contribution from the Humberside County Council, together with volunteer labour from the Pocklington Canal Amenity Society. An agreement is to be concluded with Humberside County Council for restoration of this length and a possible 3 km extension, and a second agreement covering future maintenance of the restored lengths is being negotiated with the North Wolds District Council.
- (5) *Shropshire Union, Montgomery Branch*: an isolated 11 km length between Welshpool and Arddleen is being restored by the BWB and volunteer labour from the Shropshire Union Canal Society under a 1973 Scheme promoted by the Prince of Wales Committee and sponsored by the Variety Club of Great Britain. (An embanked road crossing separates this length from that restored through Welshpool).

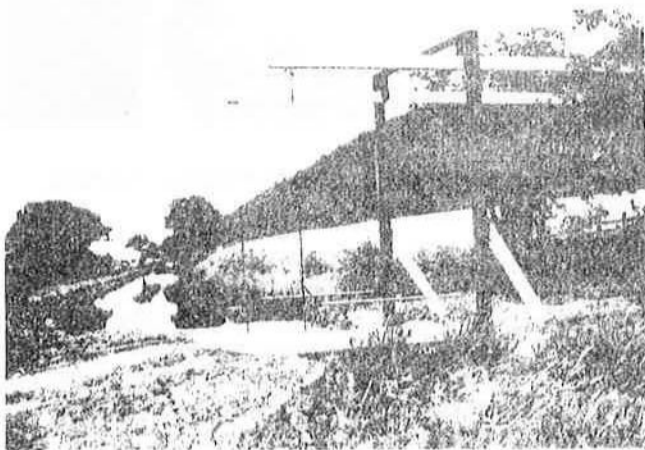


Plate 15.4 Replacement steel lifting bridge on the Montgomery Branch of the Shropshire Union Canal. (PFP)

15.6.4 The Agreements between the Board and local authorities have several features in common. The Board's contribution to the cost of restoration is based upon its estimate of the cost of the 'most economical solution', which is generally conversion to a tidy water channel. The extra cost of restoring the navigation is normally met by the local authorities, sometimes with contributions from the Inland Waterways Association and a Canal Society or Trust. Societies and Trusts make substantial contributions towards the cost of restoration

work carried out by the BWB, particularly dredging and lock gate replacement. The restoration Agreements (generally for a firm 21 year period) also provide for maintenance, the cost being apportioned in a similar way. The exception is the Ashton and lower Peak Forest Canals, for which the maintenance agreement has not yet been concluded.

15.6.5 The Board has entered into certain obligations under the several restoration Agreements. Typically, the Board undertakes to put the Canal into condition throughout "for use by cruising craft as defined in Section 105 (1) (b) of the Transport Act 1968 .... and purposes incidental thereto" and subsequently "to carry out such work and do such other things as may from time to time be necessary to maintain the canal to the cruising standard" throughout the currency of the Agreement. The signatory local authorities undertake to meet a proportion of the balance of expenditure (the cost of maintaining to the cruising standard less the income arising from amenity uses) as follows:-

|                              |                          |
|------------------------------|--------------------------|
| Caldon Canal                 | : the whole up to £4,000 |
| Erewash Canal                | : 1/13th (7.7%)          |
| G.U. Slough Arm              | : 1/8th (12.5%)          |
| Monmouthshire & Brecon Canal | : 1/2 (50%)              |

An Agreement awaiting execution provides for:-

|                         |                   |
|-------------------------|-------------------|
| Ashton Canal            | : 2/17ths (11.8%) |
| Lower Peak Forest Canal | : 1/4 (25%)       |

Draft agreements have been submitted, or are to be submitted, for three branches of the Birmingham Canal Navigations and for the Pocklington Canal.

15.6.6 While the division of initial expenditure between the Board and the authorities was generally calculated following the principle set out above in paragraph 15.6.4, it is not clear in all cases that the Board's continuing level of financial responsibility will be strictly limited to the assessment of "most economical treatment" cost - especially as effects of cruising traffic on bank protection needs must be expected.

## 15.7 Present Considerations

15.7.1 There can be no doubt that the present condition of many of these waterways is far better than it was. The Board permit cruising on all navigable Remainder waterways, so it is not surprising that recommendations for up-grading to Cruising status by users, and indeed by IWAAC and the Board, have been made in several cases. Nevertheless our Terms of Reference are strict and we are required to examine objectively the case of each waterway now in the Remainder category and to provide the required assessments.

15.7.2 For this purpose it is first necessary to determine an appropriate basis for, and method of, assessment. On the credit side revenues from any cruising or other activities, including water sales, may be taken into account, as also contributions received from local authorities under firm agreements. On the debit side there are the costs of operation and maintenance (to standards that are discussed in Section 15.9) and appropriate overhead charges. Then the possibility of elimination is to be considered, even in the case perhaps of a canal that may only recently have been restored, care being taken not to prejudge a case on the ground that elimination may be a desirable objective in itself. For cruising to be permitted on Remainder waterways not subject to agreements with other parties requires

a broader interpretation of Section 107 of the Transport Act 1968 than if the consideration of 'most economical treatment' is restricted to purely financial arguments. Any cruising activity causes deterioration of the banks and affects the working life of the various elements of the waterway, and hence leads to increased maintenance costs. For the purpose of our assessments we have assumed that water channel standards are to be applied to all such Remainder lengths, and that no net costs due to cruising will be incurred.

15.7.4 We have therefore approached our task by considering various possible methods of treatment and by defining standards (primarily on a qualitative basis) of condition and maintenance in each case. We then ascertain from the results of our field surveys what deficiencies from those standards may exist, and the costs of making them good and thereafter maintaining the waterways at the respective standards. We then compare the net costs of these possible methods of treatment, select the one that appears to be the most economical taking account of any firm contractual obligations, and present a statement in tabulated form (a "digest") on a common basis of Net Present Cost (future costs being discounted at 10% per annum). Finally we consider the feasibility of elimination; where elimination appears to be practicable we assess the Net Present Cost of doing so within a reasonable period so as to provide a comparison with the most economical method of retention. The results are set out in the digests introduced in Section 11 of this chapter.

## 15.8 Possible Methods of Treatment

15.8.1 The possible states of a waterway after treatment can be limited in practical terms to four, i.e. as

- (1) a navigable waterway (not necessarily at Cruising Standard),
- (2) an open water channel,
- (3) a piped water channel, or
- (4) eliminated, more or less completely.

The first of these is never found to be the most economical treatment unless the direct revenues from navigation etc., are supplemented by contributions, under agreement, from local authorities or other bodies. In the absence of a firm agreement, therefore, economy will not result from improving the physical state, e.g. from an open water channel to a navigable waterway. Piping is an expensive expedient, justifiable in special cases of persistent bed leakage, but it may be adopted by local authorities when undertaking development work as they may qualify for a grant.

15.8.2 Depending on the pre-existing condition of a waterway, therefore, the practical alternatives for treatment comprise the following:

- (a) restore and maintain as a navigable waterway with the aid of contributions from other parties,
- (b) maintain its present function as a navigable waterway (under agreement) or a water channel,
- (c) convert a navigable waterway into an open, or partly open, water channel,
- (d) dispose of it in its present form,
- (e) complete elimination for early disposal, or
- (f) partial elimination and controlled decay of the rest with a view to ultimate disposal.

Not all of these are of universal application. Alternative (d) would apply mainly to isolated lengths which

local authorities might wish to develop for amenity purposes; (f) would in most cases be opposed on amenity grounds and additional expense would probably be incurred in abating risks of public nuisance. The need for navigation by maintenance craft might have a bearing on (a), (b), (c) and in some cases (f).

15.8.3 Disregarding the special cases of waterways used for cruising etc. under agreement with local authorities and other bodies, the following offer scope for economical treatment. There are certain sections on permeable subsoil where dewatering (involving the diversion of incoming drainage) could result in a dry bed that would allow of agricultural use; conversion to an open water channel; disposal after undertaking a necessary minimum of work. Elimination, where feasible, would be a variation of the last as local circumstances would require.

15.8.4 If a waterway is to be retained for navigation under agreement any locks, bridges, aqueducts and tunnels would need to remain. Conversion to an open water channel would, subject to the possible needs of water based maintenance, involve replacing lock gates by weirs and allow of the replacement of bridges by culverted embankments. In the case of public road bridges the cost would largely be met by the highway authority. Water levels could in many cases be lowered, entailing alterations of controlling weirs, and the need for bank protection would be very much reduced.

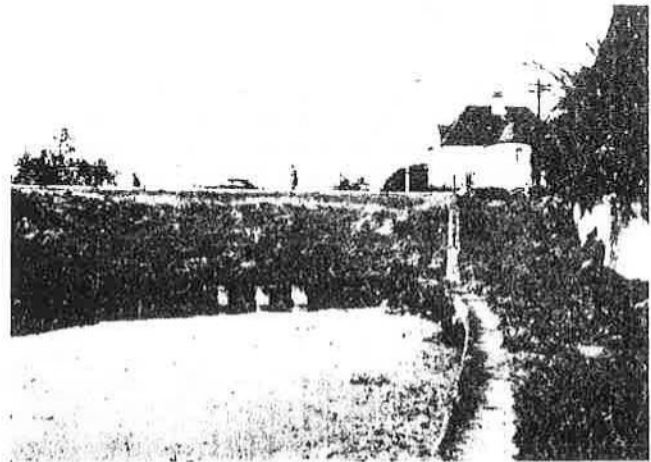


Plate 15.5 Culverted Bridge at Kirkintilloch on the Forth and Clyde Canal. (PFP)

15.8.5 Partial or complete elimination would obviate any need to maintain a water supply to the waterway. Use as a water channel for drainage purposes would likewise make no demands on reservoir and other water resources but if the purpose of the water channel is to feed other parts of the system any associated reservoirs and feeders would need to be maintained to normal operational standards.

15.8.6 About a quarter of the Remainder waterways act as feeders essential to the Cruising network, for example the Caldon, Chesterfield (part), and Erewash Canals, the Welford and Wendover Arms of the Grand Union Canal, the upper Lancaster Canal and part of the Birmingham Canal Navigations. In most cases it would be impracticable or quite uneconomic to provide substitute supplies and we conclude that elimination of this quarter would not be feasible. Of the rest only two Remainder waterways — the Liverpool portion of the Leeds & Liverpool Canal and the lower Peak Forest Canal — draw appreciably on the Cruising network but there are water sales to industry in both cases.



15.8.7 For some of the other Remainder waterways retention or restoration for cruising would involve difficulties, quite apart from financial problems. Waterways where additional water supplies could not readily be obtained include the Pocklington and Grantham Canals and the upper end of the Sheffield & South Yorkshire Navigation. A particularly difficult case would be the Kennet & Avon Canal at its Savernake summit; restoration of the Crofton locks to complete the link between Devizes and Hungerford would certainly necessitate finding new water resources, including the installation of pumping plant, if navigation by any numbers of cruising craft were to follow. Where a waterway has been converted to a water channel, involving lowering of water levels in the pounds, any subsequent proposal for restoration would be made very much more difficult and expensive. Clay puddle cores dry out quickly after a lowering of water level, cracks develop and rodents soon multiply the defects, with the result that many serious leaks would at once occur if the water level were raised again.

### 15.9 Maintenance Standards

15.9.1 In formulating standards for the maintenance of Remainder waterways the most important consideration is that of safety; if this is ensured then any extra costs of providing for public health and amenity are not usually very great. An essential element of safety is the prevention of breaches. The majority are initiated by leaks and can be avoided if the leak is detected at an early stage. A minority of breaches, but including some of the most catastrophic, are caused by banks being overtopped in storm conditions. Exceptional inflows from direct run-off and drainage discharges may exceed the flow capacity of the channel down to the next weir or relief sluice.



Plate 15.6 Breach at Llanfoist on the Monmouthshire and Brecon Canal – February 1975. (PFP)

15.9.2 It is not possible to consider the detailed circumstances of every pound but some general principles may be recognised as follows.

- (a) Canals as originally constructed were generally satisfactory, as comparatively few pounds have suffered breaches in their life time.
- (b) The extension of built-up areas has tended to increase the rate at which run-off enters canals.
- (c) As a result of siltation and weed growth since the

cessation of commercial navigation the flow capacity of channels has diminished.

- (d) Unchecked weed growth reduces channel capacities much more rapidly than does siltation, but local siltation building up at points of entry of feeders can also be serious.
- (e) Where piping has been carried out the flow capacity is drastically reduced from that of the open channel, and may be brought to zero if trash grids are not kept clear.
- (f) Where manually operated sluices are replaced by weirs water cannot be discharged over them without a local rise in canal level, thus making it necessary to construct the weir at a lower level so as to allow in time of flood for the required flow gradient. (It must be recognised that labour is not so often available nowadays to man sluices at short notice.)

15.9.3 Other considerations relating to safety have been discussed in Chapter 10 and paragraph 15.2.7 and in the light of these, as well as those outlined in the previous paragraph, we consider that the following guide lines are appropriate for the maintenance of Remainder waterways which are retained to act as water channels:-

*Waterway:* to be kept free of weeds; reeds and rushes to be kept only to protect banks. A channel to be maintained of sufficient width to accommodate any necessary maintenance craft and normally 900mm depth of water. The depth to be increased to 1200mm where extra flow capacity is necessary, or may be reduced to 600mm where adjacent sections of canal have been piped.

*Banks:* no erosion of the offside bank to be permitted beyond the Board's boundary. Protective works to towpath or offside banks to be provided and maintained where erosion threatens embanked sections or deep cuttings, especially in built-up areas or where leaks are likely to develop. Any existing revetments in sound condition to be maintained to prevent eventual disintegration, and a minimum freeboard of 300mm to be maintained on unprotected lengths.

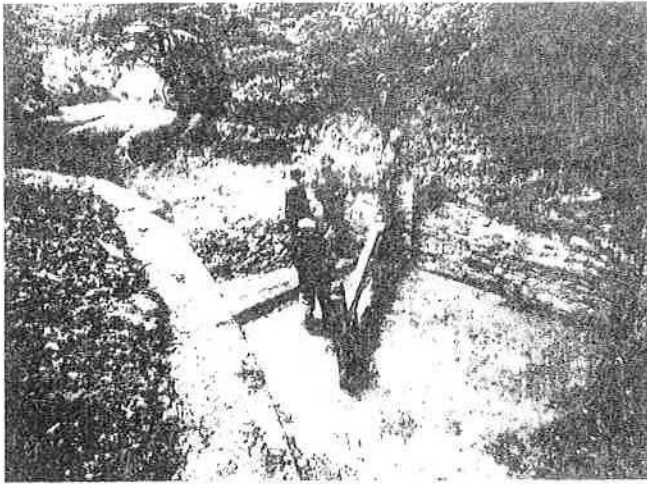
*Locks:* where required to be retained (e.g. for maintenance craft) they must be kept in safe working order; otherwise they may be converted to act as weirs (or cascaded) and maintained as such.

*Weirs, Sluices, Stop Gates and Stop Planks:* to be maintained in good working order.

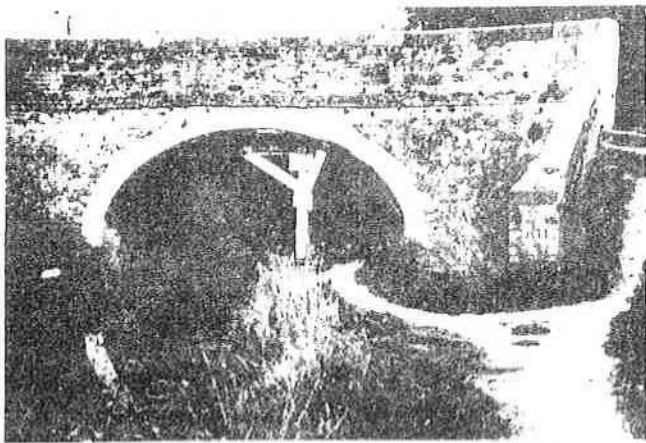
*Towing paths:* to be maintained as necessary for access: where a public right of way exists a sufficient strip of land to be kept available.

*Fences, Ditches, Vegetation:* a stock proof boundary fence to be maintained along the towing path. Embankments to be kept free of shrouding vegetation and undue tree growth; hedges and ditches to be maintained so as to preserve amenity and prevent nuisance.

*Bridges, Tunnels, Culverts, Aqueducts:* Where still required they are to be maintained generally as for Cruising waterways (Section 10.6).



*Plate 15.7 Replacement of former stop-gate near Llanfoist on the dewatered Monmouthshire and Brecon Canal. (PFP)*



*Plate 15.8 Temporary support to a road bridge, Montgomery Branch of the Shropshire Union Canal (PFP)*

15.9.4 Where through navigation of maintenance craft is not a necessity bridges could, if desired, be replaced by low level culverted crossings. It would also be possible to provide a piped lining for an aqueduct where leakage is a problem. The substitution of a piped channel for an open waterway might be considered in certain cases, at the instigation of interested authorities, in which case the BWB would see that the agreement covering the arrangement did not place any additional financial burden on them. Piping would be justifiable for the BWB themselves if it were shown to be less expensive than carrying out extensive work to stop serious leakage through the bed of the waterway.

15.9.5 Where the Board has entered into an agreement with a local authority or other party which provides for unrestricted cruising activity the standards of Chapter 10 are applicable. In one case, however (the Bridgwater & Taunton Canal), the Agreement provides for light boating activity on intermediate pounds only, and other authorities may in the future feel that full restoration to navigation is not necessarily desirable. The general guidelines of paragraph 15.9.3 are also appropriate to such cases, though the resulting costs of maintenance will be higher than for pure water channels by an amount depending on the extent of waterborne activities and their effects on the banks and channel.

15.9.6 It is hardly possible to attempt the definition of

standards in the case of the partial or complete elimination of a waterway. Each case must be considered on its merits and a scheme would be prepared to take account not only of the physical and topographical features of the waterway, but also of the wishes and resources of the local and other authorities who may be concerned.

15.9.7 "High Risk" areas present a special problem. The main concern is for the safety of children playing upon the towpath and entering the water to paddle or to swim, or falling in or being pushed. They risk being entangled in weeds, or being held by mud, or succumbing to panic. If they can reach the bank, it may be too high for them to climb out. No wholly satisfactory solution has yet been found. High security fencing cannot be made completely childproof and would delay possible rescuers. Weeds can be controlled, mud be dredged out and replaced by hard-core shelving at 1:3, and continuous steps be formed along the bank. Unfortunately this would only make the canal more attractive for paddling, and there would still be a full depth of water in the middle of the channel. It has been suggested that there should be partial infilling with hard-core to reduce the depth to 500mm but this would be expensive and would at the same time rule out some water-based amenity uses; a further drawback is that shallow channels seem to attract more rubbish.

15.9.8 When the Board proposes to undertake works on a waterway which will result in a significant change from the traditional use it must obtain permission from the planning authorities. In these cases the authorities are entitled to impose certain conditions, not least in respect of public safety. An example of this is the requirement, generally only in urban environments, to 'cascade' locks rather than simply construct a weir within the chamber — and the Board normally carries the extra expense of doing this. We do consider, however, that there is no justification for expecting the Board to meet the cost of exceptional local safety requirements. If such should be judged necessary by a particular local authority they should be prepared to meet any extra costs involved.

#### 15.10 *Most Economical Treatment*

15.10.1 As outlined in paragraphs 15.7.2 and 15.7.3 we have studied for each Remainder waterway the net costs of operation and maintenance for various alternative treatments in order to identify the most economical method. The net cost in any particular case is derived after ascertaining the probable actual revenue, i.e. receipts from water sales, drainage easements, cruising if any, amenity activities, etc., together with any income under firm contractual arrangements with local authorities and other bodies. No account has been taken for revenue purposes of the value a waterway may have where no payment is actually received at present, e.g. for general land drainage, or water-feed to another canal. We then consider what arrears of maintenance may exist in relation to the appropriate standard and the cost of making them good within a reasonable period; after so making good we estimate the future annual maintenance costs. From the total of these costs is deducted the probable actual revenue figure and the resultant net cost is expressed, on a discounted value basis, as the Net Present Cost. The following paragraphs of this Section comment on some of the factors that we have taken into account in determining the most economical treatments.

15.10.2 The Board owns the water in its canals and reservoirs, and is entitled to sell it, subject to an abstraction licence from the Regional Water Authority. The Board has entered into many agreements with abstractors, generally for

terms of twelve months, some for five or ten years, payment being on the basis of metered abstractions subject to specified minima and maxima. Agreements provide for interruption to supply and can usually be terminated by either side at short notice. The existence of water sales thus does not rule out elimination of a canal and cessation of water flow, but many abstractors would find it very expensive to obtain alternative supplies from the public mains, or to construct alternative cooling lagoons.

15.10.3 Of the many licit drainage discharges into the Board's canals the majority are accepted under agreement, the main exceptions being statutory rights. There are also numerous illicit discharges, entering below water level or surreptitiously via a private basin, which the Board are not obliged to accept. Some drainage agreements may possibly be terminated at short notice, but the cost of alternative provisions would be high, especially in urban areas, as brought out in the Working Party Reports for Liverpool and Birmingham. Most of the cost would have to be met from other sources, since the major discharges are from local authority storm sewers or from highway authority road drains.

15.10.4 All of the Board's waterways provide services to the community in accepting land drainage, acting as temporary storage reservoirs to reduce the initial impact of stormwater run-off on existing drainage systems and natural watercourses, and in transporting this water from the many local discharge points (from highways and developed areas in particular) to sites where Local or Regional Water Authorities are able to accommodate it. It is to be noted that financial recognition of the full economic value of these services would effect a considerable reduction in the Board's trading deficit.

15.10.5 The Working Party's detailed study of the 13 km Liverpool length of the Leeds and Liverpool Canal concluded that the cheapest alternative for dealing with the 360 Mld peak discharge would have cost well over a million pounds in 1969, say £1.6 M in 1974. Annual maintenance and loan servicing would cost about £200,000, or an average over the whole length of £15,000 per km. Another Working Party Report, on the Birmingham Canal Navigations Remainder lengths, included estimates (indexed to March 1974) of £27.5 M (£225,000 per km) for providing alternative drainage facilities if the canals were to be eliminated, together with annual running costs of £2.75 M or £22,500 per km. The value of this service in these two instances alone of Remainder waterways therefore amounts to some £3 M per annum.

15.10.6 There thus seems to be a case for evaluating canals as economically useful drainage channels rather than purely loss-making transport and amenity systems. The BWB are aware of this but for various reasons cannot at present obtain recognition in financial terms of many of the services performed. When applications are made for new discharges into canals, or where an existing discharge is renewed or enlarged, acceptance is conditional upon payment at the current rate (£18 per annum for a discharge of 1 Mld at the end of 1974). There are, as we have said, many illicit discharges into the system (the BWB estimate that with present resources it will take three or four years just to locate them all), and a great number of existing agreements have not been revised for many years so that the receipts are now of only nominal value. The Board thus gives services which would otherwise have to be provided by local authorities or Regional Water Authorities.

15.10.7 In view of the difficulties involved in making accurate assessments of the value of these services we have approached

the problem indirectly by considering the arrangements which have been made in the past on elimination of lengths of waterway. We have also studied all the Working Parties' Reports available, and conclude that on the average the capital costs of providing alternative drainage facilities to accommodate these services is upwards of £50,000 and £5,000 per km respectively for urban and rural lengths. A conservative estimate of the equivalent annual charge would be 10% of these figures, so that we suggest notional average values of £5,000 per km per annum on these unrecognised services in urban and £500 in rural environments. We have therefore included an item at the foot of the digests of Section 15.11, discounted on a 'Net Present Value' basis so that it can be considered along with the sum relating to the 'most economical treatment' in each case.

15.10.8 In summary therefore the present position is that the BWB are obliged to meet the cost of replacing the drainage functions of a canal as part of any elimination scheme, but do not receive financial recognition of most of these services when the canal continues in being. In principle this inconsistency would be overcome if the notional NPV of the drainage functions quoted at the foot of the digests were to be subtracted from the NPC of the 'most economical treatment' before this is compared with the discounted cost of elimination.

15.10.9 Various way-leaves have been granted under licence, most of them to allow statutory undertakers to lay their services along the towpath. All these can be revoked: while there might be some disturbance during the process of elimination, in most cases the services could be relaid along the same route. However, a Central Electricity Generating Board gridline straddles much of the Liverpool Remainder length: by statute, licences for electricity pylons cannot be revoked.

15.10.10 The other main source of revenue under agreement is that obtained from local authorities in consideration of the Board's carrying out restoration or improvement works and thereafter maintaining to the improved standard. We are required to take such revenue into account only where firm contractual obligations exist, but we have considered it right to include in this heading cases such as the Ashton and Lower Peak Forest Canals, where the arrangements are virtually complete and await only the execution of the formal Agreement by the local authorities concerned. In all such cases the maintenance costs quoted in the digests of Section 15.11 are net of contributions by other parties so that they represent only the BWB's share.

15.10.11 One increasing use of lengths of Remainder waterways is in providing linear moorings away from the main navigable channels of the system. The Board's policy in this respect has been discussed in Chapter 13 where it was seen that such moorings must be relocated off the cruiseways as a matter of urgency. The short branches, basins and old loops comprised in the Remainder category are well suited to this purpose. It is relevant to note here that the Board's present system allocates licence revenue to the waterway on which the craft is normally moored, so that some revision will be required to this system if the accounts for each length are to be fairly presented. For the purpose of our digests we have followed the Board's present system in this respect, though we would recommend that a survey of cruising or mooring activity is carried out before a decision on elimination is taken for any particular length of waterway.

15.10.12 Arrears of maintenance involve first determining the deficiencies of the waterway from the appropriate Standard in

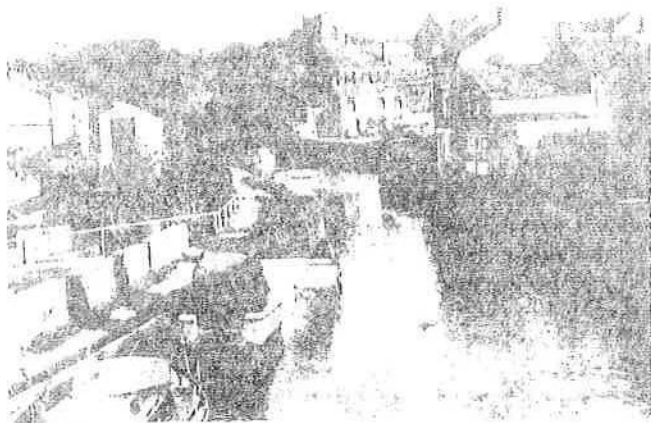


Plate 15.9 The Springs Branch of the Leeds and Liverpool Canal in Skipton. (PFP)

the light of its present condition as found during the field inspections. Our field inspections were carried out for the Remainder waterways in the same way as for the Commercial and Cruising waterways, except that they were not included in the second check for bank protection on the random sampling basis, nor were soundings always taken in unnavigable channels. In assessing the arrears we have found in many cases that for water channel use there is no significant expenditure required for bank protection, and consequently that the total cost of arrears is fairly uniformly distributed along the length of each BWB Activity Code. We are satisfied that the sample lengths surveyed are reasonably representative. Care was taken to ensure that special items such as tunnels and major aqueducts were inspected or otherwise allowed for: these were costed as one-off items, separate from the samples. For bridges the costs arising under Operation Bridgeguard have not been included, but we have made an allowance of £1,000 per accommodation bridge; the considerations of Section 10.6 will apply to Remainder waterways as they do to Commercial and Cruising. No such allowance is of course made in the figures of actual cost for 1974.

15.10.13 We have attempted a comparison of our findings with the BWB 1970 Survey, but for several reasons it has proved unhelpful. There are cases where restoration has intervened (e.g. the Ashton, Peak Forest, Erewash, Bridgewater & Taunton, and Caldon Canals), and no survey was then made of the Montgomery Branch. In many cases there were no entries under several headings where we have recorded material arrears of maintenance. In the only two instances where a reasonable comparison seems possible, our assessment for the Leeds & Liverpool is lower and for the Birmingham Canal Navigations higher. (In the case of the BCN, there was a larger proportional allowance for dredging in 1970, but otherwise the apportionment between the heads of banks, structures, agriculture and locks was almost identical in percentage terms).

15.10.14 For navigable Remainder lengths the costs of future maintenance, once the arrears have been overtaken, will cover much the same range as those in the Cruising category. The unnavigable lengths will require a rather different make-up of maintenance work, and the cost per kilometre will be much less: there will be little need for new bank protection, since with the absence of wash there is much less tendency for banks to erode, and if water levels can be lowered any erosion that may take place will be of less consequence. There is also significant saving on lock maintenance where these structures can be converted to act as weirs.

15.10.15 However, the second most expensive item, dredging

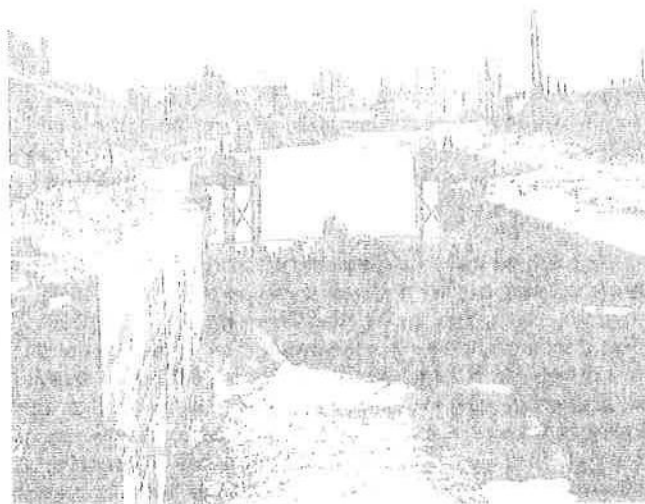


Plate 15.10 A weir lock on the Forth and Clyde Canal. (PFP)

and weed clearance, is likely to cost as much on unnavigable canals as on navigable. Dredging will be needed in order to maintain adequate channel capacity to accept storm flows safely and weed clearance will be much increased. While the channel will not silt up so rapidly, dredging will cost more per tonne. Many lengths, for example in built-up areas, in cuttings, where the towpath is narrow or the revetment weak, where pounds are short or inaccessible, would prohibit the use of all but light weight plant, and increase costs considerably; in such cases it may be more economical to keep locks in operation for use by maintenance craft. All other maintenance heads are likely to be as costly as on navigable canals.

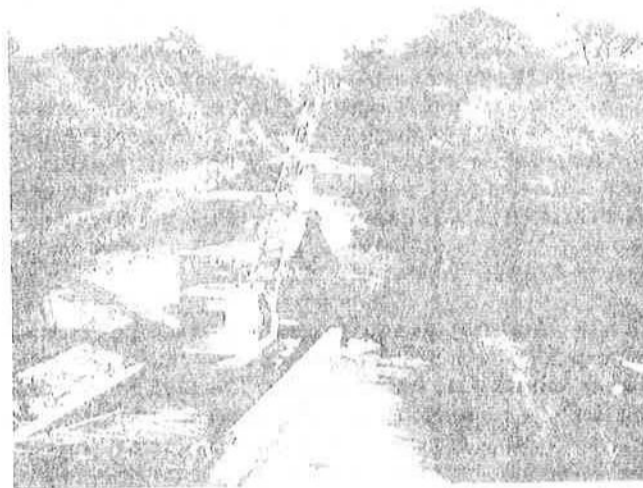


Plate 15.11 Pontoon mounted grab dredger on the Union Canal. (PFP)

15.10.16 Additional tasks arise when a canal is fully converted into a water channel. For example, each of the many culverts at embanked bridges and covered locks is protected by a trash-grid. They have to be cleared frequently in order to prevent blockages and flooding, although in some cases this is the responsibility of the local authority. It is not possible to make close estimates of conversion costs in all cases as the work to be undertaken will to a large extent depend on terms to be negotiated with local authorities, industry, land owners, etc. and on the conditions attaching to planning consents.

15.10.17 In estimating the costs of future maintenance, our conclusion is therefore that in general the net costs of maintaining a Remainder waterway to whichever standard is appropriate will be very nearly the same as to maintain it in its present condition provided that that condition is not now actually deteriorating. There are several cases where conditions are deteriorating, examples being the Grantham Canal, the Montgomery Branch and the southern end of the Sheffield & South Yorkshire Navigation. Bridges are an exception to this rule because the considerations for their maintenance set out in Section 12.4 for Commercial and Cruising waterways will apply also to the Remainder category.

15.10.18 Future costs are difficult to estimate for recently restored canals, since it seems to take a few years for annual maintenance costs to settle down. The year after restoration tends to be abnormally expensive, presumably because extra work is found to be necessary and has to be charged to the regular accounting Activity Code since the Restoration Code is no longer current. As restored Remainder canals are similar in character to the Cruising category, we have assessed their future maintenance costs on a similar basis.

### 15.11 Tabulation of Costs

15.11.1 This section sets out for each Remainder waterway estimated arrears of maintenance and figures of annual costs which are discounted on a Net Present Cost basis, to facilitate comparison of the Board's liabilities under existing and the most economical future regimes short of elimination or disposal. Introductory notes in each case indicate length, present function, current proposals, possibility of elimination and so forth.

15.11.2 Special items are shown for major work in connection with tunnels, aqueducts, earthworks, reservoirs and the like. In some cases it has been possible to make a reasonable estimate of the costs, and a definite price is shown. In others, a full survey is required, and in such cases we have noted in the digests an indication of the likely order of cost. Where costs are not directly attributable to a particular waterway we have entered them separately, in Table 15.2. There are also certain annual provisions to be made, on a contingency basis, to cover the unpredictable occurrence of relatively major cost items related to breaches and emergencies, specialist services and associated major works, and the maintenance of public road bridges. These sums are listed in Table 15.3, and are additional to the continuing annual cost figures given in the digests and summarised in Table 15.1.

15.11.3 The following assumptions have been made in arriving at Net Present Costs:-

- (a) Annual Deficits will remain constant over the long term, the NPC of an annual charge at 10% interest being taken at 9.5 times the charge.
- (b) Arrears will be overtaken within 5 years. For an asymmetrical curve of expenditure over 5 years, the NPC is 0.75 times total expenditure.
- (c) Development will be carried out over 3 years, giving the NPC as 0.83 times cost of disposal.
- (d) Disposals will be completed in 18 months time, giving the NPC as 0.87 times total expenditure.
- (e) Elimination will be carried out over 5 years. With an

allowance for maintenance costs continuing at half the present rate in the interim, the NPC is 0.83 times total elimination expenditure. (In this instance, interim maintenance does not appear in the future Annual Budget).

- (f) Where there is a maintenance agreement with a local authority, estimated future expenditure is net of contributions payable thereunder.

15.11.4 Arrears of maintenance were assessed from our field reports once the relevant treatment and hence standards were decided, in the same way as for Commercial and Cruising waterways. We took pains to ensure that abnormal conditions outside our survey lengths were accounted for wherever we learned of them but it must be remembered that our extrapolated totals for individual canals are based on a small sample and they should therefore be used with caution. On some sample lengths full surveys were not undertaken, and there we used averaged costs from other similar canals. The other generalised totals for each canal have been calculating using the following costs, with appropriate allowances for non-typical items:-

|      |                          | Narrow Canal<br>£ | Broad Canal*<br>£ |
|------|--------------------------|-------------------|-------------------|
| (i)  | Open Water Channelling:- |                   |                   |
|      | Cascade locks            | Sum 4,000         | 5,000             |
|      | Weir locks               | Sum 250           | 500               |
|      | Culvert bridge crossing  | Sum 4,000         | 5,000             |
|      | Other costs              | Per km. 1,000     | 1,000             |
| (ii) | Elimination:             |                   |                   |
| (a)  | Rural Controlled Decay   | Per km. 5,000     | 5,000             |
| (b)  | Rural Elimination +      | " " 10,000        | 12,000            |
| (c)  | Urban Elimination +      | " " 55,000        | 65,000            |

+ If surplus fill material is not available these rates will be substantially increased

\* Higher rates apply for the Forth & Clyde Canal, which has double the cross-sectional area of other broad canals.

Under the heading of 'controlled decay' in rural environments it is intended that the canal would be dewatered (by breaking through at culverts etc.) but that no attempt would be made to level embankments or prepare the ground for further use. 'Rural Elimination' on the other hand envisages bulldozing the banks into the bed (after laying pipes for local drainage) and 'urban elimination' involves all works of infilling, landscaping, demolition of structures etc. necessary to remove all traces of the waterway.

15.11.5 The results of the thirty or so individual digests appended to this chapter are summarised in Table 15.1. This shows that of the present total length of 815 km of Remainder waterways the least Net Present Cost treatment would be:-

|  | km    |
|--|-------|
| (a) to retain for cruising                       | 142.5 |
| (b) to retain for light boating                  | 23.0  |
| (c) to convert to, or retain as, a water channel | 441.0 |
| (d) to dispose of or eliminate                   | 208.5 |

15.11.6 Before allowing for the possibility of elimination or

disposal, the capital cost of overtaking the arrears of maintenance including the special items of Table 15.2 would be some £6.5 M; not all this work would need to be carried out immediately, however, and the Net Present Cost would be £4.9 M. The total future continuing cost of operation and maintenance on the lines indicated (net after deduction of the associated revenues) would be £935,000 per annum made up from the Table 15.1 total of £760,000 (which, though marginally less than the actual 1974 costs should be sufficient to maintain these waterways in constant condition whereas deterioration is taking place at present), and the Table 15.3 contingency total of £175,000.

15.11.7 Considering now the possibility of elimination, the total of the lengths for which it is feasible amounts, as noted in Table 15.1, to 467 km. The aggregate NPC of eliminating these lengths would be £22.6 M, compared with which we calculate the NPC of the most economical treatment, short of elimination, as £5.4 M. If, however, account is taken of the drainage functions discussed in paragraph 15.10.7 as an annual service, then the latter figure would become instead a Net Present Value of £12.9 M. Of this 467 km we have already said that elimination would be the cheapest course of action for 208.5 km; this figure is not significantly altered if the value of these drainage functions is included, though the total cost advantage in eliminating the 208.5 km would reduce from £945,000 to £335,000.

#### 15.12 *Special Cases*

15.12.1 In the foregoing sections of this chapter we have put forward conclusions about the most economical treatment of the Remainder waterways as nearly as possible in the spirit and letter of our Terms of Reference. However, it will be apparent (for reasons suggested in paragraphs 15.3.4, 15.7.1 and 15.9.5, for example) that in some cases there are areas of uncertainty which make it difficult to reach a firm decision. In practical terms this is most likely to occur in seeking to determine whether retention or disposal is the right course when elimination is either not feasible or not the cheapest solution.

15.12.2 Although we have provided in every case an indication of what we consider the most economical treatment might be, it does appear that in a few cases special consideration might be given on lines outside the strict limits observed hitherto. We therefore conclude this chapter by drawing attention to five cases where the concerns of the BWB appear to be rather remote from the main corpus of their activities, and to one case where the circumstances are unique within their system.

15.12.3 The lengths of the Swansea, St. Helens and Manchester, Bolton & Bury Canals remaining within BWB ownership are 6, 23.5 and 13 km respectively. They are in each case completely isolated from other waterways, they carry no navigation, and their only real usefulness is to supply water for industrial purposes. This is in fact done on a large scale and brings in a considerable revenue. In these circumstances it appears reasonable to suggest that these three waterways should be transferred, as they stand, to the local authorities or Regional Water Authorities concerned. The BWB, while losing the associated revenues, would be relieved of the tasks of undertaking maintenance at a distance and the Department could no doubt arrange that appropriate adjustments were made to future annual grants.

15.12.4 The Pocklington Canal and the Ripon Canal (part of which, with the River Ure Navigation, is a Cruising waterway) in the north east of England are also detached from the Board's

other waterways, but are connected respectively with the River Derwent, a tributary of the (Yorkshire) River Ouse, and the River Ouse at its junction with the River Swale; the Ouse itself is navigable. Works now being carried out on the Derwent would allow of navigation being restored from its mouth for a considerable length upstream of the canal junction at East Cottingwith. Encouragement of navigation facilities on both the Ripon and the Pocklington Canals, if desired, would clearly be more directly allied to existing facilities on the River Ouse than to conditions on the BWB's other waterways. We therefore suggest that a transfer of these two waterways (including the River Ure navigation) to the navigation authority for the River Ouse might be the most satisfactory method of treatment.

15.12.5 The Kennet & Avon Canal is unique among the Board's waterways in that while it originally formed part of a trunk waterway route between London and Bristol it is now divided into three Cruising lengths separated by two Remainder lengths, parts of which are quite unnavigable. Recent works, undertaken with the assistance of volunteer labour, have effectively extended the cruising facilities over parts of the Remainder lengths, but there are several major obstacles in the way of restoring through navigation over the whole length of the Canal. These include the reconstruction of public highway bridges near Aldermaston, the restoration of locks and provision of adequate water supplies at Crofton, the problem of dealing with the derelict locks at Caen Hill, Devizes, and the sealing of chronic leaks in the bed of the canal between Bradford-on-Avon and Limpley Stoke. Quite clearly no amount of likely cruising and amenity revenue could justify undertaking the works needed to remove all these obstacles, and the costs shown in our tabulation for this waterway indicate, in fact, that elimination of certain sections would be the cheapest course.

15.12.6 Nevertheless there is a considerable amount of activity on the part of the Kennet & Avon Canal Trust and the Inland Waterways Association, with some encouragement from the BWB and the County Councils concerned, in an endeavour to continue restoration work on the unnavigable lengths. In view of the heavy expenditure involved, more particularly on the items mentioned in the preceding paragraph and in the subsequent continuing annual maintenance tasks, we consider that the future of the canal as a whole should be reviewed rather than dealing with its Remainder segments in isolation. A preliminary decision, in principle, as to whether local authorities and other bodies would be prepared to guarantee meeting costs in excess of "most economical treatment" for defined portions of the waterway, might enable a firm policy to be agreed as to the lengths to be earmarked for retention. Further expenditure on the rest, to be eliminated in due course, would thus be positively discouraged.

Table 15.1 REMAINDER WATERWAYS – SUMMARY OF TREATMENT AND COSTS

| Ref. No. | Waterway                          | Length<br>km | Length for Treatment (km)<br>(paragraph 15.11.5) |      |       |       | Net Present Cost/Value (£000)<br>(paragraphs 15.11.6 and 15.11.7) |            |             |          |
|----------|-----------------------------------|--------------|--|------|-------|-------|---|------------|-------------|----------|
|          |                                   |              | (a)  | (b)  | (c)   | (d)   | Arrears   | Continuing | Elimination | Drainage |
| 39       | Ashton Canal                      | 15.0         | 9.6  | —    | 0.8   | 4.6   | 47  | 0          | 4*          | 550      |
| 20c      | Birmingham Canal Navigations      | 122.8        | 9.8  | —    | 109.3 | 3.7   | 705   | 979        | 11,950      | 25,200   |
| 13       | Bridgwater & Taunton Canal        | 23.0         | —  | 23.0 | —     | —     | 64  | 86         | —           | 230      |
| 42       | Caldon Canal                      | 32.8         | 28.2   | —    | 4.6   | —     | 269   | 276        | —           | 280      |
| 31       | Chesterfield Canal                | 24.8         | —  | —    | 16.8  | 8.0   | 46  | 276        | 210*        | 200      |
| 24       | Cromford Canal                    | 4.6          | —  | —    | —     | 4.6   | 9   | 143        | 38*         | 20       |
| 26       | Erewash Canal                     | 17.0         | 17.0   | —    | —     | —     | 157   | 266        | —           | 290      |
| 2-6      | Grand Union Canal                 | 25.8         | 7.9  | —    | 15.1  | 2.8   | 124   | 276        | 70*         | 140      |
| 29       | Grantham Canal                    | 52.4         | —  | —    | 52.4  | —     | 238   | 485        | —           | 250      |
| 38       | Huddersfield Narrow Canal         | 26.8         | —  | —    | 26.8  | —     | 109   | 200        | —           | 130      |
| 12       | Kennet & Avon Canal               | 99.5         | —  | —    | 14.6  | 84.9  | 225   | 1,235      | 900         | 440      |
| 46       | Lancaster Canal                   | 14.0         | —  | —    | 14.0  | —     | 50  | 209        | —           | 65       |
| 45       | Leeds & Liverpool Canal           | 16.6         | —  | —    | 13.2  | 3.4   | 74  | 294        | 2,970       | 1,825    |
| 43       | Manchester Bolton & Bury Canal    | 13.9         | —  | —    | 9.2   | 4.7   | 107   | 10         | 155         | 110      |
| 14a      | Monmouthshire & Brecon Canal      | 56.0         | 52.0   | —    | 4.0   | —     | 255   | 589        | 180*        | 440      |
| 25       | Nottingham Canal                  | 8.2          | —  | —    | —     | 8.2   | 14  | 133        | 82*         | 40       |
| 10       | Oxford Canal (North)              | 7.1          | —  | —    | 2.5   | 4.6   | 7   | 38         | 19*         | 35       |
| 40       | Peak Forest Canal                 | 14.2         | 13.0   | —    | —     | 1.2   | 75  | 209        | 10*         | 620      |
| 32       | Pocklington Canal                 | 15.2         | 5.2  | —    | —     | 10.2  | 27  | 247        | 42*         | 70       |
| 44       | St. Helens Canal                  | 23.5         | —  | —    | 20.2  | 3.3   | 29  | 86         | 360*        | 290      |
| 34a      | Sheffield & South Yorkshire Canal | 6.3          | —  | —    | 6.3   | —     | 54  | 38         | 340         | 300      |
| 21       | Shropshire Union Canal            | 67.2         | —  | —    | 2.5   | 64.7  | 151   | 494        | 340         | 165      |
| 14b      | Swansea Canal                     | 6.1          | —  | —    | 6.1   | —     | 14  | 29         | 280         | 290      |
| 49a      | Forth & Clyde Canal               | 58.0         | —  | —    | 58.0  | —     | 143   | 333        | 3,395       | 1,560    |
| 49b      | Monkland Canal                    | 5.0          | —  | —    | 5.0   | —     | 11  | 29         | 270         | 240      |
| 50       | Union Canal                       | 48.4         | —  | —    | 48.4  | —     | 153   | 361        | 830         | 570      |
|          | Other Lengths                     | 11.0         | —  | —    | 11.0  | —     | 20  | 133        | 190*        | 200      |
|          | <b>Totals</b>                     | 815.2        | 142.7  | 23.0 | 440.8 | 208.7 | 3,177†  | 7,244+     | 22,635*     | 34,550   |

Note: Figures in italics indicate a surplus, or Net Present Value

† £4.2 M before discounting, see also Table 15.2.

+ The annual continuing cost is £760,000, but see also Table 15.3.

\* Elimination cost for part length only, total cost refers to the 467 km. for which elimination is feasible.

Table 15.2 ARREARS OF MAINTENANCE – SPECIAL ITEMS

| Canal                     | Item   | Cost<br>£000 |
|---------------------------|--|--------------|
| B.C.N.                    | Lappal Tunnel – infilling                          | 300          |
| Chesterfield              | Norwood Tunnel – infilling                         | 200          |
| Cromford                  | Butterley Tunnel – infilling                       | 200          |
| Huddersfield Narrow       | Tunnel End Reservoir – remedial works to discharge | 300          |
| Manchester, Bolton & Bury | Elton feeder – piping                              | 100          |
| Monmouthshire & Brecon    | 1) Llanfoist breach – repairs                      | 40           |
|                           | 2) Protective measures to vulnerable lengths       | 100          |
| Peak Forest               | Remedial works to length near Hyde Bank Tunnel     | 200          |
| St. Helens                | Carr Mill Reservoir – remedial works               | 150          |
| Shropshire Union          | Berwick Tunnel – infilling                         | 70           |
| (General)                 | Accommodation Bridges +                            | 400          |
|                           | Sub Total  | 2,060        |
|                           | Administration Costs (say 10%)                     | 206          |
|                           | Total £000   | 2,266*       |

+ See Section 12.4.

\* Equivalent NPC £1.7 M, additional to Table 15.1 totals.

Table 15.3 RECOMMENDED ANNUAL ALLOWANCES FOR CONTINGENCY ITEMS

| Description                          | Annual Budget<br>£000 |
|--------------------------------------|-----------------------|
| Breaches and emergencies             | 25                    |
| Specialist services and major works  | 50                    |
| Maintenance of public road bridges + | 100                   |
| Total £000                           | 175*                  |

+ Excluding operation Bridgeguard

\* Additional to Table 15.1 totals



ASHTON CANAL (Ref. No. 39, Plate 34)

*Length*

- 1) Main Line 9.6 km. navigable under L.A. Agreement.
- 2) Main Line 0.8 km. water channel (partly navigable).
- 3) Remnants of Hollinwood and Fairbottom Branches: –
  - a) 2.6 km. half of which is in water.
  - b) 2.0 km. (in short isolated lengths) eliminated.
 BWB own the land.

*Present Function*

- 1) Water sales, water supply (to Bridgewater Canal via the Rochdale Canal – both independent), land drainage, cruising, amenity.
- 2) Feeder from Huddersfield Narrow Canal (38) to length (1) above, land drainage.
- 3a) Land drainage (including overflow from Crime Lake), amenity.

*Development*

- 1) Restored to navigation in 1974; L.A. Agreement pending.

*Proposals*

- 1) BWB have applied for upgrading.
  - 2) Use as moorings. Part of 'Tame Valley Improvement Scheme'.
- 3a & b) In process of disposal.

*Most Economical Treatment*

- 1) Cruising standard in accordance with Agreement.
- 2) & 3a) Water channel.

*Elimination*

- 1) & 2) Not feasible.
- 3a) Not feasible, but disposal in hand.

| ANNUAL ACCOUNTS   |                | 1974<br>£000 | Most Economical Treatment |                       | Total Cost of<br>Elimination<br>£000 |
|---|----------------|--------------|---------------------------|-----------------------|--------------------------------------|
|   |                |              | Future Accounts<br>£000   | Arrears Total<br>£000 |                                      |
| <i>Receipts</i>   | Water          | 30.4         | 30                        |                       | Not<br>applicable*                   |
|   | Amenity        | –            | –                         |                       |                                      |
|   | Other          | 8.9          | 9                         | 39                    |                                      |
| <i>Expenditure</i>  | Engineering    | 57.5         | 30                        | 62                    |                                      |
|   | Development    | 27.6         | –                         |                       |                                      |
|   | Overheads      | 9.0          | 9                         | 39                    |                                      |
|   | <i>Deficit</i> | 54.8         | 0                         | 62                    |                                      |
| NET PRESENT COSTS (paragraph 15.10.1)   |                | £000         | 0                         | 47                    |                                      |
|   |                |              | 47                        |                       |                                      |
| Net Present Value of Land Drainage Function at £58,000 p.a. (paragraph 15.10.7) |                | £000         | 550                       |                       |                                      |

\* But allow say £4,000 for disposal of length 3(a).

OLDBURY SECTION (see Fig. 15.1)

**A. Birmingham Canal**

*Length*

- 1) Old Main Line (Smethwick Junction - Factory Junction) 10.7 km. navigable.
- 2) Gower Branch 0.8 km. navigable.
- 3) Spon Lane Locks 0.7 km. navigable.
- 4) Engine Branch 0.7 km. navigable.
- 5) Soho Loop 2.3 km. navigable.
- 6) Icknield Port Loop 1.1 km. navigable.
- 7) Oozells St. Loop 0.7 km. navigable.
- 8) Dixon Branch 0.6 km. (isolated, pipe connection).
- 9) Others 0.4 km. eliminated.

*Present Function*

Generally water sales, land drainage, also:—

- 1) Feeds Cruising length via Dudley Tunnel.
- 1)-7) Cruising and amenity.
- 4)&6) Feed Cruising lengths from Rotton Park Reservoir.
- 6) Access to Oldbury Section Yard.
- 9) Leased to industry.

*Development*

Not significant.

*Proposals*

- 5)-7) Moorings.
- 8) Lease, retaining right of water passage.

*Most Economical Treatment.*

- 1)-8) Water channel.

*Elimination*

- 1),4)
- & 6) Not feasible,
- 2),3),5),7)
- & 8) Feasible, but not cheapest solution.

**B. Titford Canal**

*Length*

- 1) Oldbury to Causeway Green 2.3 km. navigable.
- 2) Portway Arm 0.7 km. navigable.
- 3) Tat Bank Branch 0.8 km. navigable.
- 4) Piped length at Causeway Green 0.5 km.

*Present Function*

- 1)-3) Water sales, land drainage, feed to Rotton Park Reservoir, hence to Cruising lengths, cruising, amenity.
- 4) Land drainage.

*Development*

- 1)&2) Restored by L.A., Agreement pending.

*Proposals*

None.

*Most Economical Treatment*

- 1)&2) Cruising standard in accordance with Agreement.
- 3)&4) Water channel.

*Elimination*

- 1)-4) Not feasible.

**C. Dudley Canals Nos. 1 & 2.**

*Length*

- 1) Dudley Tunnel line 3.8 km. navigable.
- 2) Halesowen Arm 5.3 km. navigable.
- 3) Bumble Hole Turn 0.5 km. navigable.
- 4) Others 0.4 km. part navigable.

*Present Function*

- 1)-3) Land drainage, cruising, amenity.
- also 2) Water sales.

*Development*

- 1) & 3 km of 2) restored by L.A., Agreement pending.

*Proposals*

None.

*Most Economical Treatment*

- Restored lengths — cruising standard in accordance with Agreement.
- Others — water channel.

*Elimination*

- 1) Not feasible.
- 2) Restored length not feasible, rest feasible. but not cheapest solution.
- 3)&4) Feasible but not cheapest solution.

*Special Item*

*Lappal Tunnel* 3.5 km. was closed after a collapse in 1917, but remains in BWB ownership. A housing estate situated over part of tunnel would be affected by any settlement. Infilling would cost over £300,000. (See Table 15.2).

**D. Walsall Canal (part)**

*Length*

- 1) Main Line (Ryder's Green to Doe Bank) 3.3 km. navigable.
- 2) Wednesbury Old Canal (Pudding Green to Ryder's Green) and Ridgeacre Branch 2.3 km. navigable.
- 3) Haines Branch 0.7 km. (dewatered)
- 4) Others 0.5 km. filled.

*Present Function*

- 1)&2) Land drainage, water sales, cruising, limited amenity use.
- 4) Leased to industry.

*Development*

Not significant.

*Proposals*

- 1)&2) Part retain for through navigation, part moorings.

*Most Economical Treatment*

- 1)&2) Maintain as water channel.

*Elimination*

- 1)&2) Feasible, but not cheapest solution.

**E. Tame Valley Canal**

*Length*

- Doe Bank to Salford Junction 14.1 km. navigable.

*Present Function*

Land drainage, water sales, cruising, amenity.

*Development*

Not significant.

*Proposals*

None.

*Most Economical Treatment*

Water channel.

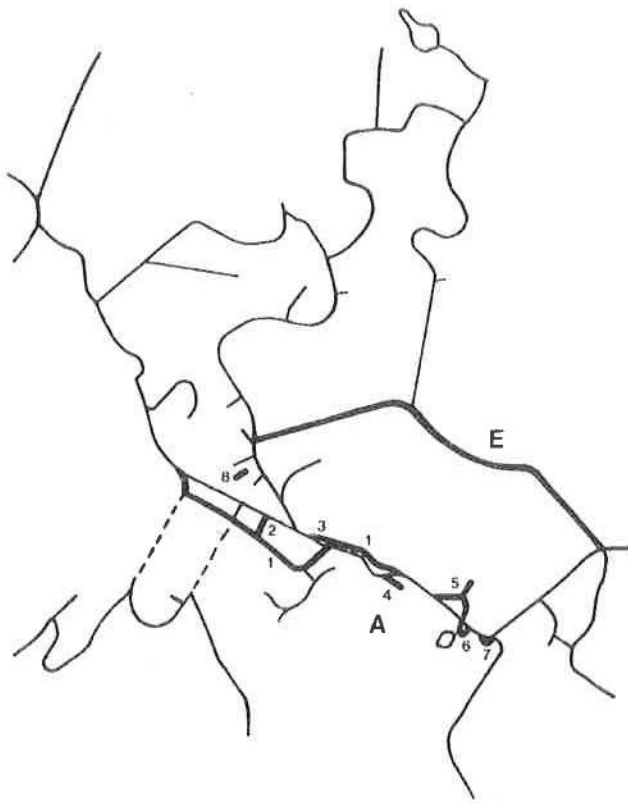
*Elimination*

Feasible, but not cheapest solution.

| ANNUAL ACCOUNTS  |                | 1974<br>£000 | Most Economical Treatment |                       | Total Cost of<br>Elimination<br>£000 |
|--|----------------|--------------|---------------------------|-----------------------|--------------------------------------|
|  |                |              | Future Accounts<br>£000   | Arrears Total<br>£000 |                                      |
| <i>Receipts</i>  | Water          | 35.2         | 49                        |                       | 6,450+†                              |
|  | Amenity        | 2.8          | 3                         |                       |                                      |
|  | Other          | 9.7          | 10                        | 62                    |                                      |
| <i>Expenditure</i>   | Engineering    | 42.7         | 68                        | 381*                  |                                      |
|  | Development    | —            | —                         |                       |                                      |
|  | Overheads      | 22.5         | 23                        | 91                    |                                      |
|  |                | 65.2         |                           |                       |                                      |
|  | <i>Deficit</i> | 17.5         | 29                        | 381                   | 6,450                                |
| NET PRESENT COSTS (paragraph 15.10.1)  |                | £000         | 276                       | 286                   | 5,350                                |
|  |                |              | 562                       |                       |                                      |
| Net Present Value of Land Drainage Function at £1,150,000† p.a. (paragraph 15.10.7). |                | £000         | 10,900†                   |                       |                                      |

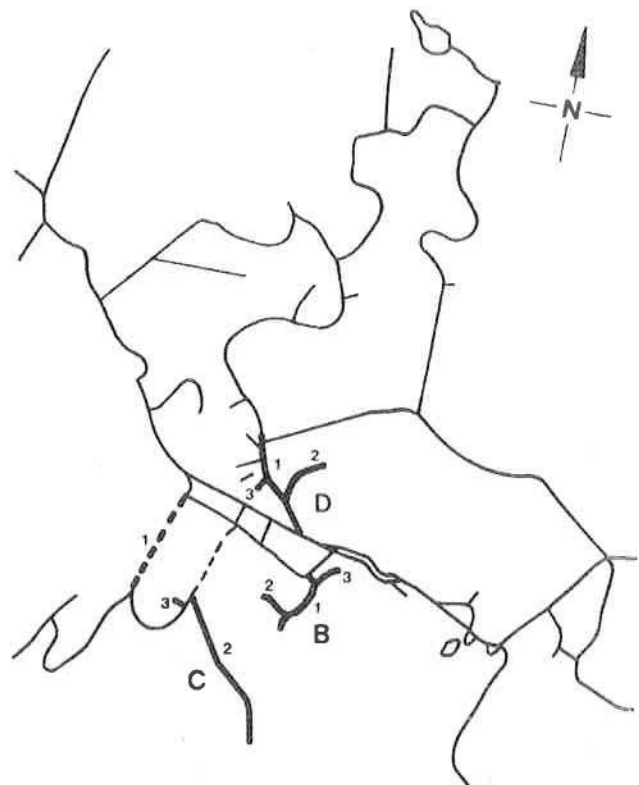
\* Excluding special item.  
+ Where feasible.

† Drainage values and elimination costs based on B.C.N. Working Party Report (see paragraph 15.10.5).



A – Birmingham

E – Tame Valley



B – Titford

C – Dudley

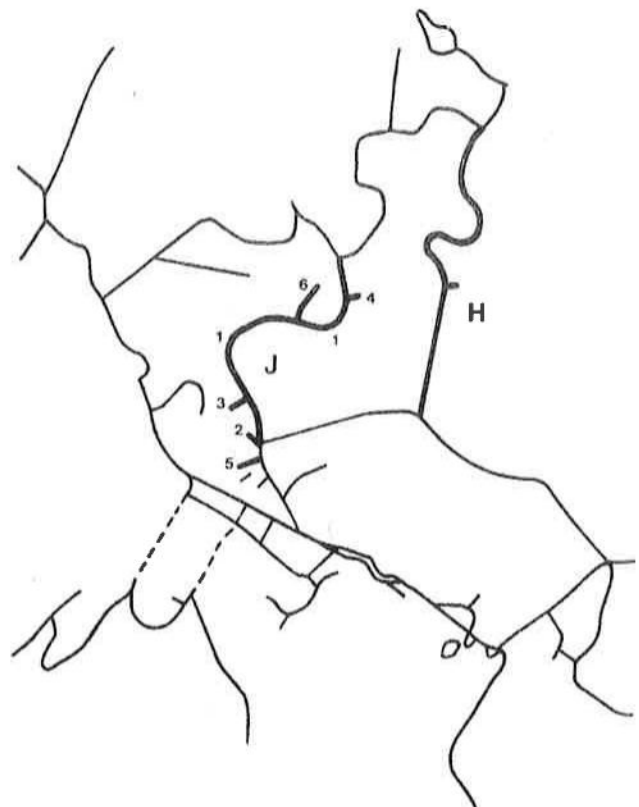
D – Walsall (part)

OLDBURY SECTION



F – Wednesbury Oak

G – Wyrley & Essington



H – Daw End + Rushall

J – Walsall (part)

WALSALL SECTION

Fig. 15.1 B.C.N. KEY PLANS

