

Montgomery Canal: Regeneration through Sustainable Restoration (A Conservation Management Strategy)

Montgomery Canal Partnership

September 2005



With funding from



FOREWORD

This document is the Montgomery Canal Partnership's framework for delivery of further sustainable restoration work on the Canal and wider regeneration of the waterway corridor. It has been produced by the Project Manager employed specifically by the Partnership for this work, with assistance from many people including the Partners' representatives on the Partnership.

This is the agreed final document, following circulation of a public draft in February 2004. Numerous changes and improvements have been made to the draft version, following extensive feedback from within the Partnership organisations and from other organisations and individuals.

We would like to thank all who have contributed to the development of this strategy, and look forward to your support in continuing to safeguard, restore and value the features and values of the canal, which make it so special. The canal arouses many passions, for it is a much loved canal, and it is now incumbent on us all to work together for a better and sustainable future.

Montgomery Canal Partnership

23rd September 2005

Front cover: Saturn Fly Boat, Montgomery Canal, September 2005
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British Waterways, 100019843, 2005.

ACKNOWLEDGEMENTS

This document is the Montgomery Canal Partnership's finalised document on the framework for delivery of further sustainable restoration work on the Canal. It has been produced by the Project Manager employed specifically by the Partnership for this work, with assistance from many people including the Partners' representatives on the Partnership.

A draft document was published for public consultation in March 2004, and this is the final document resulting from both that consultation and further debate within the Partnership. Since the public draft was published, a wide ranging Options Appraisal has also been carried out, reviewing all future options against social, environmental and economic criteria. This has also contributed to refining this Strategy, and a summary of the appraisal has been included within, as an additional chapter.

Nine specialist reports have also been commissioned as part of this work, and fifteen organisations within the Partnership have devoted much time during the lively debates and discussion during our regular meetings. To those who have attended those meetings, and other specialists who have commented and advised during the preparation of this document we express our thanks.

During consultation, over 700 questionnaires were completed during the consultation work. Many of these were from local residents, whose views are vital, as the future of the Canal must be one that embraces and respects the values of as many interests as possible.

Last but not least, we must express our thanks to the various funding agencies who have made this work possible:

Heritage Lottery Fund
European Objective 2
British Waterways
Powys County Council
Shropshire County Council
Inland Waterways Association
Shropshire Union Canal Society
Countryside Council for Wales
English Nature

We hope you like the result, but please remember the Strategy is the starting point for achieving the vision outlined. Many more years of fundraising and enhancement works lie ahead, and we hope that we can continue to rely on your help as we move on to deliver this exciting project.

Montgomery Canal Partnership
23rd September 2005

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1. INTRODUCTION

Summary of chapter

This document has been prepared by the Montgomery Canal Partnership, to guide the restoration and future management of the canal. The Partnership consists of fifteen organisations, representing local authorities, navigation groups, conservation organisations, and British Waterways, who own and operate the canal.

The strategy has been prepared over the last twelve months, with specialist input from a range of supplementary surveys and reports, together with widespread consultation between partners and the local community.

The Strategy has been developed in order to ensure that the restoration meets the needs of all interest groups, notably resolving some previous tensions between navigation and nature conservation. It also includes the built heritage and seeks to ensure that the canal meets the aspirations and needs of the local community for recreation and rural regeneration.

The canal was built in several sections, initially to supply limestone from Llanymynech, and extended from Frankton Junction, near Ellesmere, to Newtown 34 miles south. The canal declined with competition from the railways, and was abandoned in 1936, following a major breach at Perry Aqueduct, close to the northern end.

The restoration of the canal dates back to 1969, when threats to build a link road on the Welshpool section led to a major outcry from locals and boating interests alike. Since then restoration has proceeded in a series of small projects, with major input from voluntary groups and local authorities as well as British Waterways. There is now seven miles of the canal open in England, connected to the Llangollen Canal, and a further eleven miles in Wales, centred around Welshpool, but this section is isolated from the main network. Just over half of the canal has now been restored and re-opened to navigation.

This document now provides a framework for delivering a sustainable restoration that seeks to meet the needs and values of all.



Figure 1.1.
**Map of the Montgomery Canal
 (Current State).**

1.1 THE PARTNERSHIP

This Strategy has been prepared on behalf of the Montgomery Canal Partnership, whose members are:

British Waterways (BW)

Montgomery Waterway Restoration Trust (MWRT)

Powys County Council

Shropshire County Council

Oswestry Borough Council

Countryside Council for Wales (CCW)

English Nature

English Heritage

Cadw

Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW)

Environment Agency

Shropshire Union Canal Society (SUCS)

Inland Waterways Association (IWA)

Shropshire Wildlife Trust

2024 update: Montgomeryshire Wildlife Trust were members of the partnership until withdrawing in May 2022

The Partnership was formed in 1999, following a workshop to look at the way forward for the canal restoration. Membership has grown during the process of consultation and development of ideas, but overall the members represent a wide spectrum of interests, from government agencies to local authorities to voluntary organisations. Navigation, the built heritage and natural heritage are represented, and we have endeavoured to be inclusive throughout the planning and consultation process.

The Partnership is led by British Waterways, who own and manage the canal, but the special nature of the Montgomery Canal has meant that all organisations have played an important role at various times in the development of policy and the Strategy. The Partnership has acted as a project management board for the duration of preparing the Strategy.

1.2 PURPOSE

The Montgomery Canal is a much-loved canal: it has 127 listed buildings within British Waterways ownership, it is designated of international importance for its wildlife and it has been described as the prettiest canal in southern Britain. Proposals to declare it a nature reserve date back to 1955, and it has been the subject of a restoration campaign for navigation since 1969, when between two and three hundred volunteers and local community people took part in the “Big Dig” at Welshpool. This was in response to a threat to infill the canal as part of a Welshpool relief road.

Since then two sections have been restored to navigation, the connection with the Llangollen Canal at Frankton and a section centred on Welshpool, but plans for restoration have at times caused a conflict with other interests, especially nature conservation.

However, there are many reasons for not accepting the status quo, or a do nothing approach. Nature conservation interest declines, as ecological succession takes hold, and the rare aquatic habitat disappears into a reed grass swamp. The built heritage slowly deteriorates, and indeed if the Vyrnwy and Aberbechan aqueducts fail (and both need major repairs), then the source of water to maintain the ecology in Wales will be lost. Underlying everything was a feeling that the canal was a resource that was highly valued, but under-used by the local community.

The canal needs a *sustainable* future – one in which its values are protected, enhanced and above all enjoyed within an economically viable framework as recognised by the Montgomery Canal Partnership’s mission statement:

“To restore the Montgomery Canal as a flagship model of sustainable canal restoration with a strategic focus on rural regeneration. To protect the canal’s unique environment and heritage through research, management and excellence in design. To increase access for all through interpretation with the promotion of tourism and educational use”.

It was recognised that in order to reconcile all these interests, and provide a way forward, an overall plan or strategy was needed. This Strategy has been expanded to cover rural regeneration and the wider canal corridor. The Partnership has also sought to build a vision of its wider role in and for the local communities along its length. For this is a rural canal, and for all its national and international labels, its future must also be as a hub for local people, be it as a source of local jobs, or a quiet place to briefly get away from it all and absorb the quality of life.

This Strategy seeks to pull all of these strands together, and provide a framework through a series of principles and broad proposals for the sustainable restoration and management of the waterway. The Montgomery Canal Partnership has consulted widely during the preparation of this strategy, and commends it as the framework for future developments, restoration and funding applications. The Partnership recognises that the success of the scheme requires a vision that is shared by the local community.

It is essential to develop the partnership to involve wider community groups, to generate the sense of place and ownership that will be the essential driver for a successful rural regeneration scheme that meets the needs of all involved. Public involvement and commitment is vital to the future of the canal, and a bilingual non-technical summary of this strategy is therefore also available.

The Strategy now acts as both a framework and starting point for the challenges ahead.

1.3 COMPANION REPORTS

Throughout this document, we refer to previous reports and work commissioned especially for this study. These are referenced at the end of each section.

The reports and surveys listed below have been commissioned as part of the process of preparing the Conservation Management Strategy. Information from these reports is publicly available on the web at www.britishwaterways.co.uk. Further more detailed records are also available from the internal British Waterways GIS mapping system, and can be seen by appointment. Please make contact via a local waterway office.

British Waterways (2003) Welshpool Town Landscape Study

British Waterways (2005) Options Appraisal for the Future Management and Canal Restoration

BTCV Conservation Contracts (2003) Montgomery Canal Access Audit

Clwyd-Powys Archaeological Trust (2003) Montgomery Canal Conservation Strategy: Landscape Archaeology Assessment, CPAT Report No 550. 122pp + maps

Clwyd Powys Archaeological Trust (2003) Aerial Survey: 245 images

Eaton, J., Willby, N. and Hatton, K. (2003) Aquatic Macrophyte Research Summary

Eaton, M. (2003) Built Heritage Assessment

Godfrey, M. (2003) Landscape and the Montgomery Canal Corridor

Newbold, C. (2003) Aquatic Macrophytes Survey of Nature Reserves

Ponds Conservation Trust (2004) A Spring and Autumn Survey of the Aquatic Macro-invertebrates of the Montgomery Canal

Rural Resources and Godfrey, M. (2003) Montgomery Canal: Community Consultation Report

Ponds Conservation Trust (2003) A Spring Survey of the Aquatic Macroinvertebrates of the Montgomery Canal

Wetlands Advisory Service (2003) Aquatic Habitat Design Guidelines

Wilkinson, I. (2003) Montgomery Canal Report: Waste Water Treatment and Reed Beds. 7pp.

1.4 CANAL HISTORY: CONSTRUCTION AND RESTORATION

The Montgomery Canal is actually a combination of four separate canals; the first half mile, and then on into the Weston Arm, was originally intended as part of the main line from Chester to Shrewsbury, but this was never completed. Instead the length became part of the Llanymynech Branch of the Ellesmere Canal, to serve the major limestone quarry and lime kilns at Llanymynech, the branch first opening in 1796. From Carreghofa the canal passes into what was the original Montgomeryshire Canal, built with support from local landowners, essentially to further the development of their estates, rather than as a commercial proposition. This proceeded in parallel to the Ellesmere branch, opening eighteen months later, as far as Garthmyl. However, as a result of funding difficulties the final section to Newtown was only opened twenty-two years later, in 1819, under the guise of a separate company, the Montgomeryshire Canal (Western Branch).

The canal traded steadily, with lime and limestone supplemented by timber and agricultural products. But by 1850 all the separate companies had agreed to join the Shropshire Union Railways and Canal Company. Plans to convert sections of canal to railway never materialised, and the Montgomery Canal remained viable until the First World War, from when there was a gradual deterioration in maintenance, and steady decline in traffic. A major bank burst near Frankton in 1936 finally led to the closure of the canal. At that time repair costs were estimated at £600!

On nationalisation in 1948 the Montgomery Canal became the responsibility of the British Transport Commission, replaced in 1963 by British Waterways Board, in turn re-organised as British Waterways in 1988. Meanwhile in 1968 the canal was classed as a remainder waterway: "to be dealt with in the most economical manner possible, consistent with the requirements of public health and the preservation of amenity and safety".

If the government had remaindered the canal, the local community had not, and there remained keen interest from both nature conservationists and canal restoration enthusiasts. The Montgomery Field Society campaigned for retention of the canal as a nature reserve in the 1950's, but could not raise the money to purchase the land. Then in 1969 came a turning point in the fortunes of the canal. Faced with the prospect of a new relief road being built along the line of the canal through Welshpool, "The Welshpool Dig" was organised by the Shropshire Union Canal Society and the Inland Waterways Association, with strong local support. One hundred and eighty people turned up, and an awful lot of mud and rubbish was shifted in one weekend. From then on the restoration progressed slowly, but with support from a range of voluntary organisations, including three visits from the Prince of Wales, and including some funding from the Prince of Wales' Committee and the Variety Club of Great Britain.

Officialdom caught on, and in 1983 a cost benefit analysis of restoration was undertaken by W.S. Atkins, and the British Waterways Act, 1987, was passed in Parliament, which protected the route and diversions necessary to cross the modern road system. At the same time funding had been almost secured from Europe for the capital costs of restoration, but late in the year, the Welsh Office refused to allow local authorities to make match funding available. So it was back to the drawing board, voluntary groups, and further support from British Waterways.

Despite this setback work has continued, with funding and support from Powys and Shropshire County Councils. Among completed projects were Gallowstree Bridge and Whitehouse Bridges, near Welshpool, which was raised to enable navigation along an ten mile length. In England four miles from Frankton Locks to Queen's Head opened in 1996, and a further three miles from Queen's Head to Gronwen Wharf in 2003, with major input from the County Council and English Partnerships.

A second major bid for funding, via the Heritage Lottery Fund was unsuccessful in 1998, as major demands on lottery funding came from a range of canal projects, and the Montgomery lost out to the Kennet and Avon Canal. However, this was the spur to the formation of the Montgomery Canal Partnership, which brought all the interested parties together into a closer consortium. An early decision of the Partnership was to seek to develop a Conservation Management Strategy for the whole canal, which would address all the diverse issues and competing needs, in an integrated holistic manner.

After more than two years of detailed research, survey work and consultation, this document is the end result, which we believe meets the aspirations and needs of everyone. The canal is a wonderful resource; come and enjoy it.

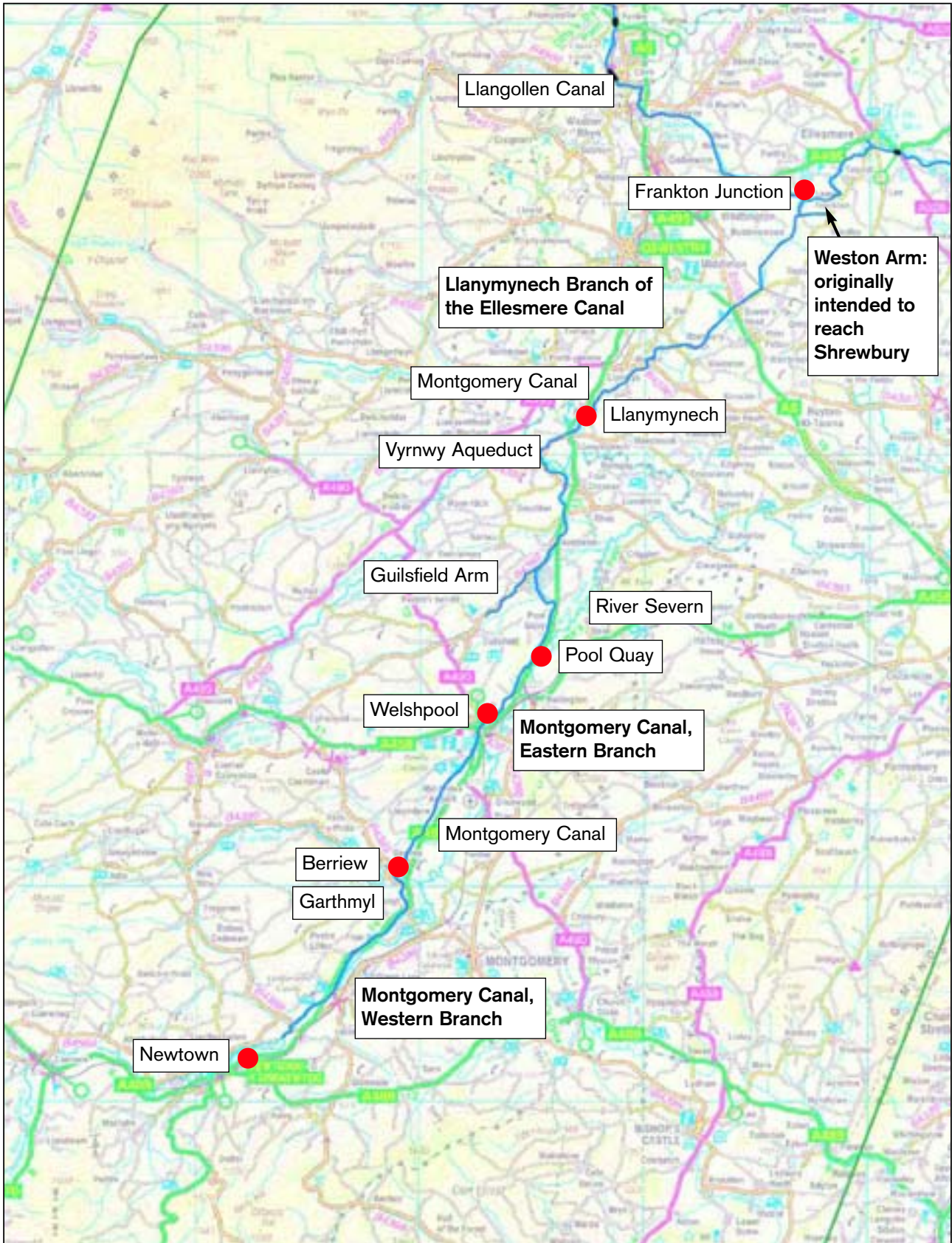


Figure 1.2.
Map showing original Montgomery Canal ownership.

2. POLICY CONTEXT

Summary of chapter

British Waterways has wide ranging duties imposed in the 1995 British Waterways Act, which include responsibilities for nature conservation, built heritage and public access, as well as navigation. This multi-functional approach was confirmed in the Framework Document for British Waterways issued by the Waterways Minister in February 1999 and continued in 'Waterways for Tomorrow', a strategic government document published in 2000. However, the status of the Montgomery Canal as a remainder waterway severely limits the resources that British Waterways can invest in the canal.

Much of the canal is designated as a Site of Special Scientific Interest, and all of the Wales length is protected under European legislation, for its rare aquatic plants. British Waterways now also have a duty to positively manage the canal for conservation, following the Countryside and rights of Way Act in 2000.

Sustainable development, the theme of this strategy, is defined by government as:

- Social progress which recognises the needs of everyone
- Effective protection of the environment
- Prudent use of natural resources
- Maintenance of high and stable levels of economic growth.

It now features as a major cross-cutting theme in a wide range of policies and initiatives, and is very strong in Wales, where it is a key responsibility of the National Assembly for Wales.

The development of the canal and canal corridor, particularly matches a range of local and regional initiatives, and the canal is specifically mentioned in the following policy documents:

- Powys, Shropshire and Oswestry Local Development/Structure Plans
- Action Plan for the Development of Welshpool
- Shropshire Tourism Strategy
- Oswestry Tourist Development Strategy
- Llanymynech Limeworks, Heritage Area Conservation Plan
- Shropshire, Powys and Oswestry Community Strategies

Community development and involvement are seen as increasingly important aspects of many such schemes and initiatives, and now underpin the requirements of many funding organisations, such as Heritage Lottery Fund.

2.1 INTRODUCTION

Many of the conservation issues and policies are covered in detail throughout the Strategy, but it is also essential to review where the proposed restoration of the Montgomery Canal sits in a range of national, regional and local policies and legal constraints.

The Strategy is a framework for more than just a conservation project, but a major scheme that will play a substantial role in the rural regeneration of the canal and its hinterland. This section seeks to summarise some of those policies, and demonstrate the range of linkages between them and the proposed sustainable restoration programme.

2.2 NATIONAL INITIATIVES AND POLICIES

2.2.1 Legislative Framework

The British Waterways Board was established by the Transport Act 1962. The **Transport Act 1968** led to the classification of the Montgomery Canal as a remainder waterway. Under the provisions of this bill, British Waterways are barred from spending money on the canal, over and above that necessary for health and safety, and maintaining the canal as a drainage channel. Restoration of the Montgomery Canal was formally enabled by the **British Waterways Act 1987**, which included very limited powers of compulsory purchase for specific road crossings. This Act was supported by a detailed agreement with the then Nature Conservancy Council.

Many of British Waterways' current duties were introduced by the **British Waterways Act 1995**, including a statutory duty regarding conservation of the natural and built heritage, preserving public access and protecting Remainder waterways for potential future use. In 1999, the Government provided BW with a new Framework Document with the following key Aim for the organisation:

“Britain’s inland waterways, comprising canals and navigable rivers, are an important national asset for future generations to enjoy. The Government is keen to see them maintained and developed in a sustainable manner so that they fulfil their full economic, social and environmental potential.”

This wide framework of responsibilities is the context within which this sustainable restoration is planned.

More recently there have been two important pieces of legislation in respect to nature conservation that are crucial to the current work. In order to fulfil United Kingdom commitments under the European Habitats Directive, a number of sites have been submitted as candidate Special Areas of Conservation, under the **Conservation (Natural Habitats etc) Regulations, 1994**. British Waterways is a competent authority within terms of the Habitats Regulations.

The Wales length of the Montgomery Canal was notified as part of this process, and its status was recently confirmed as a Special Area of Conservation (SAC). Also the **Countryside and Rights of Way Act (CROW) (2000)** imposed a legal obligation on government agencies and departments to take all reasonable steps to positively manage and where possible enhance all Sites of Special Scientific interest (SSSIs) in their ownership. These are sites of national importance, the notification of which is the responsibility of English Nature and the Countryside Council for Wales. This Act consequently applies to all of the Wales length of the canal, and the England section from Keeper’s Bridge to Aston Bottom Lock, a distance of four kilometres. Its philosophy is at the heart of the proposed sustainable restoration outlined in this document.

The Water Framework Directive is the most substantial piece of European Union water legislation to date. It requires all inland and coastal waters to reach “good status” by 2015, and implementation has started through the UK government publication “The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003”. At present (September 2005) standards required for canals have not been defined, but it is expected that the standards required to achieve favourable nature conservation status for the canal will be sufficient to meet Water Framework Directive requirements.

There is also a potential need to undertake a Strategic Environmental Assessment under the SEA Directive. However, much of the information required for this assessment is contained within this Strategy and the full Options Appraisal.

2.2.2 Economic and Regeneration Policies

Sustainable development features increasingly in a range of national initiatives and policies. The four objectives of the **UK Sustainable Development Strategy** are:

- Social progress which recognises the needs of everyone
- Effective protection of the environment
- Prudent use of natural resources
- Maintenance of high and stable levels of economic growth.

Uniquely among EU Nations, the National Assembly for Wales (WAG) has a binding legal duty to pursue sustainable development in all it does. This is achieved through a scheme adopted by the whole assembly; the first scheme, **'Learning to Live Differently' (2000)** sets out principles for how sustainable development would be at the centre of all policy-making. Progress on the scheme is reported annually, and some of the indicators have been used for the proposed monitoring of the Montgomery Canal (Chapter 9).

The **Rural Development Plan for Wales**, produced by WAG, continues the theme of sustainability, and promotes diversified farming and eco-tourism. More recently, **People, Places, Futures, The Wales Spatial Plan (2004)** has a core vision of sustainable communities, economy and accessibility, and valuing the environment. The vision for central Wales is "high quality living and working in smaller scale settlements set within a superb environment, providing dynamic models of rural sustainable development". The Plan also advocates the development of sustainable demonstration projects to promote best practice. The **Welsh Development Agency**, which is being absorbed into the Welsh Assembly Government, has a particular role in supporting business development, and accessing funding to achieve this.

Tomorrow's Tourism: A Growth Industry for the New Millennium (Department for Culture Media and Sport, 1999) lists as its first action point "a blueprint for the sustainable development of tourism to safeguard our countryside, heritage and culture for future generations". The target for tourism is to match and exceed the rate of global growth in the industry by the end of 2010. Within Wales, **Achieving Our Potential** (Wales Tourist Board, 2000) listed sustainability as the first of four themes. The Board estimates that tourism is worth £350 million per annum to rural Wales. One example of this support in practice has been **Adfywio**, a small grant scheme run by Wales Tourist Board and the Countryside Council for Wales. The scheme has provided financial support for projects, which help integrate tourism business more closely with open air recreation, outdoor leisure and the natural environment.

Sustainable development seeks to make connections between previously different aspects of government policy, and goes much further than pure conservation. Thus economic growth is possible without damaging the future, social and community policies are part of the solution, and nature conservation must also consider these issues. Government has promoted a number of initiatives through both the Home Office and the Office of the Deputy Prime Minister, one of the most important of which has been a requirement of all local authorities to produce a **Community Strategy**. English Nature have summarised many of the non ecological benefits of nature conservation in **'Revealing the Value of Nature'** (2002). Twenty-five categories of benefit included social development, cultural meanings, recreation and better living surroundings. The Countryside Council for Wales have a wider remit, which includes the promotion of sustainable development and rural tourism. In England the Countryside Agency undertake the role of promoting rural regeneration through a range of initiatives across tourism, farming, communities and access. One shared scheme which demonstrates cross-cutting linkages is the **Walking the Way to Health Initiative**. English Nature welcome access to the countryside and coast for recreational purposes where this protects wildlife, improves management, and allows people to experience and benefit from close contact with nature (**Access and Recreation Position Statement, 2004**).

The built heritage also increasingly values the role of communities; **Power of Place** (English Heritage, 2000) stresses the potential of the historic environment to strengthen the sense of community and provide a solid base for neighbourhood renewal. This was further strengthened in **The Historic Environment: A Force for the Future**

(Department for Culture Media and Sport, 2001). The Heritage Lottery Fund also advocate very close community links, and their **Area Partnership Scheme Guidelines** has formed the basis of much of the community consultation and involvement work for this strategy.

Government Planning Policy Guidance 15: Planning and the Historic Environment states: "Though choices sometimes have to be made, conservation and sustainable economic growth are complementary objectives and should not generally be seen as in opposition to one another. Most historic buildings can still be put to good economic use in, for example, commercial or residential occupation. They are a valuable material resource and can contribute to the prosperity of the economy, provided that they are properly maintained: the avoidable loss of fabric through neglect is a waste of economic as well as environmental resources. In return, economic prosperity can secure the continued vitality of conservation areas, and the continued use and maintenance of historic buildings, provided that there is a sufficiently realistic and imaginative approach to their alteration and change of use, to reflect the needs of a rapidly changing world". The equivalent government guidance for Wales is "Planning for Wales" and Circular 61/96, "Historic Buildings and Conservation Areas and Planning".

In June 2000, the Government set out a new vision for the inland waterways of the UK in "Waterways for Tomorrow", which seeks to promote inland waterways, and encourage a modern, integrated and sustainable approach to their use.

"The inland waterways are an important asset for future generations to enjoy and the Government is keen to see them maintained and developed in a sustainable way so that they fulfil their social, economic and environmental potential. We want to ensure that the many benefits and opportunities they provide are used to the full..."

...It is of course vital to protect and conserve the waterways as an environmental and heritage asset but... the system is not a museum. Navigation authorities should explore and develop new ideas and uses which, applied sensitively, can help secure the future of the system."

From Waterways for Tomorrow

A background of partnership and community is at the heart of British Waterways' commitment to the Montgomery Canal Partnership, and the Conservation Management Strategy.

2.3 REGIONAL INITIATIVES AND POLICIES

The **Rural Regeneration Zone** prospectus published by Advantage West Midlands as part of their Economic Strategy, describes a vision for the Regeneration Zone is of "a connected rural area with a strong identity, a rich quality of life for all, a healthy environment, and a strong economy". There are four strategic priorities – the economy, the environment, lifelong learning and community – and this strategy for the Montgomery Canal touches and contributes solutions to all of these issues.

DEFRA run a **Rural Development Programme** in the West Midlands which seeks to support environmental, social and economic goals.

Within Wales the Montgomery Canal falls within the **Objective 2** area, which has sustainable rural development as its second priority and provides guidance to all applicants for maximising environmental sustainability.

Mid Wales Tourism Strategy, **Naturally Different**, was a forerunner to the national strategy and again lists economic, social/cultural and environmental sustainability as a major cross-cutting theme. A tourism strategy for the West Midlands is currently (Oct 2003) in preparation, but early work highlights canals as an opportunity.

The West Midlands Spatial Strategy focuses on the need for sustainability and advocates rural renaissance initiatives concentrated in the Rural Regeneration Zone in the west of the region, which includes the canal corridor. Environmental

policy QE5 states that “other strategies should recognise the value of conservation led regeneration in contributing to the social, spiritual and economic vitality of communities and the positive role that buildings of historic and architectural value can play as a focus in an area’s regeneration”. The canal network is specifically exemplified. Other key policies are PA10 (tourism and culture) and QE4 (the water environment).

2.4 COUNTY AND LOCAL POLICIES

2.4.1 Powys

Powys Unitary Development Plan. This currently exists as a draft published in October 2004. Its content strongly reflects the support of Powys County Council for the restoration of the Montgomery Canal, and the Conservation Management Strategy.

The Powys tourism strategy produced by Powys County Council, **A Sustainable Tourism Strategy for Powys: Making Quality Count**, is still in draft form. There is no mention of individual visitor attractions such as the Montgomery Canal, but the report does note “unique heritage and cultural resources” as a strength in Powys, and talks about “the need to consider environmental/green issues” within future tourism development projects.

At a community level, key strategy documents for the areas through which the Canal passes are the Community Strategies. The **Powys Community Strategy** includes a priority action to work towards the sustainable restoration of the Montgomery Canal, and also commits to increase the sustainable tourism benefit from the county’s natural resources through the involvement of local communities.

The Welshpool Partnership’s **3 Year Action Plan for the Development of Welshpool (April 2002 – 2005)** describes a vision for Welshpool as “a truly thriving, modern market town”. Within the plan, the “attractive canal” and canal cruises are described as a strength in a SWOT analysis of the town. Linking the canal to the national network is described as an opportunity.

One project within the plan is specifically about the canal: the Dragonfly Trail, which aims to regenerate the waterside of the canal in Welshpool and increase its use by locals and visitors and to contribute to the economic development of the town by creating links with the town centre. This Plan follows earlier regeneration reports, including the **Welshpool Strategic Overview** (1998) and **A Future for Welshpool** (1998), both of which identify the potential of the canal to contribute to tourism, quality of the local environment and local heritage. The latter report is sufficiently enthusiastic to note that “If the canal development does go ahead, Welshpool is set to become a major tourist destination in Mid Wales”.

2.4.3 Shropshire

Shropshire and Telford and Wrekin Joint Structure Plan 1996 – 2011 specifically states (Policy P30) that proposals for the restoration of the Montgomery Canal to cruising standard will be given favourable consideration. Two of the four criteria are of particular relevance to this strategy:

- the protection and enhancement of wildlife and biodiversity of the waterway and its corridor.
- the restoration and conservation of any associated buildings or features of architectural or historic importance.

Shropshire Futures: Action Plan is the County Council’s economic development strategy. It stresses the quality of the environment as a selling point to business, and Policy SP3 specifically promotes environmental excellence, with one objective to “capitalise on the high quality environment, heritage attractions, farm based tourism etc.”. It also promotes the county as a place for entrepreneurs in a high quality environment – “harnessing and promoting the observed phenomenon of in-movers setting up small, knowledge-based businesses in rural areas”.

A key aim of the **Shropshire Tourism Strategy** is to “establish Shropshire as a high quality tourism destination that uses the area’s distinctive landscape, environment and heritage assets”. It makes specific reference to the Montgomery Canal, and emphasises a sustainable approach that will involve communities and create opportunities for local people in an integrated way. There are also clear links to the Montgomery Canal through the sub-theme of ‘Landscapes of waterways and gardens’ which has been geographically linked to the Oswestry area.

The County Council published a new integrated **Community Strategy** in June 2005, which identifies a sustainable economy and environment as one of four key shared priorities. It also seeks to link with the **Oswestry Community Strategy**, which is currently under revision. The first Oswestry document referred to potential community and economic benefits of the canal, looking at possible project developments through to 2007.

Improving the Quality of Life in Shropshire 2002-2012, produced by the Shropshire Partnership also advocates four key themes:

- supporting inclusive communities
- improving the environment
- promoting life-long learning
- stimulating a thriving economy.

On a more local level, **Oswestry Borough Local Plan** runs until 2006, and a revision process is in progress. The current plan highlights the Montgomery Canal as an example of Council support for an environmentally friendly form of tourism, and supports its continued restoration as a means of rural regeneration. The new plan will reference this document as the framework for achieving this.

Oswestry’s Healthcheck is a comprehensive research exercise undertaken in preparation for the Market Towns Initiative, describes the Canal as a valuable resource in terms of the local environment and heritage, as well as being a key linear feature in the area’s landscape. Information presented within the Healthcheck, originating in the **Oswestry Tourist Development Strategy 1999-2006**, assesses the potential of the Montgomery Canal (together with 6 other current or possible visitor attractions in the area). It identifies potential in terms of the environment, sustainability, being an all year attraction, having educational value and appeal to all ages, as well as potential for job creation.

A recent development in the Oswestry area is the successful **Oswestry Economic and Community Tourism Strategic Package** for Objective 2 and Rural Regeneration Zone funding, of which developments on the Montgomery Canal form a part.

The Montgomery Canal is referred to in the **Severn Vyrnwy Land Management Initiative** Business Plan (1998), and since then has been a part of key elements of the Land Management Initiative’s work through the ‘Sustainable Canal Restoration’ Project. This work has been important in building links into the local communities and in particular with landowners and businesses along the canal corridor, and now continues within Ruralscapes, the successor to the Severn Vyrnwy LMI.

Various consultation exercises and reports about the Llanymynech Heritage Area and its possible development, dating back as far as 1987 make reference to the Montgomery Canal, demonstrating the very important physical, historical and environmental linkages between the two. The most recent of these, **Llanymynech Heritage Area Development Study** (2002), includes a suggestion to “make links to other areas of interest including the Montgomery Canal”. **Llanymynech’s Village Appraisal**, undertaken in 1998, does not refer directly to the Canal, but reports on the value placed locally on the industrial heritage, including the Canal. Most recently a management plan has been formulated for the area, drawing on the connections between the canal, the heritage area and the quarries (now a Wildlife Trust nature reserve), to develop a focal point for education and local recreation. Details are being progressed by Shropshire County Council. The Parish Council are in the process of preparing a new parish plan.

3. ASSESSMENT: STATEMENT OF VALUE

Summary of chapter

The canal passes through an attractive, predominantly pastoral, landscape, which, although diminished by modern agricultural practice, still reveals a rich and varied history. This includes prehistoric barrow remains, hillforts, and Offa's and Wat's Dykes. Llanymynech Hill, one of the largest hillfort enclosures in Britain, the Breiddens and Long Mountain have been designated Special Landscape Areas. The canal is an important feature in the landscape, tying together settlements and influencing modern perceptions. The trees and hedgerows, and the contribution of the built heritage to landscape are of special value to local residents.

127 listed structures remain along the canal, which provides a full and relatively undisturbed record of change over the history of the canal, but the channel itself is also a valuable record of the **built heritage**. Constructed for supply of lime and agricultural materials, the canal shows influences from George Buck, an innovative engineer with iron, and the later stewardship of the Shropshire Union Railways and Canal Company. The canal also has a major influence on the built heritage and vernacular architecture in the adjacent corridor. Lack of maintenance is a major threat, exemplified by the poor condition of the listed aqueducts.

The Montgomery Canal is perhaps the best canal in the country for **its nature conservation interest**, and all of the Wales length and part of England is designated as a SSSI. The particular interest of the canal is a wide range of rare and uncommon water plants. Floating Water Plantain has led to European protection of the Wales length, but Grass-Wracked Pondweed is perhaps even more interesting, with the canal containing over 90% of the UK population. The rare water plants are especially sensitive to water quality, and are vulnerable to both re-opening to navigation and ecological succession if not actively managed.

In **navigation** circles, the canal is a national priority scheme for restoration, but is very lightly used at present, especially the open but isolated section around Welshpool. This isolation leads to a relatively small contribution to the rural economy, although the opportunities are great if this section was reconnected to the inland waterways network. The canal and towpath is frequently used for other forms of **recreation**, including paddlesports and walking. Three major long distance paths already utilise the canal, Offa's Dyke Path being the best known. Opportunities for better local walks and links to cycle routes exist; these offer opportunities to residents and visitors alike. Limited angling is run by local clubs.

Water resources limit navigation in England to about 5,000 annual boat movements, and supply in Wales is a potential problem when the River Severn is in regulation in periods of drought. Quality is generally very good, especially the Wales lengths, but is vulnerable to silt disturbance and eutrophication: nutrients draining into the canal.

3.1 LANDSCAPE HERITAGE

3.1.1 Overview and Survey Approach

The assessment of the character and significance of the landscape heritage has been informed by national and regional character assessments, a landscape appraisal of the Montgomery Canal corridor, an assessment of the historic landscape, and community consultation work. The area assessed comprises the area visible from the canal – the visual envelope – as well as land immediately adjacent or historically connected with the waterway. The significance of the canal as a feature in the landscape has also been considered. More detailed landscape character assessments, which cover the whole land areas and include natural, historic, and cultural influences, are close to being published by Shropshire County Council and the Countryside Council for Wales (Landmap).

The assessment identified a predominantly attractive rural landscape, gently undulating in Shropshire and more hilly in Powys, with the Breidden and Llanymynech hills forming landmarks on the border. Mostly pastoral, historic landscape features, although diminished by modern agricultural practices, continue to shape and contribute to the local character. Landscape designations and responses from the local community show that it is a valued landscape, with the peaceful and unspoilt character of particular importance to local people. The built heritage and wildlife habitats along the canal make a key contribution to the character of landscape viewed from the waterway, as well as forming features in the landscape in their own right, and are again particularly valued by local people.

3.1.2 Landscape History

i. The Historic Landscape

The canal in all its phases cuts through a series of landscapes that have been used by humans in different ways for several millennia. It passes three known major areas of Late Neolithic and Early Bronze Age activity on the valley floors of the Severn and the Vymwy:

- **Berriew:** barrow remains, a standing stone and the remains of a ceremonial monument known as a henge.
- **South of Welshpool:** a complex of Late Neolithic and Early Bronze Age ritual monuments focused on the Sarn-y-bryn-caled cursus.
- **Four Crosses:** extensive cropmarks include the remnants of ploughed-out barrows, which excavations between 1981 and 1985 showed to be Late Neolithic and Early Bronze Age in origin.

Later in prehistory and into the Roman period, the same valley floor areas and the low hills beyond them, were populated by farming establishments which make their appearance as ditched enclosures of varying complexity. A remarkable number of such farmsteads lie within the immediate environs of the canal and in one case the canal appears to have impinged on such an enclosure. These are now evident only as below ground remains or cropmarks visible from the air. The enclosures themselves do not necessarily represent the full picture of these late prehistoric and Romano-British farms; while stock keeping undoubtedly played a major role in the local economy, cereals would also have been cultivated.

ii. Defensive Structures

The most important enclosures in the late prehistoric period are the hillforts:

- Llanymynech Hill, straddling the border of England and Wales and overlooking the canal, is one of the largest enclosures in Britain, and extending well over 50 ha. is usually considered to relate to the control of the lead ore sources on the hill.
- Dolforwyn Castle; the hill is occupied by a later defensive structure.
- Gaer-fawr at the western end of the Guilsfield branch of the canal.
- Bryn Mawr fort looks down on the canal adjacent to Pentreheylin Hall.

The centuries after the Roman withdrawal remain difficult to detect in the archaeological record. Churches are likely to have been founded in those centuries, even though nothing from that time is visible in the structures of today. Some holy wells, too, may have originated in this period.

The two great dykes, Offa's and Wat's, demarcated the Anglo-Saxon kingdoms from Wales in the Early Medieval period. The canal cuts across the grain of both of these important monuments. Coming within a few hundred metres of Offa's Dyke at Four Crosses, the canal then swings away from it before cutting across its line somewhere in the built up area of Llanymynech. A more significant relationship is with Wat's Dyke, which adopts a fairly straight course from south to north. It has been argued convincingly that for two or three hundred metres to the south of Croft's Mill bridge the canal bank and towpath have physically adopted the line of the dyke, which could presumably still be seen as an earthwork at the time of the canal's construction.

With the Norman Conquest we move into better documented times. Towards the south end of the canal on the far side of the Severn are the mottes of Gro Tump (Newtown) and Brynderwen near Abermule, while on the same side of the river to the canal is the Welshpool motte and also that at Lower Luggy.

iii. Settlements

Villages began to develop around the churches that had been founded centuries earlier, and in the case of Welshpool the settlement developed into a market town, aided by the addition of a regularly planned zone of settlement by a 13th century Prince of Powis. Isolated farms also appeared in the medieval period. In the main any that survive are overlain and disguised by more recent farm holdings, but exceptionally the Woolston building platforms close to the canal may represent one such site.

Around the villages, open-fields were exploited, the strips cultivated by one farmer separated from those of his neighbours by slight baulks of unploughed grass. Such strips rarely survive today but a memory of their presence can be found in the survival of field names such as *maes*. The canal passes through several such former open-fields: Berriew contains the most obvious examples but field names confirm others in Brithdir, Welshpool and Arddleen. In some cases ploughing in the open-fields led to the development of the corrugated surfaces known as ridge and furrow, seen extensively from Wern northwards as far as the River Vyrnwy, around Crickheath, and further north near Maesbury. However, ridge and furrow is notoriously difficult to date and some of the visible ridging may be post-medieval in origin.

Strata Marcella Abbey (Figure 3.1) was one of the major Cistercian abbeys in medieval Wales and lay on the edge of the Severn valley floor just to the north of Welshpool. The canal cuts through its precinct, and as works associated with such abbeys spread over extensive areas, it is likely that other elements of the abbey complex were also disturbed during canal construction.

Another feature in the medieval landscape through which the canal passes is the moated site at Bromwich Park in Shropshire. Such moats distinguish the residences of more affluent members of medieval society including gentry; the moats providing some level of protection and, perhaps, a sign of status.

Of a generally more recent date are the landed estates that border the route of the canal and we can identify the Glansevern and Vaynor estates in Berriew, the more extensive grounds of Powis Castle at Welshpool, the parkland belonging to Rhysnant Hall near Four Crosses and Pentreheylin Hall close to the Vyrnwy. In Shropshire were Aston Hall and Woodhouse; in the case of the former and possibly in the latter too, the parkland and grounds ran as far as the canal. Woodhouse is also notable for the construction of an unofficial canal branch, although this may never have been completed.

iv. The Canal

The driving force behind the construction of the Montgomery Canal was agrarian improvement and exploitation rather than industrial development. While the primary motivation was the transport of lime from Llanymynech (Figure 3.2), the influence of the canal was wider reaching and the archaeology reflects this. Pockets of industrial activity eg kilns, wharves and warehousing sprang up along the length of the canal, and settlements were encouraged by the convergence of canal and road. It is likely that Pant was already in existence before the canal was planned, but Maesbury Marsh is likely to have emerged with the canal, as did the holdings at Frankton Locks. The growth of Four Crosses, Arddleen, Pool Quay and Garthmyl were all encouraged and perhaps may even have been initiated by the canal. Field systems were modified as inconvenient segments left behind as the canal sliced through farms were integrated into new patterns; and previously open mosslands began to be drained and enclosed as the canal offered a mechanism for channelling the water away.

Industry was also present in the vicinity of the canal, particularly such features as watermills powered by streams that the canal crossed: Aberbechan fulling mill, the corn mill now destroyed at Abermule, and the mill at Luggy can all be cited in this context. Rednal boneworks is another past industrial site, now demolished.

v. The Twentieth Century

The changing nature of agrarian activity through the 19th century and into the 20th century has resulted in landscapes that have witnessed continued modification. Intensive cultivation in places has successfully smoothed out and often erased the physical traces of earlier features so that, for instance, the banks and ditches of late prehistoric enclosures now show only as cropmarks from the air and sub-surface remains upon excavation. Field boundaries have been removed to create larger and often more regular fields, distorting earlier patterns of land use. The drainage of fens and mosses has led to the loss of peat and the consequent lowering of the land, most obvious where the canal now runs at a higher level than the grounds through which it passes. Twentieth century activity has had a much greater impact than any of its predecessors on early landscapes and what can now be seen along the canal corridor is only a very small part of what once existed.

vi. Summary

It is possible to define two broad archaeological zones through which the canal passes. In the south it follows the Severn Valley. Hillforts, early medieval churches and later medieval nucleated settlements, mottes and, on the lower and more fertile valley floor and adjacent slopes, open-fields are all components of this rich archaeological landscape. At Pant the canal enters a second zone. Settlement patterns are more dispersed and the farms of presumed medieval date occupy the higher and drier ground, but in places there are few signs of past human activity, because the seasonally waterlogged nature of the land encouraged only transient and often seasonal activity which has left no physical trace.



Figure 3.1. Earthwork remains of Strata Marcella Abbey, adjacent to Abbey Lift Bridge.



Figure 3.2. Llanymynech Heritage Area: Hoffman Lime Kiln, Canal Depot top right.

3.1.3 Historic Landscape Character Assessment

An historic landscape character assessment was undertaken as part of the landscape archaeology work for this Strategy, and this integrates all the natural and historic influences on the canal landscape. Identified areas are shown in Figure(s) 3.3 and Table 3.1; more details are available in the main landscape archaeology and assessment report.

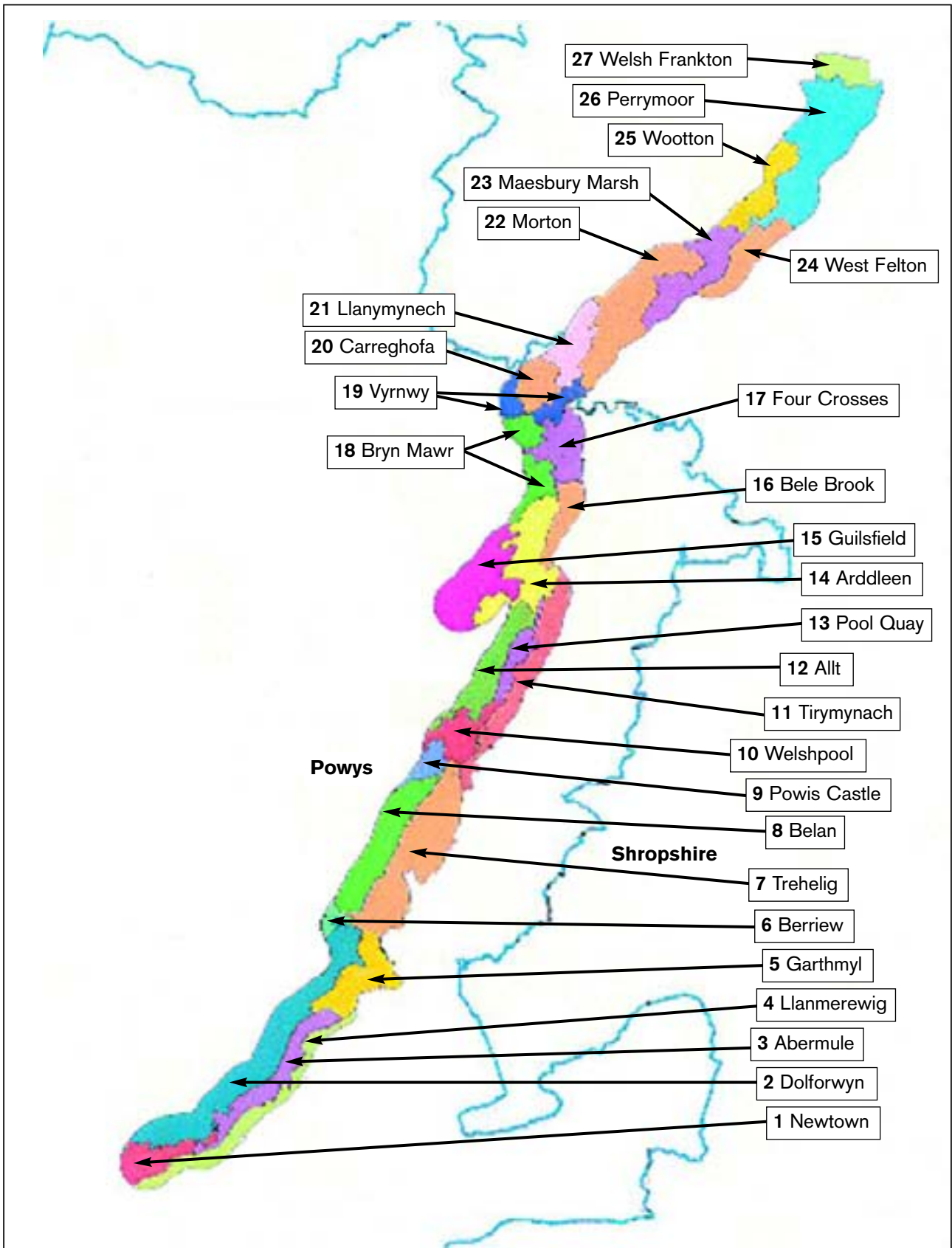


Figure 3.3. Historic Landscape Character Areas (From CPAT 2003: Landscape Archaeology Assessment).

Table 3.1. **Montgomery Canal Corridor: Historic Landscape Character Areas.**

Character Area	Description	Main Historical and Archaeological Interests
1. Newtown	Medieval market town, 18th and 19th century industry.	Medieval remains, earthwork castle, post medieval industry.
2. Dolforwyn	Woodland, plantations and dispersed farms.	Hillforts, Welsh medieval masonry castle, historic farms.
3. Abermule	Nucleated settlement.	Prehistoric burial monuments, medieval motte and bailey castle, Cistercian monastic grange, mills & historic farms.
4. Llanmerewig	Widely dispersed farms on hilly land.	Ancient woodland, prehistoric defended enclosure, historic farms, stone quarries, motte and bailey at Bryntalch.
5. Garthmyl	Post medieval cottages, 19th C country houses and parkland.	Historic ford, ridge and furrow, country houses and parkland, historic farms, canal associated structures.
6. Berriew	Medieval church settlement, Jacobean mansion.	Medieval church, parkland, and post medieval mills and other vernacular buildings including 16th and 17th C half-timbered buildings.
7. Trehelig	Medieval and post medieval farmland.	Complex of earlier prehistoric burial and ritual monuments, medieval motte and bailey, vernacular architecture, canal associated structures.
8. Belan	Widely dispersed farms, remnant broadleaf woodland.	Prehistoric hillfort, abandoned late medieval and post medieval house sites, former woollen mill and factory, canal associated structures.
9. Powis Castle	Stone castle with associated gardens and parkland.	Medieval earth and timber and later stone castle, historic gardens and parkland.
10. Tiryrynach	Floodplain of river Severn.	19th C road and railway bridges, medieval church, medieval timber waterfront, course of Offa's dyke.
11. Welshpool	Regionally important market town with 18th and 19th C buildings.	Medieval earth and timber castle and medieval church, late medieval town houses, 19th C woollen mill, canal and transport associated structures from 18th and 19th C.
12. Allt	Dispersed farms and large areas of managed woodland.	Bronze Age metalwork finds, prehistoric hillfort, historic farms.
13. Pool Quay	Clustered 18th and 19th C cottages, houses, farms and church.	Cistercian monastery, canal associated structures, 19th C church and former school building.
14. Arddleen	Small settlement largely dating from late 18th C.	Prehistoric burial monuments, later prehistoric defended enclosures, medieval fields, canal and transport associated structures including railway bridge and 18th C milestones.
15. Guilfield	Diverse landscape area.	Prehistoric burial monuments and hillfort, medieval fields, historic houses, cottages and farms. Canal associated buildings and structures.
16. Bele Brook	Area of medium sized regular fields.	Medieval field system, historic houses, cottages and farms, railway associated structures.
17. Four Crosses	Settlement which arose at the junction of several transport routes. Evidence of prehistoric settlement.	Complexes of prehistoric burial monuments, course of Offa's dyke, medieval church foundation, vernacular farmhouses, transport history features.
18. Bryn Mawr	Medieval and post medieval fields and ancient woodland.	Prehistoric hillfort, medieval earth and timber castle, 19th C manor and tennis courts where rules of lawn tennis were formulated.
19. Vyrnwy	Low lying floodplain of Vyrnwy.	Buried remains of medieval and post medieval mills, significant elements of transport history including 18th C aqueduct and 18th and 19th C bridges.

20. Carreghofa	Area of fields with scattered farms and cottages.	Complex of early prehistoric burial and ritual sites, Significant elements of canal and transport history.
21. Llanymynech	Mining and industrial processing settlements.	Prehistoric hillfort, remains of Roman copper mining and processing, course of Offa's dyke, industrial sites and structures associated with lime processing, significant railway and canal transport history.
22. Morton	Scattered farms and small linear settlements.	Prehistoric or Roman farmsteads, elements of transport history.
23. Maesbury Marsh	Low lying area of widely scattered farms.	8th C Wat's Dyke, medieval moated site, St Winifred's Well, canal associated structures.
24 West Felton	Agricultural land of medium sized regular fields.	Canal associated structures.
25. Wootton	Area of predominantly agricultural land.	Former duck decoy.
26. Perrymoor	Low lying farmland around headwaters of the river Perry.	Canal associated structures, historic parkland, Bronze age axe hammers.
27. Welsh Frankton	Dispersed canal side settlement.	Canal associated structures.

3.1.4 Archaeological Resource

The predominantly lowland agriculture of the canal corridor, and modern farming practices has meant that relatively few remains are well preserved, with, for example, numerous prehistoric burial mounds having being plough-levelled over the centuries. This increases the importance of known sites, and carries the possibility of sites yet to be discovered. Detailed maps, based on field survey and archive research are in the Landscape Archaeological Assessment (CPAT), and also through the British Waterways GIS system. Sites have been categorised at five levels:

Category A sites of national importance (54 records). It is presumed that sites in this category will be preserved and protected *in situ*.

Category B sites of regional or county importance which are of particular importance within the region (70 records). Preservation *in situ* is the preferred option for these sites, but if loss or damage is unavoidable, appropriate detailed recording should be undertaken.

Category C sites of district or local importance which are not of sufficient importance to justify preservation if threatened, but which merit adequate recording in advance of loss or damage (76 records).

Category D minor and damaged sites which do not merit inclusion in a higher category, and for which rapid recording should be sufficient (92 records).

Category E sites whose importance could not be fully determined as a result of the assessment and may warrant further evaluation (185 records).

Adherence to these standards will enable conformity with existing national and local planning policies.

3.1.5 Landscape Definitions and Designations

National Landscape Character Definition

The Countryside Agency (formerly the Countryside Commission) document "Countryside Character – The Character of England's Natural and Man-made Landscape" (1998) sets out a nationwide division of landscape character across the country. Distinctive areas of landscape are defined, relating to geological and landform features as well as the effects of human influence upon the landscape.

The country has been divided up into a series of 159 distinctive character areas. Character areas no.63 Oswestry Uplands and no. 65 Shropshire Hills cover the Montgomery Canal Corridor.

Regional Landscape Character Definition

Montgomeryshire District Council identified a number of Landscape Character Areas, in the canal corridor. These are (Figure 3.4):

- **The Flood Plain** around the lower Severn and Vyrnwy valleys.
- **Broad River Valley** including the Severn, Vyrnwy, Guilsfield, Trewern and Camlad valleys.
- **Shallow Rolling Hills** near Arddleen, Forden and Llanmerewig.
- **Isolated Border Hills** of Llanymynech Hill, The Breiddens and Long Mountain.

A detailed landscape character assessment is in preparation for Shropshire, and this identifies four different areas along the Montgomery Canal:

- **Halston Hall** – low lying, flat and wet
- **West Felton** – gently rolling and mainly arable
- **Maesbury** – low lying, but with more small settlements
- **Pant** – transitional land between Shropshire plain and upland of Llanymynech

A major change in landscape assessment and characterisation is also nearing completion in Wales. A new system is being set up under the title Landmap, and this reviews the landscape at five different levels:

- Geological Landscape
- Landscape Habitats
- Visual & Sensory landscape
- Historic Landscape
- Cultural Landscape

The visual landscape units frequently refer to the canal, but tend to cut across its route. Other layers of the landscape assessment will be published shortly after this Strategy.

Existing Landscape Designations

Shropshire County Council have identified the valley of the river Severn as an Area of Special Landscape Character; this also includes the valley of the Vyrnwy, a tributary of the Severn. The Council are currently developing a more detailed landscape character assessment for the whole county, which identifies a number of smaller landscape zones.

In Wales, Powys County Council have identified Llanymynech Hill, The Breiddens and Long Mountain as Special Landscape Areas within the canal corridor (Figure 3.5).

Given the historic and architectural significance of the Montgomery Canal support for designation of a conservation area covering the whole canal has been given in principle by planning committees of the relevant local authorities, although there are practical difficulties in resourcing this.

3.1.6 The Modern Landscape

The long history of human occupation has shaped today's landscape, which is predominantly of an attractive rural character and, although greatly diminished during the twentieth century, historic landscape features such as ridge and furrow are still evident and contribute to the local distinctiveness. Mostly pastoral in scope, substantial areas of pasture alternate with some rough grazing and, more particularly towards the Shropshire end of the canal, an admixture of arable farming. In Shropshire the landform can be described as gently undulating, in contrast with the more hilly landscape of Powys with the Severn valley becoming narrower and more steep-sided as it approaches Newtown. Of significance, and marking the border between England and Wales, are the steep and quarry scarred Breidden and Llanymynech hills.

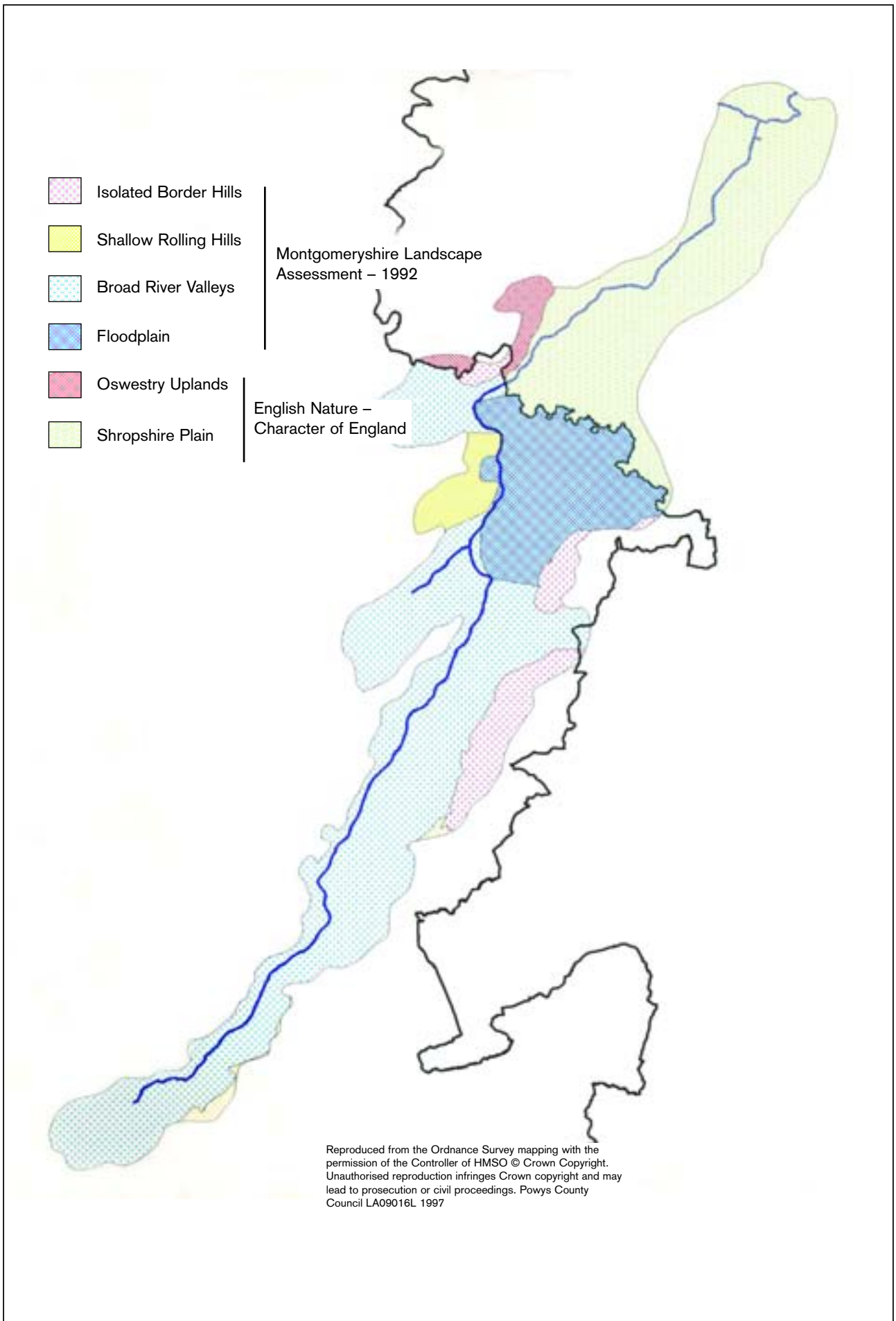


Figure 3.4. **Previously Defined Areas of Landscape Character.**

Although there is little natural woodland remaining in the region there is a “wooded” feel to the landscape with trees in small copses, rows or hedgerows with some mature trees in fields. Historic parkland areas lend a great deal to this sense of woodedness with fine mature trees lining roads, as groves or as individual specimens. Although many of these trees are native a substantial group of Californian Redwood, planted at Leighton Hall, remains a significant feature of the canal landscape. The tree lined disused railways around Llanymynech also contribute to this wooded vista.

Most farm boundary features are mature hedgerows containing standard trees, with very little in the way of post and wire. The primary building material in the region is brick with slate roofing although there are some local stone buildings around the quarries at Llanymynech and Pant and some black and white half-timbered buildings at Berriew. That said, there has been some development both on farms and other areas bordering the canal which is quite out of sympathy with the landscape. Modern metal silos on farms and storage compounds and working areas can be quite unsightly and, even when some attempt has been made to shield them, inappropriate means, such as leylandii hedging, has been used.

A review of the canal corridor reveals an interesting landscape containing a range of man-made and natural habitats providing visual variety, from the relatively flat and open northern sections to the more enclosed and narrow valley to the south. A varied traditional mix of arable, pasture and woodland use remains with a changing emphasis between the elements as one moves down the canal corridor. The canal complements this landscape and has attractive features of its own.

3.1.7 The Canal in the Landscape

The canal and its associated historical structures, even in their current underused state, have been an integral part of the landscape for over 200 years, providing mellow buildings and fringing hedges, trees and emergent vegetation. As it now stands the canal is, in many areas, effectively invisible; the only sign of its presence being the sharply humped bridges on narrow side roads. Unless done badly restoration is unlikely to make the canal structure itself any more conspicuous and thus perhaps the most obvious effect of canal restoration will be the re-introduction of the canal boat into the landscape. The predicted number of boat movements throughout is anticipated to be low and the aesthetic appeal of colourful narrow boats will, it is felt, add to rather than detract from the landscape.

The major feature, which ensures that the canal blends sympathetically with the surrounding landscape, is the nature of its boundary. For much of its length the boundary of the Montgomery canal is hedgerow and it is the height and continuity of this which gives the canal its character, both as seen from the outside and as seen by the user. It is almost always a mixed deciduous hedge with standard trees, which complements the field hedges of the surrounding landscape.

A particular problem arises when boundary features are in private ownership, many of which may be constructed of unsympathetic materials and/or be in need of repair.

Community consultation studies have shown that the contribution the canal and its associated buildings make to the existing landscape is greatly valued, both by local people and visitors to the area. Consultation also shows that there is substantial support for sensitive restoration of the canal to navigation and improved access for informal leisure activities. Our public consultation study demonstrated that where wildlife interest on the canal is valued, it is often for its visual nature. Thus the wild flowers in the emergent vegetation and swans were constantly referred to, and should be regarded as part of the local landscape.

3.1.8 Vulnerabilities

Landscape is the sum of all other activity and human influences overlaid on natural forms. Thus all future developments and activities will introduce change to the landscape. Neglect of the canal will lead to deterioration of its contribution to the landscape, but unsympathetic development, both canalside and in the wider corridor, is also a potential threat. These opportunities and threats are addressed further on in the Strategy, but can be accommodated through careful planning and design.

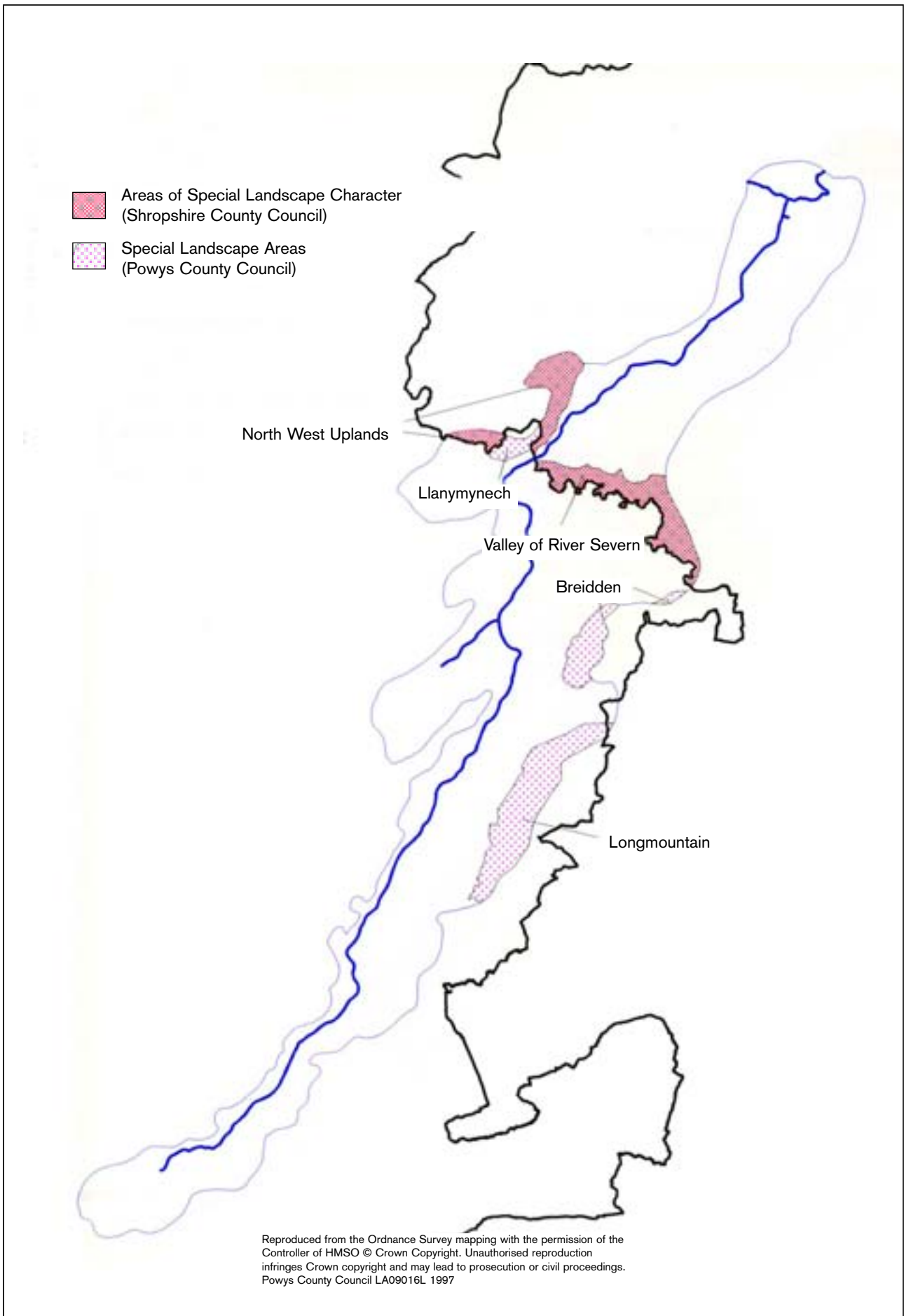


Figure 3.5. **Designated Special Landscape Areas.**
 (note that the Landmap and landscape character assessments will replace these when published in the near future)

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<http://landmap.ccw.gov.uk/>



3.2 BUILT HERITAGE

3.2.1 Overview

There are 127 listed structures in British Waterways' ownership along the Montgomery Canal although there is only one grade two star listed structure on the canal, a paired cast iron bridge over the canal and River Severn near Abermule. This represents about three times the national average per mile of canal in British Waterways' ownership.

The number of listed structures reflects the rural nature of the canal, and the relative lack of development or early unsympathetic restoration. A British Waterways heritage survey in 1994 identified a further seventy site records, including outbuildings and original properties too modified to merit listing, but still of local importance. The survival rate is mirrored in the number of smaller structures, including for example cast iron signs, crane bases and original sheds. Following survey work for this Strategy, many of the small structures are now recorded on the British Waterways' GIS system, and additional buildings have been identified and recommended for inclusion within heritage records.

The value in the Montgomery Canal is the surviving range of structures that form a relatively complete record of a once thriving rural canal. It is important to include the canal channel itself in this assessment, as it is the continuous link that binds the history and other buildings together, and an engineering structure in its own right. The channel is the basis for the corridor of opportunity that this strategy seeks to realise and develop.

3.2.2 Description

i. The Channel

Much of the original channel survives from each of the three phases. Dry sections near Pant, the Guilsfield branch, and south of Freestone Lock show the original material and profile of the 1790s, and make the important point that like most rural waterways of its period, the canal had soft edges except at specific points. Change to the channel is most obvious in the rebuilt and strongly engineered stretch across the Perry Valley. Archaeological assessment at the time of reconstruction revealed the marginal standards of the original construction here, the channel being little more than parallel embankments channelling water. Stone pitching was confined to wharves, with coping at locks and bridge approaches, and the towpath was also soft-edged.

ii. Bridges

Bridges are by far the most numerous of the canal's historic buildings. Of these, the brick elliptical arch was most common, exemplified by Lockgate Bridge near Frankton. These bridges were part of the first phase of construction, and are a key feature of the canal's character, and later alterations and repairs have not yet obscured this.

Notable iron bridges on the canal are the small accommodation bridges using T-section cast iron girders with a cambered upper rib, and incorporate sockets for wooden fence posts. Their survival shows the suitability and lasting qualities of cast iron when properly applied.

iii. Locks

More obviously than buildings, locks are working mechanisms, and their form presents special constructional problems. The result is that locks are subject to deterioration and wear, calling for repeated repairs and rebuilding. There is no evidence that any of the locks is unaltered, and their historical interest lies mainly in the gates and paddlegear. These belong to the later phases of the canal's history, and are considered below. Locks are particularly important because they so often form part of a complex of canal buildings including houses, bridges, wharves, cranes and limekilns. Carreghofa and Belan are outstanding examples.

iv. Aqueducts

In line with the conservative engineering of the whole waterway, the original aqueducts were all of masonry with a clay puddle lining, and all gave trouble. The Vyrnwy, Berriew and Aberbechan aqueducts are the canal's outstanding engineering features, dating from its first, second and third phases respectively. Because of their structural problems,

they have undergone extensive repair: Vyrnwy externally braced, Berriew refaced and its channel perhaps narrowed, and Aberbechan rebuilt in 1859 behind its original facing. Like the repaired bridges, this constitutes part of their historical interest.

v. Canal Housing

The construction of the canal through a largely rural landscape introduced a group of workers who were dependent on the canal for their livelihood and whose housing developed alongside the canal. Not including the lock keepers' cottages, around 85 other dwellings were built on or close to wharves, mostly in canalside settlements such as Welshpool, Newtown, Garthmyl, Belan and Maesbury Marsh. The majority of these houses still survive, with particularly good examples including a cottage on the wharf at Four Crosses and Chain Cottage, Garthmyl, both of which are stone-built, and two adjoining company houses at Pant, brick-built in the company style.

Aston lock house retains most of its original features and character, being typical of the very early nineteenth century. The lock keeper at Frankton, with four locks to look after would seem to have merited a larger house than that provided. Lock houses continued to be built and altered throughout the nineteenth century, usually equipped with privy, pigsty, stable and sometimes other outbuildings. It is important that their historic character and features should be retained, as has been achieved at Burgedin. Lock houses at Dolfor, Byles Lock and Frankton have all had alterations to windows and doors, which reduce their historic interest.

vi. Wharves and Warehouses

Numerous wharves developed along the canal, with at least 25 having been identified to date, mostly associated with the shipment of limestone, coal and timber. Newtown Wharves were the largest on the canal and had a unique multi-dock loading system with single boat docks branching-off a central loading-basin. Welshpool Wharf and Yard was also an important wharf on the Montgomeryshire Canal and is considered separately below.

More rural wharves developed to serve local needs, often leading to the development of small settlements as at Garthmyl. Gronwen Wharf, near Maesbury Marsh, was the canal's link to the Oswestry Coalfield, via a tramway which ran directly onto the canalside, while Pool Quay provided a link with river traffic on the Severn (see Fig. 3.7). Elsewhere, Crickheath Wharf and Tyddyn Basin, at the end of the Guilsfield Branch, are well preserved examples of rural wharves.

The aim of the canal was primarily to carry limestone, coal and timber, so warehouses are relatively uncommon. The warehouses largely belong to two phases, with those built before c. 1850 tending to be in the vernacular style, often in rubble stone or brick, with slate roofs. Pentreheylin warehouse, built c1824-31, and restored in the late 20th century, was alongside a timber wharf and is of a particularly high architectural standard, a rare example of a showpiece building on the canal. Richard Goolden's warehouse at Clifton Bridge, and that at Welshpool Aqueduct, each formerly with its crane, are also good examples of essentially vernacular design and construction. A later phase of building, between around 1870 and 1900, reflects the investment of the Shropshire Union Railway and Canal Company, perhaps most notably including the warehouse on the Welshpool Town Wharf which now houses a museum. Other structures of this date show extensive use of timber and corrugated iron, a particularly good example of which survives at Queen's Head. By their scale, style and materials they tie the canal as closely to its landscape setting as their function ties it to the area's economic life.

vii. George Buck's Contribution

Appointed engineer of the Eastern Branch in 1819 and engineer and clerk to the Western Branch in 1832, George Buck made an outstanding contribution to the canal's built heritage. He designed the canal's unique paddle-gear, which survives widely and is still working at Carreghofa Locks. Buck also installed many sets of cast iron gates as shown by the distinctive curved recesses in lock chambers. The last surviving example was removed from Welshpool to the Stoke Bruerne museum in the early 1970s, along with the stone sill bearing Buck's name. Along with Buck's cast iron aqueducts and bridges, these features are a very important element of the canal's character. They are also internationally important as early examples of the use of structural and functional cast-iron.

viii. The Shropshire Union Railways and Canal Company

In 1847 and 1850, the Eastern and Western Branches amalgamated with the Shropshire Union Railways and Canal Company (SURCC), which thereafter controlled them until 1922. The SURCC balanced its canal and railway interests in such a way that the Montgomery Canal survived as a working waterway into the second quarter of the 20th century, receiving the final additions to its buildings and character. A colourful commercial enterprise of this period was the short-lived flyboat passenger service from Newtown to Rednal. It is claimed that the unique brick and timber warehouse at Rednal was made use of for this service, but there is no proof of this. It is an example of a vernacular type of construction found usually in the late 18th century, and it is possible that the warehouse predates the canal, like Heath House on the opposite bank. Associated with the canal's only turnover bridge, and the nearby 19th century railway bridge, this building forms the centre of a particularly noteworthy waterside settlement, showing continuity with an earlier period.

During the last quarter of the century, there seems to have been a swing to animal husbandry and dairying. The canal's management responded to this by providing new warehouses suitable for what were usually powders and grains in sacks. Queen's Head was the largest of these, with facilities for storing a variety of goods, and a basement tunnel linking it with a nearby sandpit. This warehouse, along with that at Brynderwen and a smaller example at Tyddyn, have corrugated roofs and cladding above a blue-brick basement. Other warehouses, like the recently restored example at Brithdir, were simply sheds. They were built of wood and corrugated iron, in a typically railway style. Even the grandest industrial buildings are normally built of expedient materials; in the late 19th century, they included corrugated iron.

Carreghofa aqueduct, built in 1866-1870, to accommodate the railway, has a slope-sided trough in wrought iron supported on cast iron columns and bracing struts, and is one of the most advanced engineering structures on the canal. Blue engineering brick was used extensively in the late 19th century, with little regard to local style. This is at its extreme in Brithdir lock house that was rebuilt in the 1890s, entirely in blue brick.

ix. Welshpool Wharf

As the only town on the canal between Frankton and Newtown, Welshpool became the canal's principal trading centre. During the early 19th century Aqueduct warehouse was the principal building. By 1884 the building that now dominates Town Wharf was fully developed. The new and substantial canal maintenance yard, now Travis Perkins, was also established.

It is a particularly noteworthy survival, in view of its date and its completeness, and further study would be justifiable. The lock mill wheelpit and buildings on Hollybush Wharf survived as late as 1981, but have now been lost, although some of the small buildings, including the canal office and warehouses at the rear of the wharf, still survive. The remains of another of the town's wharves, associated with a bank of limekilns and including a dry dock, was recently uncovered during excavations further north, although no visible structures now survive.

x. Limestone Economy

Carrying limestone, and the coal to burn it, was the canal's main purpose for most of its history, with 98 limekilns along its length in its heyday. The industrial heritage area complex at Llanymynech was the first destination of the canal, and boasts numerous important archaeological and building remains, including incline tramways to the wharves and the exceptional Hoffman limekiln, whose chimney dominates the area. The complex is arguably the most significant historic site along the canal and is of national importance and a rare industrial survival, illustrating not only developments in the lime industry, but also its impact on the wider landscape. Although many of the other canalside limekilns have now been lost, the remains of around 35 kilns can still be readily identified, with particularly good examples at Llanymynech, Belan and Pant. The limekilns are some of the most impressive features of the canal's built heritage and they are of particular importance where they are associated with other notable features, as at Belan, Garthmyl, and Brithdir, as well as Llanymynech. One of the greatest concentrations of canalside limekilns in the United Kingdom was built on the very extensive Newtown Wharves where some of the kilns survive.

xi. Water Economy

The canal required a large and reliable supply of water, and for most of the canal's length there was a surplus supply which could be utilised to power small-scale industry. The majority of the canal's water supply was provided by gravity feeds. The western end of the canal, however, faced a problem as the demand for water from existing mills prevented the use of a gravity feed from the Severn, necessitating the construction of a pumping house at Newtown to draw water from the river. Originally water-powered, the pump was later powered by steam and then diesel, and although the machinery and part of the structure have now been removed, the surviving building is an important piece of canal architecture.

Where a surplus of water was present a number of mills developed alongside the canal, the most significant of which was the Powis Estate complex, to the south of Welshpool. The mill and buildings date from the 1840s, and form one of the most important surviving industrial features on the canal, originally comprising a sawmill and bone mill. In addition, the Powis Estates home farm at Coed-y-Dinas, south of Welshpool, made use of water from the mill-pool at the estate sawmill to feed the boiler of a steam engine installed in 1872 as part of a 'model farm' along the lines of an impressive establishment at the nearby Leighton Estate. As well as providing a source of water, to the east of Queen's Head the canal also acted as a drain, enabling the improvement of the surrounding moss.

3.2.3 Description: The Wider Corridor

i. Canal-side settlements

The creation of the canal had a profound effect on both the materialisation of, and development of, settlements along its length. There were, of course, existing centres of population adjacent to the canal that had been there for hundreds of years in some form or other, including Newtown, Berriew, Welshpool and Llanymynech. The coming of the canal had an impact on all of these places, but to a varying degree. In Welshpool, housing was already spreading down Severn Street in the mid-18th century, so the arrival of the canal served simply to encourage new building activity in its vicinity, including the wharf and the buildings that lined it. The development in Newtown was on a different scale: the period that witnessed the development of the canal saw a marked expansion in the industrial base of Newtown including in the east around the terminus of the canal. Llanymynech also increased in size with the canal-side industrial complex of kilns and associated features on the north side of the village.

Yet some settlements were a direct response to the construction of the canal. Garthmyl was for the period from 1797 to 1815 the terminus of the canal until its extension to Newtown. Here the wharves, warehouses, kilns and houses are all a response to the canal's construction and even the Nag's Head Inn, the only building at Garthmyl prior to the turn of the 18th century was rebuilt. Clifton Bridge, west of Four Crosses, developed as a result of large extraction pits being flooded and the consequent basins being used as docks. A small complex of houses, warehouses, a barn and an office emerged here where the road up the Vyrnwy valley crossed the canal. Into Shropshire similar small communities developed in the wake of canal construction at Crickheath Wharf, the canal port at Maesbury Marsh and, almost inevitably at Lower Frankton where the Montgomery Canal met the Shropshire Union Canal, but in contrast to its Welsh section the canal passed through an agricultural landscape devoid of existing nucleated settlements in its short journey through England.

ii. Vernacular architecture and the canal

Building styles were changing around the time of the canal construction, with increasing use of brick, stone and slate, at the expense of timber and thatch. The canal provided a transport artery for the movement of the constructional materials: brick, slate, probably stone, and perhaps too, lime for incorporation in the mortar that was used for building. However, it is more realistic to identify the canal as facilitating the changes the local vernacular rather than actually causing them.

The canal also had an indirect impact, through the increasing industrialisation and organisation of the countryside through which it passed. The introduction of terraced and paired cottages was part of a changing organisation of development, for example Sarn y bryn. Canal-side settlements had a vernacular style of their own; examples include cottages edging the canal wharf at Welshpool, and the wharf-workers' housing around the old canal basin at Newtown.



South of Freestone Lock.



Vyrnwy Aqueduct.



Burgedin Lock Cottage.



Pentreheylin Warehouse.



George Buck Paddle gear.



Iron Lock Gates from Welshpool.



Maintenance Yard, Welshpool.



Queen's Head Warehouse.

Figure 3.6. **Highlights from the Built Heritage Assessment.**

iii. Canal-related industry

The nature of the canal was rural, and that its function was perceived as essentially agricultural. The 19th century witnessed fundamental changes to the agricultural landscapes of the Welsh border region, as elsewhere, with the larger landed estates in particular implementing agricultural improvements, and the canal inevitably assisted in some aspects of these improvements. The development of the lime industry (see above) was intimately related to such agricultural change, yet the improvement in transport afforded by the canal also presented new opportunities for other industrial developments, most of which can be detected in the built heritage.

Apart from the lime trade, the most significant and best-known contemporary industry was the woollen trade; both Welshpool, and in particular Newtown, developed a thriving woollen industry. The canal basin at Newtown had a number of large woollen mills close by, and elsewhere mills developed at Aberbechan, Welshpool, and Pool Quay.

Agricultural improvements brought by the canal, due to use of lime, and drainage to the Shropshire Mosses, have made important changes to the landscape (see Section 3.1). The textile industry was also contemporary with the canal, with many textile mills in Newtown (one of the driving forces for the West Montgomeryshire canal extension). Relatively few buildings remain, but these include several former factories and attic weaving lofts in Penygloddfa near the Newtown canal head, and a large old flannel factory in Welshpool town centre.

Reference has already been made to the use of water from the canal for a number of grain mills, although others developed close to the canal but with an independent water supply, as at Aberbechan, Abermule, Berriew, Pool Quay and two close to Maesbury Marsh, Park Mill and Peate's Mill. The latter is the best-preserved example of a corn mill associated with the canal, having its own canal arm 400m in length.

The shipment of coal and timber is now largely only represented by the various wharves, with the Powys Estates sawmill being a rare exception. Although the main use for coal was in lime burning, it was also used in the gasworks at Welshpool which developed alongside the canal, although only the boundary wall now remains. A number of brickworks developed alongside the canal, notably at Pool Quay, Pant and Wern, the latter at least being also associated with the extraction of clay for the puddled lining of the canal. The brickworks themselves have left little in the way of structural remains although their impact on the built heritage of the canal corridor was significant.

Three small-scale industries linked to the canal were smithing, malting and fertilizer production, all of which are represented in the built heritage. A number of smithies developed close to the canal, as at Refail, although none survive intact. Five maltings are known, at Abermule, Glan-Hafren, Garthmyl, Pool Quay and Pant, of which the Garthmyl example is perhaps the best preserved. There were three fertiliser works along the canal, including a bone mill within the Powys Estates complex south of Welshpool, as well as at Maesbury Marsh and Rednal, the later having its own canal basin.

A high proportion of the built structures in the wider corridor have been lost, but their influence often remains, and contributes to understanding of the built heritage. The buildings that do survive are therefore of increased importance. Archaeological digs have also provided valuable information, and surviving above ground structures, such as boundary walls also positively contribute to the local detail and character of the neighbourhood.

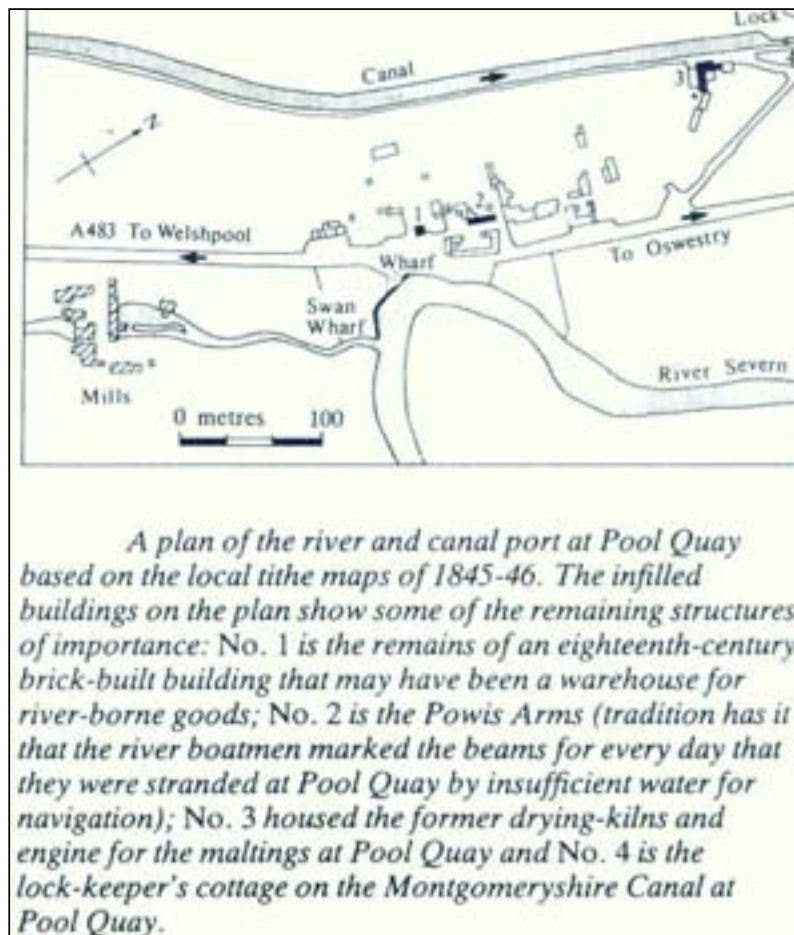


Figure 3.7. Pool Quay and connections between the canal and River Severn (From Hughes 1988).

3.2.4 Vulnerabilities

Built heritage is vulnerable in a number of distinct ways:

- **Lack of Awareness**

This may be especially true of some of the less dramatic small artefacts, such as crane bases, and old corrugated iron sheds.

- **Lack of Investment**

Old navigation structures clearly demonstrate dangers from lack of investment, itself due to no or little current use. Both the Vyrnwy and Aberbechan Aqueducts are in need of major restoration expenditure, and are vital to the future of both navigation and nature conservation as well. Other structures are suffering from benign neglect, for example lime kilns, and also require positive intervention.

- **Unsympathetic Restoration**

Non-ideal and inappropriate restoration and changes continue at present, for example heavy pointing and non-local materials. This strategy seeks to inform and educate; the challenge is to translate good policy into best practice on the ground.

- **New Developments**

Some of the important built heritage assets, for example the main canal maintenance yard at Welshpool, are perhaps at a crossroads in time. Plans to develop the site are in the offing, and there is an opportunity now to seek to incorporate the best of the old and new in sympathetic developments. Demolition is the biggest threat, but alternative viable commercial proposals are needed to provide positive alternatives, as well as invoking statutory protection.



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3.3 NATURE CONSERVATION

3.3.1 Natural Habitats of the Canal Corridor

The natural vegetation of the canal corridor has been heavily influenced by human activity to the extent that it possesses little or no natural habitat. The fragments of ancient woodland which remain cling to the steeper slopes of the valley sides and consist of sessile oak, ash and wych elm with some beech, sycamore, field maple, cherry, small-leaved lime and silver birch. Most of the other woodland which is now evident results from human planting, both of broadleaf and conifers.

Species rich unimproved grassland, an important semi-natural habitat, exists as isolated patches. Most grassland in the canal corridor is now improved as a result of modern agricultural practice, although some areas of low intensity grazing are being re-created under agri-environment schemes.

The Severn valley supports several important wetland sites and associated nature reserves and there are a number of small areas of pools, fens and mosses in the Shropshire end of the corridor. It should also be remembered that the Montgomery Canal with its associated offline reserves is an important wetland of both European and national importance, in its own right. The Natural Areas Map of this region shows the canal falling entirely within natural area 27 (Meres and Mosses).

3.3.2 A Nature Conservation History of the Canal

The first biological records for the canal date back to 1874, although the two most important aquatic macrophytes, *Luronium natans* and *Potamogeton compressus*, were not recorded until the 1930s. Notification of part of the Welsh length as a SSSI was first proposed in 1955 and confirmed in 1959. Sections in England were first designated in 1963.

Meanwhile a campaign to declare part of the canal a nature reserve was led by the Montgomery Field Society, and in 1956 Carreghafa to Pool Quay and the Guilsfield Arm were offered to them by British Transport Waterways for the princely sum of £400. The then Nature Conservancy suggested that running costs could be met by letting the fishery, but neither they, nor the Montgomery Field Society, nor the Society for the Promotion of Nature Reserves (forerunner of the Wildlife Trusts) were willing to take on the potential liabilities.

In 1969 the Montgomery Field Society regretted that the canal might be sacrificed to provide entertainment for holiday makers, but appreciated the channel was becoming choked with reed grass and applauded the work of SUCS in clearing out the Welshpool length. Efforts to declare the Guilsfield Arm a reserve continued, and a 1970 survey revealed that heavy tree shading and the spread of reed grass was adversely affecting the SSSI interest, with seven pondweed species already lost. A later survey (Paskell, 1984) demonstrated that restoration of the Prince of Wales length, north from Welshpool, restored species diversity, but only at very low levels of boat traffic.

During the early 1980s through the process of drafting the Act of Parliament that would enable the restoration of the canal, an agreement was reached between the then British Waterways Board and the Nature Conservancy Council. This involved the creation of over thirty nature reserves, the aim of which was to safeguard a representative example of the wildlife that existed within the canal. Some were tiny, but others have led to the reserves present today. The scheme was ground breaking in its time, but essentially sought to save some of the wildlife interest in side reserves as representative examples.

Since that time the importance of nature conservation has risen further up the public agenda. The whole of the Wales length is now designated as a Special Area of Conservation (SAC) under the European Habitats Directive (1994), due to the presence of a major population of Floating Water Plantain. The 2000 Countryside and Rights of Way Act imposed further duties on British Waterways to positively manage SSSI sites in its ownership, in order to maintain the nature conservation value.

This Strategy seeks to further develop the 1980s proposals, so that positive nature conservation measures fully compensate for any adverse changes brought about by restoring the Montgomery to a working canal. The Partnership believes that the best safeguard for the canal into the future is with a sensitive and sustainable restoration.

3.3.3 International Status

The canal in Wales is designated as a Special Area of Conservation, from the border at Llanymynech through to Freestone Lock and the Penarth feeder, the southern limit of the canal remaining in water. This designation is under European Habitat Directives, and is due to the presence of Floating Water Plantain (*Luronium natans*) (Figure 3.9) throughout this length.

3.3.4 National Status

Wales

The same length, from Llanymynech to Freestone Lock, is also designated as a Site of Special Scientific Interest (SSSI), on the strength of aquatic, emergent and marginal plant communities of exceptional interest. The Countryside Council for Wales accept that the canal is generally in favourable condition. Species referred to in the designation are given in Table 3.2.

Table 3.2. **Basis of Wales SSSI Designation.**

Level of Importance	Common name	Scientific name
International Importance	Floating Water Plantain	<i>Luronium natans</i>
National Importance	Grass-Wrack Pondweed Club-tailed dragonfly	<i>Potamogeton compressus</i>
Nationally Uncommon	White-legged damselfly Red-eyed damselfly	
Regionally Rare		<i>Callitriche hermaphroditica</i> <i>Potamogeton friesii</i> <i>Potamogeton praelongus</i>
Locally Rare		<i>Spirodela polyrhiza</i> , <i>Butomus umbellatus</i> , <i>Acorus calamus</i> , <i>Oenanthe fistulosa</i> .

The canal habitat was provisionally assessed as Favourable as part of the CCW rapid review of habitat feature condition on SSSI in 2003, with a medium level of confidence. While the overall plant assemblage in Wales has remained good, throughout regular surveys since the 1980s, there have been some changes. This includes declines of some significant species. The current Assessment of CCW is that the canal is favourable in respect of *Luronium natans*, but overall unfavourable with respect to aquatic macrophyte assemblages. Some individual targets for species distribution have therefore been included within the conservation objectives, for both *Potamogeton compressus* (as a SSSI feature in its own right) and the aquatic plant assemblage. Meeting these targets, as part of the restoration, will enable the canal condition to be redefined as favourable (provided other objectives defined as required are also met).

England

The canal is designated as a SSSI from Keeper's Bridge southwards to Aston Bottom Lock. The 1986 citation is, to some extent, out of date, but particularly refers to aquatic plants and demonstrating succession to a fen community. The general range of good examples of habitat is particularly noted.

The northern section of the site, to Aston Lock, was last assessed as in unfavourable but stable condition, whereas between Aston Locks was assessed as favourable condition in 2000.

However, following recent dredging and re-opening to navigation, water quality, turbidity and decline in aquatic plant assemblage all indicate that current status is unfavourable throughout the site and this is a major driver for action.

Table 3.3. **Basis of England SSSI Designation.**

Common name	Scientific name	Comment
Submerged aquatics		
Floating Water Plantain	<i>Luronium natans</i>	Not found during any BW survey since 1986
Grass-Wrack Pondweed	<i>Potamogeton compressus</i>	
Fan-leaved Water Crowfoot	<i>Ranunculus circinatus</i>	
Curled Pondweed	<i>Potamogeton crispus</i>	
Red Pondweed	<i>Potamogeton alpinus</i>	
Perfoliate Pondweed	<i>Potamogeton perfoliatus</i>	
Small Pondweed	<i>Potamogeton berchtoldii</i>	
Fennel Pondweed	<i>Potamogeton pectinatus</i>	
Water Violet	<i>Hottonia palustris</i>	
Floating aquatics		
Yellow Water Lily	<i>Nuphar lutea</i>	This is a common plant
Broadleaved Pondweed	<i>Potamogeton natans</i>	
Frogbit	<i>Hydrocharis morsus-ranae</i>	
Great Duckweed	<i>Spirodela polyrhiza</i>	
Unbranched Bur-reed	<i>Sparganium emersum</i>	
Fringing reedswamp		
Reed Sweet Grass	<i>Glyceria maxima</i>	Very common and invasive
Branched Bur-reed	<i>Sparganium erectum</i>	
Greater Pond Sedge	<i>Carex riparia</i>	
Lesser Pond Sedge	<i>Carex acutiformis</i>	
Yellow Flag	<i>Iris pseudacorus</i>	
Common Reed	<i>Phragmites australis</i>	
Flowering Rush	<i>Butomus umbellatus</i>	
Scrub and rough grass		Add diversity to site

UK Biodiversity Action Plan

Standing water and canals are a broad habitat category, and within that mesotrophic lakes are a priority habitat. Individual Species Action Plans (SAPs) exist for both *Luronium natans* and *Potamogeton compressus*; British Waterways is the lead partner for both species. The Montgomery Canal is now recognised to be particularly important for *Potamogeton compressus*, and is believed to hold over 90% of the entire UK population.

3.3.5 Local and Regional Status

The Powys Biodiversity Action Plan has a Habitat Action Plan for mesotrophic waters, though curiously there is no reference to the canal. At species level there are two action plans that the Montgomery Canal contributes towards: for the otter and Floating Water Plantain.

The Shropshire Biodiversity Action Plan has a habitat action plan for standing open water (meres, pools, canals and ponds), and canals are referred to as a refuge for species. Key species identified, and which occur on the Montgomery Canal, include water vole, otter, kingfisher and red-eyed damselfly. The Club-tailed dragonfly, for which a Species Action Plan has been written, is also present.

It is therefore clear that the Montgomery Canal contributes to a range of priority species and habitats at a local as well as national level.

3.3.6 British Waterways Data and Assessment

Systematic collection of data by British Waterways began with detailed survey work in the 1980s, with a particularly full report being presented in 1988. This confirmed that the canal was of national importance for its aquatic plant assemblages, which at the time included 5 nationally scarce and 15 locally scarce species. A further detailed ecological survey of aquatic plants, birds and some invertebrates was undertaken in 1997. Declines in breeding bird populations revealed during this study are thought to reflect environmental changes in the wider canal corridor rather than any particular problem on the canal itself. The towpath vegetation, bryophytes, amphibians and mammals were not surveyed in detail by the 1997 work, nevertheless the species richness identified confirmed the biodiversity value of the canal, and it was described as having a limited, but not insignificant, bryological interest. In particular the canal was identified as containing important populations of the internationally scarce species *Luronium natans* and nationally scarce *Potamogeton compressus* and as being a regionally important site for charophytes. These latter had colonised well in the restored Shropshire part of the canal, possibly reflecting an early stage in vegetation succession. A limited study of the use of the canal and its structures by bats, carried out in 2000, revealed that 3 species used the area for foraging and may use bridges for roosting. In 2001 the aquatic macrophytes were mapped in detail along the length of the canal and this survey has been recognised as containing the best base line data against which to judge future management.

As part of the preparation of the Conservation Management Strategy, further surveys were undertaken of the aquatic macrophytes in the current nature reserves, and of the aquatic invertebrates. Table 3.4 highlights notable species from these surveys and other collected data. Four nationally scarce water beetles were found in the invertebrate survey, and the results were typical of a high quality canal, but below the threshold necessary to merit SSSI designation on the strength of the invertebrates alone. The water plants in the nature reserves were generally typical of those found in the adjacent sections of canal.

The nature of the canal's aquatic habitat reflects the drift geology of the land through which it flows and from which it receives water. The northern section, in England, is fed from the Llangollen Canal, and before that the River Dee, but the character is influenced by the peatland through which it flows between Welsh Frankton and Maesbury. At present the Wales length is hydrologically separate, with the northern section fed with high quality water from the River Tanat and influenced by the limestone in the area. Water quality from the River Severn at Newtown, which supplies the canal as far as Wern is also good, though it suffers from increasing eutrophication, probably from agricultural run-off, as it flows north.

In nature conservation rivers and canals act as a corridor for wildlife in a narrower sense than has been referred to earlier in this document. The hedges and towpath link together a whole series of habitats, and provide a safe route for small animals to travel and spread along, thus maintaining linked populations. The hedges resemble woodland edges, whereas the towpath resembles some of our old hay meadows, having not been subject to use of pesticides and fertiliser. A cross section of a canal, and its typical habitats is shown in Figure 3.8.

These associated habitats do not have many notable species on the Montgomery Canal, but the invertebrates associated with mature hedgerow provide, for example, food for bats and various small birds. They are also important for public perception and appreciation of wildlife value. There is major scope for the extension and enhancement of these habitats with the proposed construction of a series of major new nature reserves (see Section 6.3.2).

- A Towpath hedgerow**
- B Towpath; mown grass and hay meadow**
- C Marginal vegetation; variable on offside, often hedge or woodland fringe**
- D Aquatic; open water**

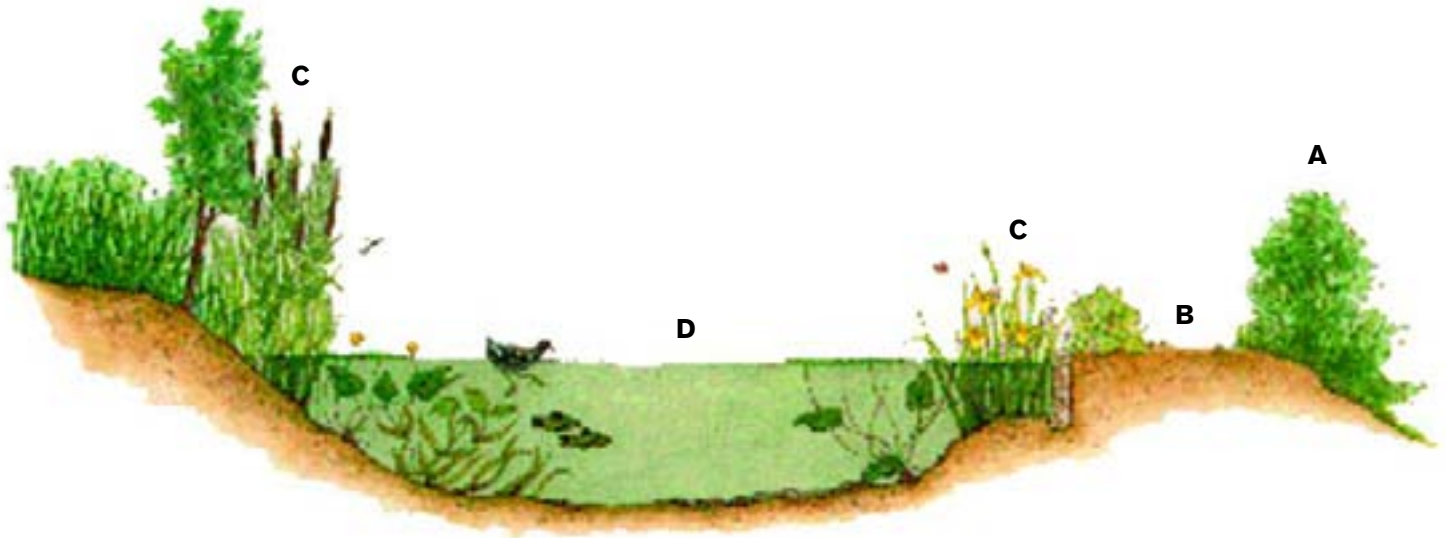


Figure 3.8. Cross section of canal showing range of habitats.

Table 3.4. British Waterways' assesement of notable species.

Species	Comment
Plants	
Vascular:	
<i>Luronium natans</i>	Nationally scarce UK
<i>Potamogeton compressus</i>	Nationally scarce UK
<i>Callitriche hermaphoditica</i>	Uncommon in UK
<i>Potamogeton friesii</i>	Uncommon in UK
<i>Potamogeton praelongus</i>	Uncommon in UK
<i>Butomus umbellatus</i>	Uncommon in Montgomeryshire
<i>Callitriche hamulata</i>	Uncommon in Montgomeryshire
<i>Callitriche obtusangula</i>	Uncommon in Montgomeryshire
<i>Carex acutiformus</i>	Uncommon in Montgomeryshire
<i>Myriophyllum alterniflorum</i>	Uncommon in Montgomeryshire
<i>Potamogeton obtusifolius</i>	Uncommon in Montgomeryshire
<i>Ceratophyllum demersum</i>	Uncommon in Montgomeryshire
<i>Ranunculus circinatus</i>	Uncommon in Montgomeryshire
<i>Ranunculus scleratus</i>	Uncommon in Montgomeryshire
Bryophytes:	
<i>Tritomaria exsectifolius</i>	Locally scarce
<i>Atrichium crispum</i>	Locally scarce
<i>Fissidens crassipes</i>	Locally scarce
<i>Barbula spadicea</i>	Locally scarce
<i>Brachythecium populeum</i>	Locally scarce
Charophytes:	
<i>Nitella mucronata var gracillima</i>	Nationally scarce

Mammals:

Bats

Pipistrelle

Noctule

Daubenton's Bat

All 3 species recorded foraging.

Also possibly using bridges for roosting.

Otter

Uses the canal throughout

Water vole

Few historic records, however new records for the Shropshire length. **There are records for this species at Gronwen Bridge.**

Water Shrew

In addition there are anecdotal records of the following Species of Conservation Concern using the canal – Hedgehog, Common Shrew, Pigmy Shrew, Brown Hare, Stoat, Weasel, Polecat and Badger.

Birds:

Mute Swan

10% of Wales breeding population (MWT).

Passerines

Many breeding species have declined through the 1990s.

Reptiles and Amphibians:

Grass Snake

Seen occasionally along towpath.

Viviparous Lizard

Recorded during 1997 survey.

Great crested newt

UK BAP Priority Species. Recent records for the Pant area.

Slow-worm, Smooth Newt, Palmate Newt and Toad recorded during 1985 survey.

Aquatic Invertebrates:

Dragonflies and Damselflies

20 species recorded on the canal and reserves;
13 species breeding.

White Legged Damselfly

Nationally rare

Club Tailed Dragonfly

Nationally rare

Red-eyed Damselfly

Nationally rare

Molluscs

26 species, 9 of which are Locally notable (1997 survey)
18 species (1987 survey)
(43 species (1987 survey)

Caddis Fly

18 Species recorded in the 1987 survey

Beetles

43 species recorded during the 1987 survey

Gyrinus aeratus

Nationally Scarce species (2003)

Gyrinus urinator

Nationally Scarce species (2003)

Ilybius fenestratus

Nationally Scarce species (2003)

Noterus crassicornis

Nationally Scarce species (2003)

Other:

Fresh water sponges

Present on the canal. Status uncertain.

3.3.7 Wider Corridor/Related Habitats

The value of the Montgomery Canal also needs to be reviewed in the context of its relationships with surrounding habitats, and links to other aquatic habitats, as for many species the canal is only one element of a series of connected habitats. The canal itself acts as a corridor connecting some of those sites together. It is also an entirely artificial creation, only two hundred years old, so to fully understand its ecology and conservation importance, it is important to identify other related habitats in the canal corridor.

Similarities exist with a number of upland Welsh ponds and lakes, in which *Luronium natans* is being increasingly discovered. There are perhaps even closer links with the Shropshire meres and mosses, which define the English Nature Natural Character Area through which the Shropshire length passes.

The populations of many species in the canal would once have been much more widespread in these meres and ponds, and many other aquatic habitats lost through agricultural improvement over the centuries. Long term conservation of the most important species will need to consider the potential role of other related initiatives, which have the potential to spread and re-introduce vulnerable species to their original natural habitats. The Montgomery Canal represents a valuable gene pool for these initiatives (see Section 6.3.7).

3.3.8 Vulnerabilities

The aquatic plant community requires long term management and intervention if it is to survive in its current state. Natural succession would, unchecked, lead to the loss of all the rare aquatic plants, and this process would be especially fast in a very narrow artificial channel (Figure 3.10). Periodic dredging and weed cutting is essential, although could be damaging if not carefully phased in sequence.

Modern farming practices are affecting the wider habitat, and this affects for example the numbers of nesting birds on the canal. A number of factors, including agricultural run-off are also reducing the water quality, on which so much of the nature conservation interest depends.

Navigation is also potentially harmful to the aquatic plant community and needs to be managed in a sustainable way. This is demonstrated by the work of Eaton and Willby (Figure 3.11), which predicts rapid decline with the reintroduction of navigation. Nevertheless sustainable navigation is seen as a mechanism to deliver the resources that will achieve the positive management essential to this habitat.

The aquatic communities are also entirely dependent on maintenance of the canal structure. They are vulnerable to either breach of an embankment (a relatively small one occurred close to Vyrnwy Aqueduct in December 2004), or failure of one of the major aqueducts (Vyrnwy Aqueduct and Aberbechan Aqueduct are assessed as in particular need of early major structural work). As a two hundred year old structure, the canal has a current backlog of desirable work, and without major investment this will increase, and the risk to nature conservation interest will correspondingly increase.



Figure 3.9. *Luronium natans* (Floating Water Plantain): The Source of European Designation.



Figure 3.10. **Vulnerability: loss of open water on neglected length.** Gronwen Wharf, 2000.

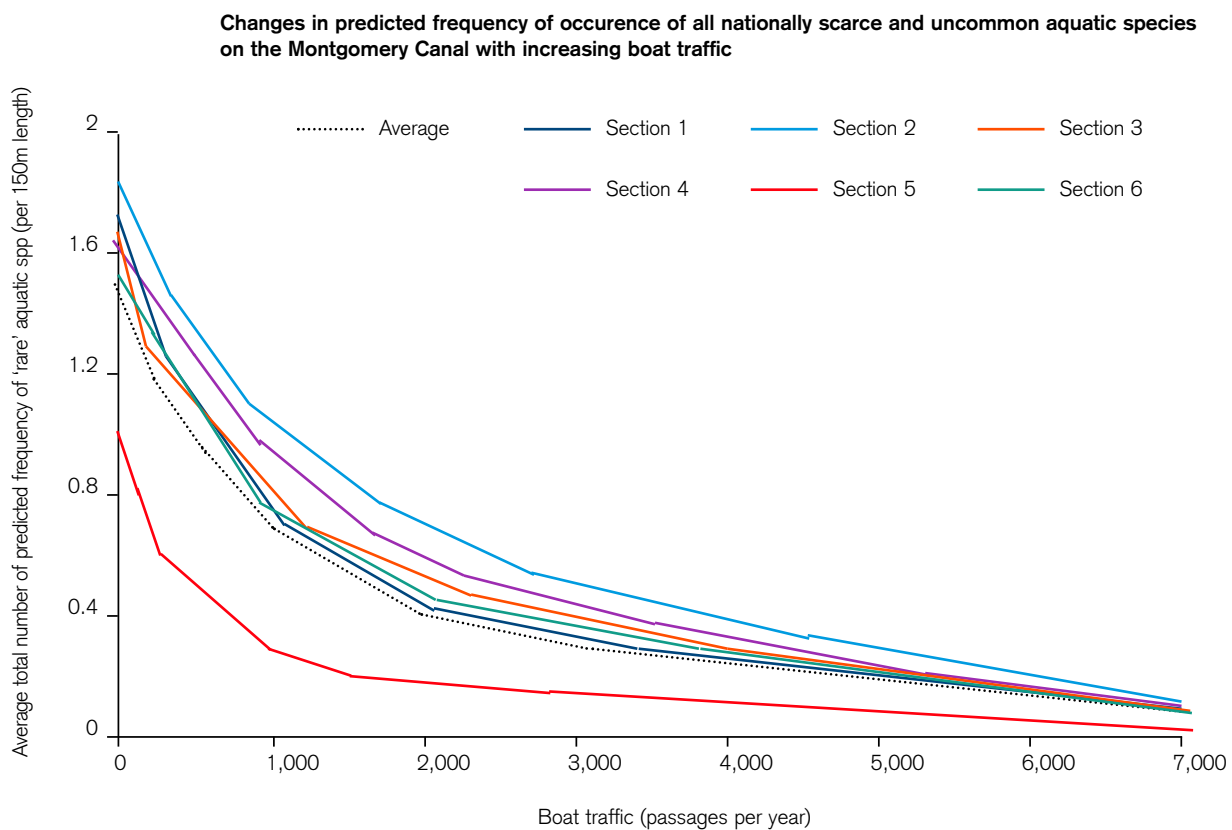
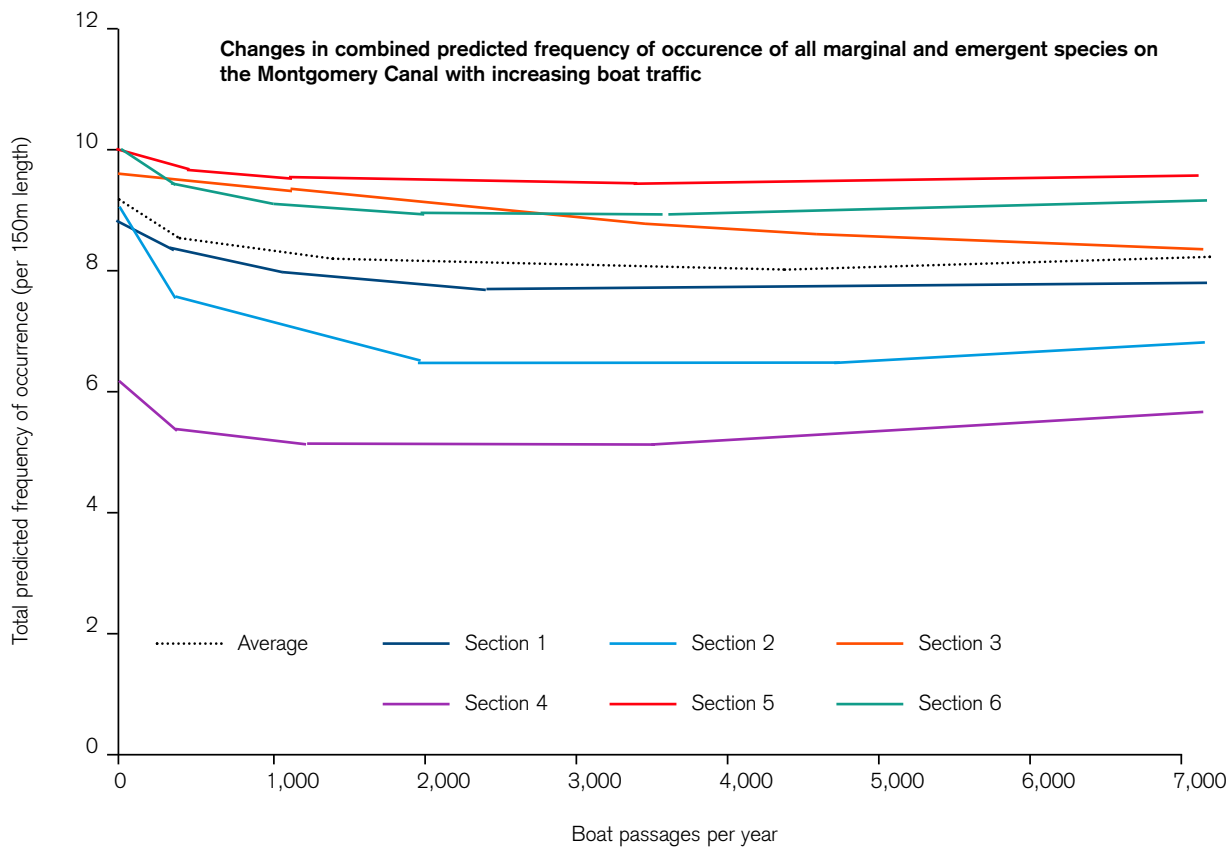


Figure 3.11. **Eaton and Wilby Research Predictions for aquatic and marginal plant species.**

Research is based on vegetation data from 592 different canal sites, including the Montgomery Canal, and 14 environmental variables include annual boat movements, Environment Agency water quality class, dredging and time since dredging, channel profile and geographical location. Analysis follows similar systems to those used for river invertebrate prediction and classification system (RIVPACS), and predictive results have been tested and found accurate on two separate canal locations. Results are based on a dredged canal profile, and represent a final stable state.

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3.4 NAVIGATION

3.4.1 General

As outlined in Section 1, The Montgomery Canal has been partially restored to navigation since efforts started in 1969 to save the line from disappearing all together, culminating in the 1988 Montgomery Canal Act giving Parliamentary approval for restoration.

Navigation is currently limited to two parts of the canal – in England a length of 7.5 miles (12 km) from the junction with the Llangollen Canal at Frankton down to Bridge 82 south of Maesbury, and in Wales a length of 11 miles (18 km) around Welshpool, from Arddleen to Refail Bridge, near Berriew.

The Montgomery Canal is featured in the British Waterways' Tranche 2 programme, which represents waterway restoration schemes considered to be of national importance. It has featured prominently on the waterway scene since restoration began in 1969, and was a major early project of the Shropshire Union Canal Society, and later led to the formation of the Montgomery Waterway Restoration Trust and most recently the Friends of Montgomery Canal.

The canal is one of three major leisure canals in Wales, along with the Llangollen Canal and the Monmouthshire and Brecon Canal. Its status as a branch running off the Llangollen Canal, which is one of the busiest canals in the United Kingdom at some 15,000 boat movements per year, ensures that demand to use the canal will easily exceed capacity, which will be limited by both water supply and ecological compatibility.

3.4.2 Navigation Standards

The canal was originally constructed to a standard trapezoidal shape with walled edges only at wharves. The canal was constructed as a narrow canal, for boats up to 72 feet in length and 7 feet beam. Being in a rural location, the channel is often relatively narrow. The phased restoration to date has created a series of different cross sections, but generally maintaining 10m width and a depth in the centre of the channel of 1.2m, or four feet. The remaining dry sections of canal show a more dished shape, from partial infilling of the original channel.

3.4.3 Current Usage

BW record boat numbers by "lock counters" which record every time a lock is operated and from the records kept by lock-keepers or commercial boat operators. A "boat movement" is the passage of a boat through a fixed point such as a lock.

Current total figures for the two navigable sections are of the order of 2500 boat movements for the Frankton – Maesbury section in England and less than 500 boat movements for the Welshpool section in Wales. These can be split into the type of craft as follows:

- **Hire Boats** (self-drive craft booked for a day, a short break or a week at a time). Three boats were, until recently, based in the Welshpool area, mainly used for short break bookings. Just over 30% of boats using Frankton Locks are hire craft.
- **Trip Boats** (craft which offer crewed voyages of less than a day's duration). Two boats run by the Heulwen Trust (specifically adapted for disabled use; Figure 3.12). These account for most of the boat movements in the Welsh section.
- **Private Boats** (privately owned craft registered on or visiting the Canal). Seventeen boats are currently registered as based on the Montgomery, but there has been a small surge in demand following the re-opening of three further miles of the English section in April 2003. Two-thirds of boats using Frankton Locks are private craft, mainly from moorings on the Llangollen or further afield.

Overall the Welsh section is lightly used because it is not connected to the rest of the inland waterway network and is not large enough to attract many privately moored boats. Demand for the English section, although higher, is also low in comparison with the Llangollen because only a short section of water is available, and because of managed access at Frankton Locks.

3.4.4 Moorings

Private boaters registered on the Canal have an approved mooring (currently “end of garden” type in most cases). In general, visiting boats may temporarily moor anywhere on the towpath although British Waterways aim to provide service facilities at key locations with associated 48 hour moorings. There are no “marinas” as such on the canal at present, although previous restoration plans have set out potential new mooring sites (see Section 5.4 and 6.4 for current recommendations).

3.4.5 Expected Demand

Because of the incremental approach to restoration to date, and the relatively short length connected to the rest of the inland waterway network, the canal is very much in a situation of untapped potential at present. That potential is very large, both for permanent moorings on the Canal and from visiting boaters, as the Llangollen Canal is one of the busiest in the country. The current national growth rate in leisure boating on canals is between 2% and 3% per annum. But on the Llangollen Canal growth has exceeded this national average, running at over 5% per annum during the last decade. There is now a shortage of permanent moorings on the Llangollen Canal, and every indication that demand for moorings on the Montgomery will be very high.

- **Hire Boats**

More visiting boats will wish use the canal as longer lengths are connected to the national network. Demand for Montgomery based craft will also increase as longer lengths are restored, and particularly when the Welshpool length is reconnected to the national network.

- **Trip boats**

Demand will depend on generally increasing the number of visitors to the canal. Opportunities exist at both Welshpool and perhaps Llanymynech. Boats can be for both tourists/visitors and potential educational use.

- **Private Moorings**

Given the shortage of permanent moorings on the Llangollen and the anticipated demand for boating on the Montgomery, the demand will be as great as other considerations will allow.

3.4.6 Capacity to meet demand

Water

Water resources for the Canal come from a number of sources (see Section 3.5) and each section of the Canal is dependent on different sources. A British Waterways study has reported on the available water for increased navigation on the Canal. This identifies sufficient water from the Llangollen Canal to support 5,000 lockages at Frankton Locks. Water volumes currently available in Wales are governed by permitted abstractions for the Tanat and Penarth feeders. Normal flows are ample, but abstraction levels in times of River Severn regulation may need reviewing.

Ecology

As outlined in Section 3.3, both the English and Welsh sections of the canal have national/international designations for important plants and animals which have to be maintained and this places restrictions on the scale and type of navigation that could be permitted in the future.

Canal

The numbers of visiting boats is potentially very high, due to the high number of boats cruising the Llangollen Canal. The Llangollen is, however, close to capacity itself, especially in peak season, when the lock flight at Grindley Brook is a significant pinch point and limiting factor.



Figure 3.12. Heulwen trip boat for disabled users, Welshpool.



Figure 3.13. Canoeing at Queen's Head.

3.4.7 Paddlesports

Currently the Canal is used by Shropshire Paddlesports, based at Queen's Head (Figure 3.13), and also by visiting activity centres, including the Red Ridge Centre, based near Welshpool. Some private canoes also use the canal, although there are no accurate records of numbers. An annual dinghy dawdle, organised by the Shropshire Union Canal Society, attracts in the region of fifty participants. This includes a diverse range of small craft, which can be lifted across road blockages, paddling a different section of the canal each year, to maintain attention on the canal and its ongoing restoration.

The relatively low number of movements by powered craft make the canal particularly attractive as a safe environment for canoes and other small craft. This is particularly true of the section of canal south of Refail, the current southerly limit of navigation in Wales.

There is potential for paddlesports use to expand. Shropshire Paddlesports wish to develop their facilities, and provide opportunities for disabled persons. Sporting outward-bound activities can probably be expanded, while leisure or holiday use is relatively unexplored. However, as powered boat numbers increase the canal may become less attractive to paddlesports users.

3.4.8 Opportunities

Current navigation is limited as the Welshpool section is not connected to the rest of the national network. The substantial demand on the adjoining Llangollen Canal indicates the potential for the fully restored Montgomery to become a popular destination, supporting viable canal-based businesses and generating significant visitor numbers.

3.4.9 Vulnerabilities

The Welshpool section of canal is isolated, and due to its short length is not economically sustainable. It is very difficult to support viable waterway-based businesses on its own; this is demonstrated by the closure of the Anglo Welsh hire operation in 2004, which had been marketing the canal for short breaks only, rather than full week hires.

The canal is still classified as "Remainder" in the 1968 Act classifications. This restricts British Waterways' activities and places the length low in priorities for major maintenance and investment such as dredging, exacerbating the problem. Two major aqueducts in Wales, Vyrnwy and Aberbechan, are in need of major restoration, to safeguard their future (Section 3.2.3). Their failure would cut water supplies to virtually the entire Wales length.

Without the prospect of full navigation, existing structures on the Canal could only be maintained for current use and opportunities to enhance both local use and the tourism resource of the canal would be lost.

3.5 WATER

3.5.1 Water Resources

Water resources for the Canal come from a number of sources and each section of the Canal is dependent on a different source. A study (British Waterways, 1996) has reported on the available water for increased navigation on the Canal.

The current navigable section in England is dependent on water fed down Frankton locks from the Llangollen Canal. This in turn is fed from the River Dee at Horseshoe Falls above Llangollen. Water from the Llangollen is also required to supply the public water abstraction at Hurlleston. Based on this requirement, typical boating patterns and the maximum permitted/likely feed from Horseshoe Falls, there is sufficient water for up to 5,000 boat movements a year.

The Welsh section is supplied from the River Severn catchment via the Tanat feeder at Carreghofa and the Penarth feeder at Freestone. Ecological interest is particularly high near this source, seemingly due to the water quality and the influence of the limestone geology. These feeds are subject to regulation in dry summers when flows in the Severn are low, with a two tier rationing. At the first level approved abstraction should be sufficient to support potential levels of navigation. Leakage levels also affect the resources available. Potential changes in the flows from the Tanat feeder (see Section 6.4) will require further study to confirm sufficient flow rates. Some detrimental ecological effects of low flow in summer may need site management to enable full use of approved abstractions. In the unlikely event of reservoir capacity falling below 25% the supply is closed completely.

Minor feeds include a leat from the River Morda, currently entering at the southern end of the English navigation. This is prone to high phosphate levels, as the river receives the discharge from Oswestry Waste Water Treatment Works.

A range of land drains and small streams also enter the canal, which it must be remembered survived as a remainder waterway, at least in part, due to a statutory duty to maintain it as a drainage channel. While these have all been mapped, the water flows and volumes have not been quantified.

3.5.2 Water Quality

The two different feeds (River Dee via Llangollen canal for England and River Severn via two feeders for Wales) results in significantly different qualities in the two sections.

The Environment Agency (EA) regularly monitor water quality at a number of points on the Canal. Classifications are however geared towards assessments of river quality, and do not bear immediate relation to conservation value. This is exemplified by the apparent significant failure of the best section of canal ecologically, around the Vyrnwy Aqueduct. EA classifications are shown in Table 3.5:

Table 3.5. **Environment Agency water quality assessments on the Montgomery Canal.**

EA criterion	Queens Head – Gronwen	Pant – Wern	Wern – Welshpool	Welshpool – Aberbechan
Water chemistry	E	C	D	B
Biology	C	B	C	No data
Phosphate	0.06 mg/l mean Grade 2	0.04 mg/l mean Grade 2	0.06 mg/l mean Grade 2	0.06 mg/l mean Grade 2
Nitrate	13.84 mg/l Grade 3	3.85 mg/l Grade 1	7.31 mg/l Grade 2	4.17 mg/l Grade 1
EA assessment of compliance	S (significant failure)	S (significant failure)	M (marginal failure)	C (Compliant)

The invertebrate fauna is one method by which this assessment is made, and the Agency data and survey work this year, has enabled a more canal specific assessment to be made. Perhaps surprisingly suspended sediment concentrations have not varied greatly either along the canal or over the last thirteen years. Total oxidised nitrogen is highest at Queen's Head, and lowest in the south. In general there is a significant difference between lower water quality and higher nutrient levels in the English length, when compared to the canal in Wales.

A computer analysis has plotted the invertebrate results for the ten sample sites from this year's survey. The greatest variations, separates the England and Wales sites; but also shows correlation with navigation and water transparency. There is also a smaller correlation with dissolved oxygen and amount of aquatic vegetation cover.

Results overall indicate a mesotrophic water canal, with some tendencies to eutrophic, and an invertebrate assemblage indicative of high water quality for a canal.

3.5.3 Vulnerabilities

Supply

- The Penarth and Tanat feeders both require significant engineering to the intakes and dams.
- British Waterways does not currently control the flows from the River Morda intake.
- Leakage is a significant problem in some sections of the canal, especially near Newhouse Lock in the southern Wales section, but also from the aqueducts and the Wern embankment.
- Aqueduct failure would threaten all of the Wales length.

These can all be addressed within a planned restoration programme.

Quality

- Eutrophication is a major vulnerability. Drainage from agricultural land is a major source, but further study would help quantify and inform priorities for remedial action. Other sources, almost certainly of much lower importance include grey water from boats, and artificial feeding of ducks, geese and fish.
- Point sources of pollution have previously included the Rednal feeder, but this has since been rectified. Other localised sites have been identified and will require action.
- Navigation particularly affects quality through increased turbidity, as a result of propeller action disturbing loose silt. This is exacerbated by inadequate dredging. Sediment disturbance can also return nutrients to the water column that had settled out, contributing to the eutrophication problem.
- Low flows from the Penarth and Tanat feeders in times of low summer flows affect quality through reduced oxygen levels in the water, and also less dilution of nutrients. Algal blooms are one harmful consequence.

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3.6 COMMUNITY AND VISITOR ACCESS

3.6.1 Walking

The canal towpath is a very important asset for walking, by both locals and visitors. This is shown from all local surveys, and at over 60% was the most common activity revealed in community consultation work for this strategy. Pedestrian counters installed at different locations along the canal, reveal weekly numbers, varying between 60 per week at School House Lane and 1,500 per week at Welshpool. In future data logging attachments will enable examination of patterns over time, which will assist analysis between local walkers (often evenings) and visitors (weekend bias). Some initial results are shown in Table 3.6.

Table 3.6. **Towpath Pedestrian Counter Results.**

Counter	Description	Weekly summer count	Winter count (as % of summer count)	Comment
Queen's Head	Navigable length, England	900	12%	Visitors by car, and to pub, more seasonal, and weekend
School House Lane	Dry section, England	60	35%	Isolated, high proportion of serious walkers
Llanymynech	Village, on border, closed to navigation	190	28%	Muddy and slippery in winter
Welshpool	Urban and surfaced section	1,500	26%	Good surface, route for shoppers etc
Sweeps Bridge	South of Welshpool, no near villages	150	45%	Isolated, high proportion of serious walkers

A number of long distance trails are linked to the canal, and share the towpath for sections (Figure 3.14). These are:

- Severn Way, managed by the Environment Agency, the longest riverside walk in Britain.
- Offa's Dyke Path
- Glyndŵr's Trail
- The Wat's Dyke Association are well advanced with plans for a long distance walk, which is planned to start at Llanymynech and follow north.
- Plans also exist to extend the Shropshire Way past the canal at Pant.

In addition to this, there is a range of published local walks, mainly circular, which also utilise the canal towpath. These include walks based around Welshpool and Llanymynech, and a further one at Maesbury. Other potential routes have been mapped, and will form part of future plans. The Severn Vyrnwy Project, is currently working in partnership with local farmers, to encourage development of these local routes. Potential routes are being tested and surveyed by volunteers. In Welshpool, there has been the recent creation of the Dragonfly Trail, a route to link the town centre and canal, which will soon be enhanced with the help of a community arts project.

A full access audit of the canal towpath, and its existing linkages has been undertaken for the Conservation Management Strategy. This contains very detailed local survey and analysis.

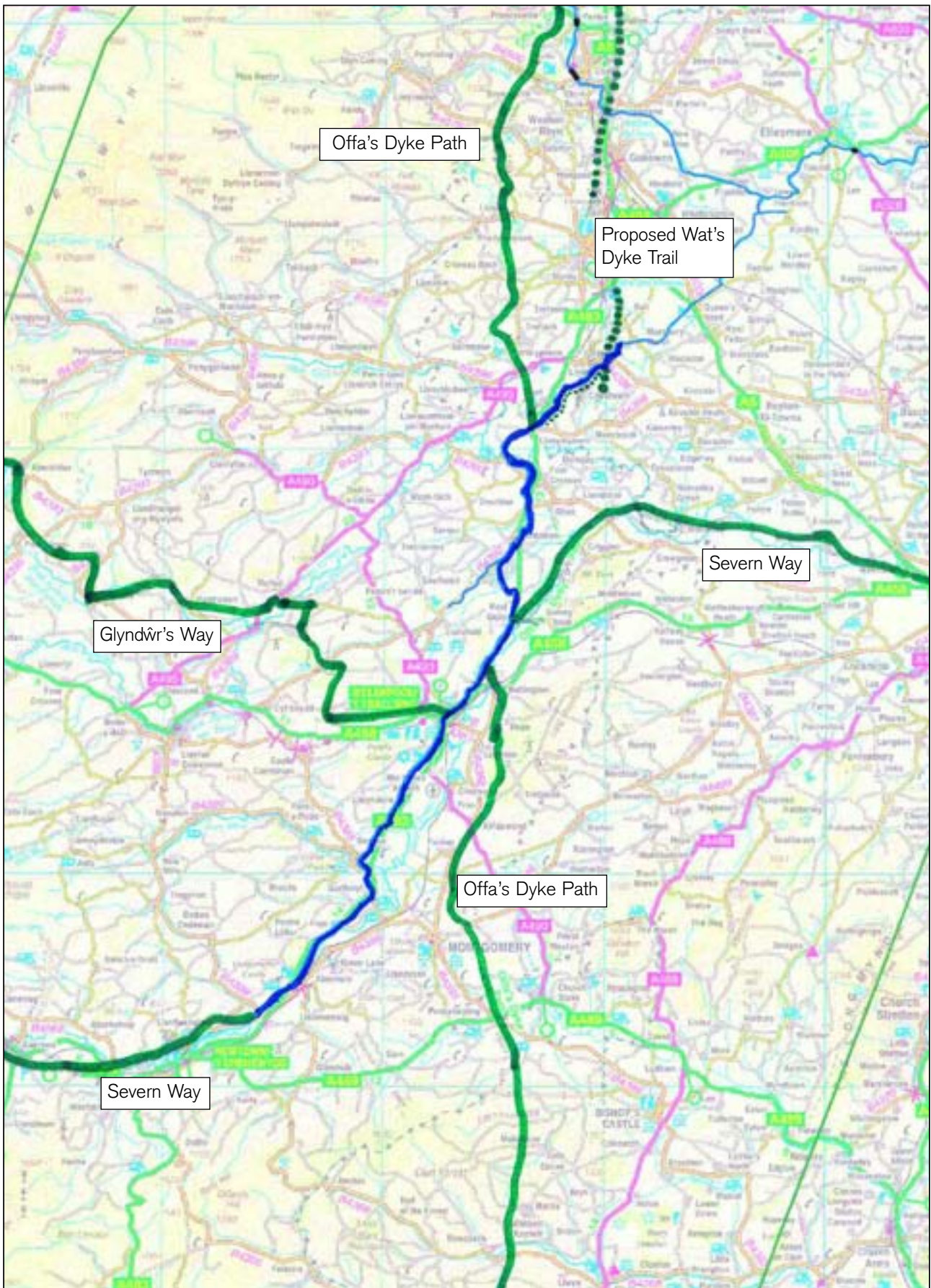


Figure 3.14. Long distance footpaths associated with the Montgomery Canal.

3.6.2 Cycling

Cycling is growing in popularity in Britain and many cyclists enjoy riding alongside the country's historic waterways. Powys County Council have a target to quadruple cycling by 2012. Originally designed to allow horses to tow canal boats, not all towpaths are suitable for cycling and there is no automatic public right of way for cyclists on the UK's towpaths. However cycling also benefits from the flat nature of canal towpaths.

The only length of the Montgomery Canal towpath currently open to cyclists is the northern section, from Welsh Frankton Locks to Queen's Head. The old canal route from Newtown, not in British Waterways' ownership and beyond the main area of this strategy, supports a cycleway from Llanllchwaiairn to Newtown town centre. A particular issue for further development of cycleways is the narrow nature of the towpath for much of its length, which will limit future opportunities.

National cycle route 81 passes through Welshpool and then Newtown, starting further west in the Midlands. Regional cycle route 31, links to this, with a section passing from Oswestry to Llanymynech. These routes are being developed by the highway authorities, based on original Sustrans plans. A number of alternative routes are still in the research and design phase, but the section south of Welshpool may wish to use the Montgomery Canal towpath. There is also an opportunity to utilise the Pant to Llanymynech section of towpath for the route, which is expected to follow the old Cambrian Railway route to the north of this section. As well as the main route, highways' plans also include local circular routes and possibilities to develop cycle hire facilities.

3.6.3 Horse Riding

There is no current use of the towpath for horse riding, and potential conflicts with other users are perceived to be great. Section 6.6 reviews a few limited opportunities for development.

3.6.4 Angling

Powis Estate retain significant lengths of fishing rights along the canal, and these are let to the Montgomeryshire Angling Association. A short length of BW water through Welshpool is also let to the Association, giving them control of the length from Bank Lock in the north, to south of Belan Locks. The only significant fishing under British Waterways' jurisdiction is the salmon fishery, along the banks of the River Severn, adjacent to the Penarth feeder at the extreme south of ownership. A club lets the fishing at Wern, for a token amount, but it is rarely used.

Nevertheless, there is significant use of other stretches of canal, including Aston and Brithdir nature reserves. In theory these sections of canal are available to anglers with roving BW licences. How many are unofficial is in some doubt, and there are few resources to either promote or police the current situation.

3.6.5 Education and Group Visits

A small schools programme has been started, working with local primary schools, and there is tremendous scope to expand this. The canal is regularly used by the Field Studies Council for field and case work, not only for natural history, but also for the built heritage. Higher education students also use the canal for field and project work, a resource that has contributed significant information for the canal's management over recent years.

Powysland Museum and Montgomery Canal Centre, at Welshpool Town Wharf, attracts 6,000 visitors a year, including regular school groups, and family visits. Llanymynech Heritage Area, including the canal wharves, is also a destination for educational study, and expected to develop through a combination of recent initiatives. This includes:

- The opening of the canal stable block as a community information point in May 2005
- Interpretation developments by the Parish Council through support from "Your Heritage"
- The arrival of "George Watson Buck", a narrowboat operated by the Duchess Countess Group, to provide educational trips. Trips are planned from 2006.
- The County Council have prepared plans for a larger scheme for the Heritage area, including connections with the canal and quarries on the hill.

As a more informal resource, the canal is a venue for guided walks and a range of other canal events. These include links to the annual Cambrian Transport Festival at Welshpool and a regular events programme run by the Friends of Montgomery Canal. There are also numerous permanent display panels at a series of key locations along the canal, in a continuing development programme.

Overall, however, the assessment of the canal for educational purposes would have to conclude it is currently either one of unfulfilled potential, or an opportunity waiting to be grasped.

3.6.6 Summary of current activity

For overall visit estimates, the 1995 British Waterways and 1996 UKDVS Count results are still appropriate. The results for the Montgomery Canal (Table 3.7) estimate an average density of usage of 19,000 visits per km per year, across all activities. By comparison, the Kennet & Avon Canal has an estimated density of use of 55,000 visits per km per year and the Llangollen Canal 25,000.

Table 3.7. **Montgomery Canal – Visits per year.**

Section	Kms	Informal Visits	Anglers	Cyclists
Frankton Junction – Maesbury	10	216,000	1,000	12,000
Maesbury – Pant – Llanymynech – Arddleen	15	126,000	1,000	7,000
Arddleen – Pool Quay	5	61,000	1,000	3,000
Pool Quay – Welshpool – Brithdir	12	357,000	3,000	19,000
Brithdir – Berriew – Garthmyl – Newhouse	10	180,000	4,000	10,000
TOTAL	52	940,000	9,000	51,000

3.6.7 Expected demand

Estimates of potential towpath usage are mainly based on an analysis of population catchment data, combined with surrogate data for other BW canals. The surrogate waterways that have been chosen are the Llangollen Canal, for its proximity and similar population catchment, and the Kennet & Avon Canal. The Kennet & Avon is considered appropriate as a surrogate because it provides a good example of visits to a recently restored canal which is well marketed.

The experience of other canal restoration and regeneration projects suggests that the restoration project could increase visit numbers by anything between 50% and 100%. This, for example, has been the experience in Scotland after the completion of the Forth & Clyde/Union Canal restoration between Glasgow and Edinburgh. That would imply a post-restoration density of use for the Montgomery of between 27,000 and 36,000 towpath visits per km per year. Evidence from the Kennet & Avon indicates the subsequent growth is likely to be between 2% and 3% per year.

These forecasts are compatible with the demographic data. A density of 30,000 visits per km per year, for example, though above that of the Llangollen, is still only 63% of the rural sections of the Kennet & Avon. This is consistent with the population catchments in the 20 mile corridor, where the density of the Montgomery is 61% of the Kennet & Avon rural corridor.

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Ruralscapes: circular footpath maps in preparation

Shropshire County Council: Llanymynech circular walks map, in preparation

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Aston Nature Reserve.

3.7 ECONOMIC CONDITIONS

3.7.1 Current economy of the canal corridor

The economic use of the canal is relatively low at present, but is an opportunity waiting to be tapped. It is important that any such developments are within the context and framework of this strategy. As a minimum they should not have negative impacts on the built or natural heritage, or on the community enjoyment of the canal. However, there is an opportunity to integrate, and embrace more fully, the philosophy of sustainable development for sites along the canal. A number of sites were identified in the 1980s for potential marina developments and canal-associated jobs or housing. It will be necessary to provide positive guidance and support for alternative and more appropriate uses of these sites.

3.7.2 Canal-based businesses

i. Direct Jobs

- British Waterways employ eight bank staff on regular maintenance, and one manager. Additional contract labour is used for hedge and towpath maintenance. Major restoration works generate additional short term jobs.
- Boat hire operations have supported three part time jobs, approximately two job equivalents.
- A small and expanding boat repair and construction business operates from Peate's Mill, and currently supports eight direct jobs, plus additional sub-contract assistance.

ii. Indirect jobs

Figures are accurately analysed in the complementary Rural Solutions economic survey and analysis. Some of the major connections are shown below.

- Sixteen public houses are situated adjacent to, or very close to, the canal. Anecdotal evidence shows a significant increase in trade at the Navigation Inn, Maesbury, since the opening of the Aston – Gronwen section in April 2003.
- Twelve hundred and fifty boats a year (equivalent to 2500 boat movements) currently visit the Shropshire length of the Montgomery Canal, entering from the Llangollen Canal.
- Powysland Museum and Montgomery Canal Centre.
- The towpath provides parts of the long distance footpath routes for Offa's Dyke Path and Severn Way, which attract visitor spend to the canal corridor.
- The canal forms part of the local network of tourist attractions, and thus contributes to all sectors of tourist accommodation in the area.

iii. Community Businesses

- Heulwen Trust, although a volunteer run charity, provides canal trips for perhaps 5,000 visitors each year.

3.7.3 Maintenance costs

Maintenance costs are currently met by BW, with a small contribution from Shropshire County Council, and Oswestry Borough Council following recent phases of restoration. The status of the canal as a Remainder Waterway precludes British Waterways from spending any resources over and above those necessary for basic safety maintenance, and meeting legal obligations.

References for further information

Rural Solutions (2004) The Montgomery Canal and Canal Corridor: The Rural Regeneration Potential of Restoration

4. OPTIONS APPRAISAL

Summary of chapter

Seven potential restoration options were assessed against each other and the option of confining future work to legal requirements only. The options appraised were:

- Option 1: Meeting legal obligations
- Option 1B: Maximising benefits from the canal as at 2004
- Option 2: In channel nature conservation, with low navigation levels
- Option 3: Major off-line nature reserves
- Option 3B: Option 3 + Additional Nature Reserves
- Option 4: Restoration To Llanymynech only, but with unrestricted navigation
- Option 4B: Restoration to Llanymynech with Unrestricted Navigation To Queen's Head
- Option 5: The 1986 Parliamentary Act: full unrestricted navigation.

The options were assessed against a range of criteria: built and natural environment, community use and economic considerations.

The overall conclusion of the Partnership was to adopt a modified version of Option 3 in Wales, and a modified version of Option 3B in England. Both reflect improved phasing, and the opportunity to deliver early gains from Option 1B – encouraging more use of the existing canal restoration. Within England the decision is to provide all the new nature reserve area in one location, which enables unrestricted navigation, once the new reserve is fully established.

4.1 PURPOSE OF THE APPRAISAL

For a situation as complex as the Montgomery Canal, with many overlapping and sometimes conflicting interests, there will be a number of potential ways forward that are capable of delivering improvements. It is therefore necessary to study a number of alternative options, against the full range of criteria (environmental, social and economic), as part of the process of defining the best way forward.

This process of appraisal also becomes a requirement under the European Habitats Regulations, where any scheme deemed to have an impact on the nature conservation interest of the site, has to go through an alternative solutions process: see Figure 4.1.

Consideration of a Plan or Project (PP) affecting a Natura 2000 Site.

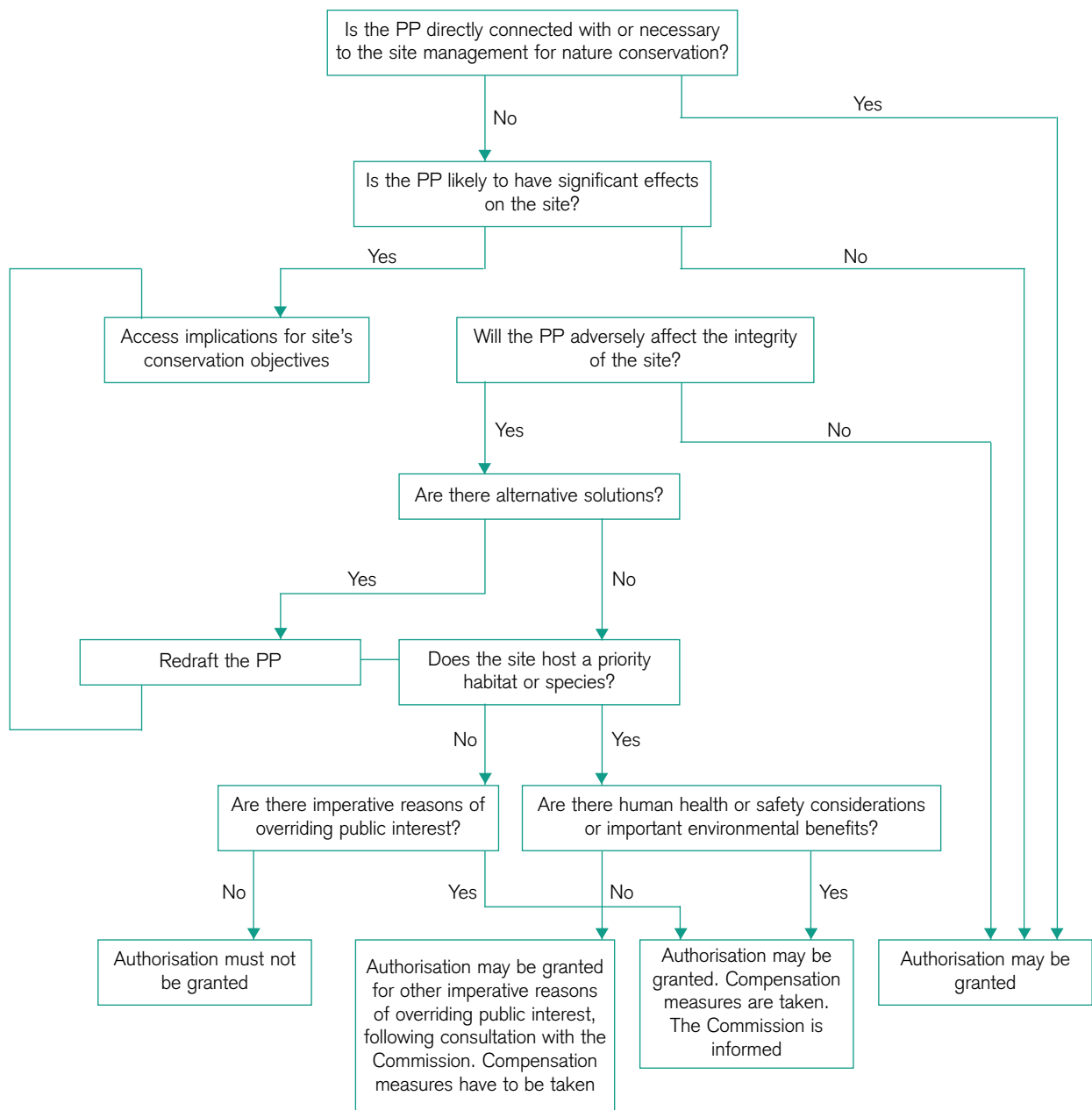


Figure 4.1. **Decision flowchart for European Habitat Regulations.**

Proposals for restoration in any form are likely to have a significant impact on the nature conservation interest of the canal, and with regard to the European habitat Regulations, to the population of Floating Water Plantain. This expectation arises from the natural distribution of the plant which only includes canals of relatively low boat usage. Work by Eaton and Willby (see Figure 3.11) further supports this expectation, and indicates that any introduction of navigation will adversely affect the site within its existing boundaries. In accordance with the flow chart, it is therefore necessary to review alternative solutions which meet the need of the project.

The appraisal was confined to the first phase of potential restoration, completing the link to Wales. The planned phased approach to future restoration will mean that the section south of Refail will not happen for a considerable number of years. The solutions adopted will depend on the option chosen for the northern end. As a later stage of works, figures are not currently available for accurate appraisal.

4.2 OPTIONS APPRAISED

4.2.1 Option 1: Meeting Legal Obligations

Definition

No further restoration of navigation, BW to fulfil its minimum statutory duties, with respect to:

- a. Remainder waterway status.
- b. CRoW 2000 and EU Habitats Regulations
- c. Existing maintenance agreements with local authorities

Philosophy

British Waterways has some statutory duties which it must meet, chiefly as a remainder waterway, which includes public safety and drainage, and under nature conservation legislation that protects the special nature conservation interest. BW has a statutory duty under CRoW to take all reasonable steps to protect and where possible enhance the nature conservation interest of the canal. There are also existing 21 year maintenance agreements with Shropshire County Council and Oswestry Borough Council, which can only be ended by mutual consent.

For some years the canal has been subject to active restoration efforts, and this has included contributions from BW over and above the legal minimum requirements, in the expectation of gradual progress towards a full restoration. However, if no agreed way forward can be found for the canal, within the Montgomery Canal Partnership, then it is likely that BW would seek to minimise its outgoings, and reduce maintenance to the legal minimum.

4.2.2 Option 1B: Maximising Current Benefits

Definition

No further restoration of navigation, but seek to develop and protect the built and natural heritage of the canal through non navigation uses and low level environmentally friendly boating e.g. horse drawn boats.

Philosophy

This scheme seeks to develop a viable and sustainable future for the canal, but adopts an approach that requires minimum capital expenditure. It seeks to maintain the full nature conservation interest in channel, and not re-instate the major dropped road crossings. This option therefore does not need major construction of nature reserves, but seeks to promote alternative environmentally friendly uses of the canal. While at a lower economic level of activity, the reduced capital funding may be more attainable and the option therefore less risky. It also enables the restoration and promotion of the built heritage of the canal, and delivers access improvements for walkers and the local community.

4.2.3 Option 2: In Channel Conservation

Definition

Restore canal to navigation through to Refail but at low levels of boat movements, in order to retain full nature conservation interest in channel. The levels used in this appraisal are 500bmy in England and Wales, although it is likely that in practice the actual levels sustainable under this approach will be lower.

Philosophy

The protection of nature conservation interest in its original location, is normally considered best practice and minimises future risk. There is no objection to restoring through navigation, which also has other benefits such as a complete towpath for walkers, but it is necessary to explore whether such a scheme can be sustainable, through innovative uses such as eco-friendly day boats and horse drawn boats.

4.2.4 Option 2B: In Channel Conservation at higher navigation levels

Definition

Restore canal to navigation through to Refail. Full nature conservation interest to be retained in-channel by a combination of habitat enhancement south of Refail, and maximising the length of new canal channel, in order to retain historic channel as nature reserve.

Philosophy

If the nature conservation interest can be fully retained in channel, then this would potentially obviate the need for special consideration under the European Habitats Directive, and deliver significant navigational use of the canal.

4.2.5 Option 3: Major Off-line Nature Reserves

Definition

The approach in the public draft Conservation Management Strategy, which proposes no net loss of nature conservation interest, but with the majority of interest located in new but connected nature reserves. Early proposals suggested that this approach can deliver a retention of 20% interest by population in channel, and 80% in the connected nature reserves.

Philosophy

Optimising gains for all interests, with a zonal approach to nature conservation. Modern propeller driven boats cause significant disturbance to aquatic plants, and research indicates that any level of navigation leads to a decline in some of the rare aquatic plant species. Given this inherent conflict, the best future for the canal re-opened to navigation by modern boats may be to create a kind of zonation; additional areas of aquatic habitat can be created, with the intention of fully compensating for any degradation or losses within channel. Overall the nature conservation interest is maintained, and higher levels of navigation become possible.

4.2.6 Option 3B: Option 3 + Additional Nature Reserves

Definition

The final CMS approach should seek to deliver an area of new nature reserves in favourable condition equivalent to 100% of the area of canal SSSI, in addition to the canal retaining some in channel interest. Level of in channel interest to be defined at a lower level, but drawn from favourable condition status tables.

Philosophy

This approach adopts the same zonal arrangement as option 3, but seeks to ensure that new habitat creation fully compensates for the existing canal habitat. In channel conservation interest retains the connectivity of the nature reserves, and leads to net gains for nature conservation. Demonstrable gains will provide a stronger case for displacement of the nature conservation interest from in channel to new reserves.

4.2.7 Option 4: Unrestricted Restoration To Llanymynech

Definition

Restore the English length to unrestricted navigation, but no further restoration in Wales.

Philosophy

This option recognises that the greater nature conservation interest is in the Wales SSSI, and that the English SSSI has been in a degraded condition since before the current restoration, when the water supply was very low, and ecological succession was advancing. The restoration adopts a linear zonation, and the English SSSI is sacrificed in return for accepting the long term protection and active management of the Welsh length with only very low levels of navigation.

4.2.8 Option 4B: Unrestricted Navigation To Queen's Head

Definition

Restoration of the English length only, with unrestricted navigation to Queen's Head, and lower levels of navigation below Queen's Head, in order to conserve nature conservation interest in channel. Restoration to Llanymynech would compensate for unfavourable condition of the Keeper's Bridge to Queen's Head length.

Philosophy

This option reflects a less extreme version of the preceding option. Option 4 would lead to a loss of the SSSI, whereas Option 4B allows a transfer of some of the interest from above Queen's Head to the Aston to Maesbury section. Nature conservation interest in England, while moved, has its overall value protected.

4.2.9 Option 5: The 1987 Parliamentary Act

Definition

The 1987 Parliamentary Act. This gives powers to BW for full restoration, and remains the only legal agreement between parties. Safeguarding of nature conservation interest is catered for through a series of small off-line nature reserves.

Philosophy

To maximise the levels of navigation, and thus economic benefits, of restoration. Canals are artificial habitats, and were constructed for navigation. Built heritage interests would favour restoration to navigation, and the argument if this option was to proceed would be that this should take priority over conserving plants which are only present as a result of human intervention. The Montgomery Canal is an artificial habitat, and a previous agreement with the Nature Conservancy Council provided for nature conservation interests by the creation of a series of small off-line nature reserves.

4.3 APPRAISAL PROCESS

The options were appraised against the following criteria:

1. Legal Implications
2. Implications for Navigation
3. Implications for Nature Conservation
4. Water Resources and Quality
5. Implications for Built Heritage
6. Implications for Landscape and Archaeology
7. Implications for Community Use
8. Engineering Costings
9. Implications for Running Costs
10. Implications for Rural Regeneration
11. Implications for Capital Funding

Within each section, the appraisal considered:

1. Evidence
2. Assessment by Option
3. Risk Analysis
4. Conclusions

Full details are available in the appraisal document, published as a supporting report to this strategy. The appraisal process was undertaken after the publication of the draft Conservation Management Strategy, during the summer and autumn of 2004.

4.4 SUMMARY RESULTS

These are shown in a tabular form on the next page.

OPTION	Archaeology and Landscape	Built Heritage	Nature Conservation	Community Use	Job Outcomes	Economic Sustainability (net running cost)
1	Continuous deterioration	Long term deterioration and ultimate loss	Long term failure	Quality: long term deterioration Quantity: Significant decrease in use	Direct: -18 Associated: 0 TOTAL: -18	£228,000
1B		Most structures safeguarded, but loss of context and connectivity	Optimum result, least risk	Quality: meets many desires, but sub-optimum Quantity: significant uplift, but much lower in England	Direct: 37 Associated: 0 TOTAL: 37	£304,000
2		Optimum result in medium term	Relatively small, but significant, losses	Quality: optimum result Quantity: improved use along length, but at lower level	Direct: 48 Associated: 0 TOTAL: 48	£301,000
2B		Significant losses to the historic channel	Over-reliance on southern, non-navigable section. Small losses	Major issue of large amounts of compulsory land purchase outside of Parliamentary Act	Direct: 114 Associated: 122 TOTAL: 236	£258,000
3		Optimum result in long term	Optimum result (if legal issues can be resolved), some risk	Quality: optimum result Quantity: optimum result	Direct: 114 Associated: 122 TOTAL: 236	£158,000
3B	All options very similar and low impact, with modest gains to landscapes	Optimum result in long term	Optimum result (if legal issues can be resolved), some risk	Quality: optimum result Quantity: optimum result	Direct: 114 Associated: 122 TOTAL: 236	£183,000
4		Wales structures at risk	Wales structures at risk	Quality: Wales misses out, as per Option 1 Quantity: Wales misses out, as per Option 1	Direct: 93 Associated: 68 TOTAL: 161	£292,000
4b		Wales structures at risk, loss of connectivity with England	Optimum result	Quality: Wales misses out as per Option 1 Quantity: As above, but also less use in England	Direct: 54 Associated: 53 TOTAL: 107	£322,000
5		Theoretically acceptable, but potentially higher engineering standards and more frequent repair requirements will pose higher risks	Major losses in England and Wales	Quality: concerns about change, loss of privacy and over-development Quantity: optimum result	Direct: 153 Associated: 122 TOTAL: 275	£100,000

4.5 CONCLUSIONS

The conclusions of the Montgomery Canal Partnership, from the appraisal and subsequent discussions, was to seek slightly different strategies for England and Wales.

Within Wales, the favoured solution was to adopt an improved version of Option 3, taking into account the need to show demonstrable gains for all areas of interest, and to allow for a phased approach to the restoration. The phasing is intended to achieve three aims:

- Recognition of the major funding issues and requirements. There is no prospect of achieving restoration from one funding package.
- Phasing will allow the restoration time to demonstrate the success of some of the innovative solutions, essential for later phases.
- Enable early gains from adopting some of the elements of Option 1B, which seeks to improve community use and appreciation of the canal in its current stage of restoration. This will help build support and the case for further restoration.

Within England, the nature conservation interest, has been largely confined to a much shorter length of canal (the length designated as SSSI), as much had become dewatered prior to restoration. It was therefore possible to look at full replacement of reserves off-line (Option 3B), but in one site. By providing the reserve area in one internally connected location, the channel standards are no longer necessary to achieve connectivity. This therefore enables the restrictions on navigation to be lifted once the reserves have reached the required standard, subject to long term maintenance of favourable condition.

The adapted and improved version of Option 3 for Wales and Option 3B for England is as now presented in the following chapters of this Strategy. The most significant change is for the nature reserves being designed to incorporate the full value of the original canal channel. The in-channel conservation therefore becomes net enhancements to the value of the overall site.

5. VISION

Summary of chapter

The proposals in this strategy are based on our 2001 mission statement to deliver sustainable restoration. That theme weaves in social and economic benefits and a very strong link to the local communities through which the canal passes. The strategy has required shared understanding, and a balance between nature conservation, restoration of navigation and the community.

A phased approach is required, with major restoration and engineering schemes working in parallel with local projects to deliver increased local access and use of the canal and its towpath. The first priority is to link the navigable length of canal at Welshpool, through to the southern section of the English length at Gronwen Wharf, taking the southern terminus of the canal to Berriew. This will require the creation of a range of new wetland areas adjacent to the canal, as well as dealing with three major road crossings.

Later phases of restoration, through to Freestone Lock and perhaps beyond to Newtown, will be dependent upon demonstrating the success of the first phase. However far the restoration of navigation goes, we seek to protect the canal corridor and use it as a green corridor link into the centre of Newtown, its historic terminus.

The Montgomery Canal Partnership's mission statement, first agreed in 2000, is:

“to restore the Montgomery Canal as a flagship model of sustainable canal restoration with a strategic focus on rural regeneration. To protect the canal's unique environment and heritage through research, management and excellence in design. To increase access for all through interpretation with the promotion of tourism and educational use”.

This statement is founded on the belief that that the long term future of the canal, is as a valued, shared resource. Sustainable navigation and boats are an integral part of a living, working canal. The built heritage and natural heritage are intricately entwined, and both rely on the support of the local community for their future.

The key elements of the vision for the future of the Montgomery Canal are:

- **A community resource, valued and used by all**
- **A corridor of opportunity that will provide a driving force for rural regeneration**
- **A restoration to navigation that respects values and enhances the unique nature of the Montgomery Canal and its surroundings**
- **Has sustainability at the heart of all management and development.**

There has been overwhelming support for the restoration of the canal, and this strategy is intended to map a way forward, and provide practical solutions that will resolve the previous tensions between different interests. This has required a willingness to share and understand the values and interests of others.

The Montgomery Canal Partnership has worked hard to develop that understanding, both within the Partnership and in wider circles, and offers a shared way forward based on the overarching theme of sustainable restoration. The proposals in this document go wider than many conservation plans, for it incorporates issues of economic and social benefit from the beginning. These are issues that are important to local residents, a group of absolutely key stakeholders for the future. It also ensures that the conservation management of the canal is both at the heart of its future management, and provides over-arching principles for all other uses.

An objective for the Partnership is to use this document as a means to unlock the major external funds necessary to achieve the aims and policies within the strategy. It is based on a balance that recognises and protects conservation interests, and seeks a community led process.

Motorised boats do have a detrimental effect on the rare aquatic plants in the canal, but this strategy proposes the creation of a range of new wetland areas, adjacent to the canal, which will provide full compensation.

This solution builds on and further develops the pioneering agreement in the 1980s, which led to the creation of a number of existing reserves, including Aston, constructed by volunteers from the Waterway Recovery Group. The reserves will provide a further range of education and recreation opportunities and will require partnership with local landowners.

A further challenge of the restoration is the large number of road crossings, especially along the A483. The major costs involved mean that the continued restoration of the canal is likely to be undertaken in stages.

The first priority is to re-connect the navigable length of canal at Welshpool, through Llanymynech, to join up with the northern section at Gronwen Wharf, near Maesbury, and thus to the national network. The economic impact from this section stands to be great, as restoring eight miles of canal will release a further eleven miles which is currently under-used.

Restoration of the southern section will need to follow at a later phase or phases. Access to funding will depend on demonstrating the success of phase 1; a success that must demonstrate that our vision of a vibrant canal, a canal which protects the values of everyone, is a deliverable reality.

In parallel to the engineering, and complementing it, the Partnership will seek to deliver small scale local improvements to the amenity, for example local footpath and signage improvements; we believe increased local access and use will support and reinforce the case for further major restoration.

It is essential that this phased approach is understood, and that each stage of the restoration stands as a viable scheme in its own right. Restoration to Llanymynech fits well with developments in the adjacent heritage area. The success of the 'Limestone Lives' Project, to conserve the rich geology, archaeology and industrial heritage of the local area, will help develop the village as a destination in its own right. Completion through to Welshpool will release a resource long under-used, and fulfil a vision of those volunteers who first helped at the "Big Dig" in 1969.

Berriew could provide a southern terminus, and has much to commend it as a destination, but one more road crossing will take the restoration to the historic terminus of the East Montgomeryshire Canal at Garthmyl. Freestone Lock, near Aberbechan is the southern limit of British Waterways' ownership, but is the final terminus at Newtown a reality? The engineering is feasible, but the current costs of the road crossings are extremely high. We re-iterate, restoration will depend on external funding, and more southerly sections will depend on the success of the northern section. In the medium term, the route should be protected as a green corridor and link for walking and cycling.

Navigation is key to a living and working canal, but the local community must value it as theirs. It is a resource that is valued by many, but could be used more. The partnership will seek to foster better links with the villages through which the canal passes, and provide facilities sympathetic to the area and rural location.

The strategy also seeks to ensure that local businesses gain from the restoration, and believe that it will help a range of tourist related schemes, and provide a firm basis for farm diversification. The themes of sustainable development and green tourism are increasingly familiar, and the restoration of the Montgomery Canal can meet both these objectives and other local and regional aspirations.

The capital costs of restoration will have to be met through a range of grants, which are likely to include heritage sources, local authorities and economic regeneration packages. This means that progress will be dependent on availability of funding, and it is not possible to give accurate timescales. However, the strategy and the parallel economics report will be used by the Partnership as the basis for a series of funding applications in the coming months and years.

The Montgomery Canal Partnership is a diverse group, seeking to serve a wide range of interests; we believe this document meets that range of interests, and commend it to you.

6. GUIDING PRINCIPLES

Summary of chapter

LANDSCAPE: We will protect and enhance the existing character of the waterway. Awareness of the landscape archaeology will be raised. New developments will respect local character, and use local and traditional materials. Wider corridor initiatives will be supported.

BUILT HERITAGE: Repairs and restoration will seek to minimise loss of the existing fabric. Compatible and alternative uses for historic buildings will be sought. The canal route into Newtown will be protected, and we will seek to have this strategy adopted as formal supplementary planning guidance by all local authorities.

NATURE CONSERVATION: Assessment of value will be based on the canal and hydrologically connected habitats. Measurement will be based on a whole canal cycle, to enable major works such as dredging. Conservation objectives will be set against the SAC and SSSI designations. Annual monitoring will be used to inform management change.

NAVIGATION: Navigation is part of sustainable management of the canal, and will be allowed up to the maximum level consistent with maintaining the conservation value of the canal. The restoration will be designed to cater for a target level of boat movements of 2,500 annually in Wales and 5,000 annually in England. Environmentally friendly boat design, and slow speeds in sensitive lengths will be promoted.

WATER: Water abstraction will be maximised consistent with environmental considerations, and leakage from the canal minimised. Practical measures to improve water quality will be identified and implemented.

COMMUNITY AND VISITOR ACCESS: "Access for All" will be promoted, and encourage long distance walkers, visitors and local use. Local circular paths, parking and interpretation will be used to increase local use of the canal and the new nature reserves. Cycling will be considered where the towpath is wide enough. Informal and education opportunities will be developed, to complement other local provision.

ECONOMIC AND RURAL REGENERATION: A major means to achieve this will be through increased visitors and visitor spend. In addition, the restoration project can be used as a catalyst for local non-tourism economic regeneration through the redevelopment of canal-side land and buildings. Economic opportunities need to be available to local people, so systems will be established to enable local firms to bid for and supply contracts. External funding will be sought for restoration, and Partners will share maintenance costs.

6.1 LANDSCAPE HERITAGE

6.1.1 Existing National Heritage Principles

National British Waterways heritage principles relevant to landscape are shown in Table 6.1.

- A) Existing national principles for landscape will underpin all future management and restoration work on the canal and the Partnership will seek to develop the Montgomery Canal as an exemplar restoration scheme.

Table 6.1. **Key National Archaeology and Landscape Principles.**

1. The historic landscape character of individual waterways will be identified, conserved and enhanced. Mechanisms to conserve local distinctiveness will be actively encouraged.
2. Operational maintenance and major works will be planned and designed so as to minimise their impact on the waterway landscape.
3. Consideration of landscape character, setting, and local culture will influence the design and planning of water based and waterside development.
4. British Waterways will seek to manage the physical impact of human activities in order to protect the landscape heritage.
5. British Waterways will seek, through national and local planning policies, to encourage adjacent land uses and development which will not conflict with the historic landscape character of the waterways.
6. Interpretation should exploit the local distinctiveness, landscape, archaeology and cultural associations of individual historic waterways.

6.1.2 Archaeology

At a local level the Montgomery Canal Partnership will further commit to the following policies:

- B) Ensure restoration works safeguard, and if possible, enhance sites identified in the landscape archaeological assessment.
- C) Meet the site investigation standards outlined in the landscape archaeological assessment.
- D) Seek to raise awareness, appreciation and understanding, of the archaeological resource, in terms of location, importance and optimum management, particularly among adjacent landowners.

6.1.3 Landscape

Landscape, perhaps more than any other aspect of this strategy, clearly extends beyond the canal route and into the surrounding countryside, and it is important that other schemes and initiatives which relate to the canal corridor form part of an integrated approach. Local landscape policies will be adopted that:

- E) Seek to address sites identified as requiring landscape improvement.
- F) Provide detailed landscape designs for all new facilities and developments all new works. The designs will be in keeping with the local character, and full consultation with the local community will be undertaken.
- G) Pro-actively work with landowners and other agencies to support initiatives in the wider canal corridor which help protect and enhance the canal's setting, and achieve a continuity of policy.

6.2 BUILT HERITAGE

6.2.1 Existing National Heritage Principles

The national British Waterways Heritage Principles commit to following the guidance provided by British Standard 7913: 1998 – The principles of the conservation of historic buildings. The key principles are shown in Table 6.2.

- A) British Waterways' existing national principles for built heritage will underpin all future management and restoration work on the canal. The Partnership will seek to promote these guidelines and develop the Montgomery Canal as an exemplar restoration scheme.

Table 6.2. **Key Built Heritage Conservation Principles.**

1. All works of repair, maintenance and alteration should demonstrate a respect for the waterway heritage and an approach based on minimum physical intervention involving minimal loss of existing fabric should be undertaken.
2. Interventions should be reversible wherever possible.
3. Regard should be had for the contributions of different periods and phases of work in an historic structure. The historic value, worth and authenticity of such contributions must be judged within the context to which their host structure belongs.
4. The patina of age and use forms part of the historic integrity and value of a building or structure and its removal should only be considered when it is essential to the protection of historic fabric. Falsification of patina should be avoided.
5. Major repairs and alterations should not attempt to imitate historic fabric and replacement of missing parts should not falsify historic evidence in such circumstances. New works should be differentiated from old and discreetly datemarked with the year of construction cut or cast into stone, brick or metal.
6. Before major works to an important historic building or structure take place, research should be undertaken to determine its past appearance, purpose and use. The results of such research should help to guide the planning and execution of major works.
7. Where major works to an important historic building or structure are taking place, physical features should be recorded in a systematic manner.
8. Historic materials, fixtures and fittings are valuable. There should be a presumption that they should remain *in-situ*. Where such items cannot be left in situ they should be carefully salvaged and stored for re-use in an appropriate context.
9. BW are best able to ensure the survival of canalside historic buildings and structures and will benefit most from their proper care and maintenance. There should be a presumption in favour of retaining ownership of such properties.
10. New construction, infill or additions can be acceptable in an historic setting provided these maintain an appropriate visual context of form, scale, texture, materials and do not reduce the cultural significance of the setting.
11. Sustainable and compatible new uses which respect the equilibria of the waterway heritage and do not engender processes of decay, will be encouraged.
12. Where works of repair, alteration or development are taking place at an historic site, archaeological recording methods should be used to guide works.
13. Public affection for the waterway heritage should be actively aroused through participation in a series of national heritage days as well as through festivals, exhibitions, publications and a range of participative hands-on events.
14. Interpretation should exploit the local distinctiveness, landscape, archaeology and cultural associations of individual historic waterways.

6.2.2 Local Implementation

- B) British Waterways' built heritage records will be extended, and continually updated to include newly identified sites from the recent built heritage assessment and future survey work.
- C) The Partnership recognises and accepts the increased costs of local materials and renewable sources, and traditional methods that will occur on some works.
- D) The Partnership will seek to support owners of important buildings in finding compatible uses that conserve their heritage value.
- E) Through a range of training and information programmes, the Partnership will continue to develop and improve awareness and appropriate skills, to improve both maintenance and restoration of all historic structures.
- F) The canal route into Newtown will be safeguarded in the county unitary development plan.

The purpose of this policy is to safeguard the remaining built heritage of the canal in Newtown, protect the route as a green corridor for walking and cycling, and to keep options open for locating the southern terminus of the canal.

- G) The Partnership will seek to have this strategy adopted as the basis for preparing formal supplementary planning documents by the local authorities.

The intended purpose is to formalise this strategy in planning terms and create positive and formal guidance for potential developers or planning applicants. There will be a presumption that future planning applications and development proposals will conform to the policies in this document.

6.3 NATURE CONSERVATION

6.3.1 Ecological Principles

- A) The restoration will deliver positive management and enhancement of the nature conservation value.

This will be achieved through:

- Improved structural integrity, and less risk of major incident
- Improved connectivity and linking of populations
- Increased populations of aquatic macrophytes, through 100% in new reserves, and in channel plants providing net gains
- Increased areas of marginal vegetation
- Higher quality terrestrial habitats
- Improved access, interpretation and education of this unique habitat

It is by these actions, and through the sustainable restoration outlined in this strategy, that British Waterways and the Montgomery Canal Partnership will deliver the positive action necessary to achieve the detailed conservation objectives and standards outlined in Chapter 10, Monitoring.

- B) Positive management and enhancement will be pursued along the full length of the canal, at all times.
- C) The agreed monitoring will be used as a basis for informing changes to restoration works, and management, including boating levels. This principle is referred to as Monitoring Informs Action.

D) Overall ecological principles, first agreed in 2000, will continue to guide the restoration and canal management.

6.3.2 The Whole Canal

E) The ecological principles refer to maintaining the overall value of an area over the full cycle of any management regime. As such it is recognised that major works such as dredging, while essential for long term management, will have short term detrimental effects on specific lengths. The whole canal and its hydrologically connected habitats will be used as the basis for this judgement.

Aquatic plants and animals in this context can be considered as one inter-connected community, with a single population of each species. It is an essential component of the solution that that connectivity remains, and is a key purpose of the need for in-channel conservation. Off-line reserves will therefore be included in any status or condition assessments. While off-line reserves can not be a solution in their own right, they are part of the solution, and a resource for both retaining population numbers and providing a wider distribution to protect against major incidents, especially pollution.

F) Because of the candidate SAC designation, it will be necessary to protect the value of the Welsh section in its own right, as well as maintaining the overall balance along the full length of the canal.

6.3.3 Favourable Status and Monitoring

G) The data used as a baseline for monitoring will be:
Aquatic plants: Newbold 2001, and British Waterways 1997 and 1985-89
Nature reserve aquatic plants: Newbold (2003)

Data for birds (British Waterways, 1997) and invertebrates (Ponds Conservation Trust, 2004) may be used to help establish additional baselines for associated fauna in the future.

H) The primary conservation objective for the Montgomery Canal is to maintain and enhance the extent, distribution and quality of the floating, submerged, emergent and marginal vegetation, populations of locally distinctive species, especially populations of *Luronium natans* and *Potamogeton compressus* within the Montgomery Canal in favourable condition.

To achieve this the following criteria will be met:

- The canal habitat and species populations will reflect the natural carrying capacity of the canal habitats, with plant populations determined by natural processes.
- The physical environment, water quality and hydrological processes require management to suitable standards.
- Recreation pressures will not significantly affect the maintenance of the habitat and populations of species, or their ability to disperse throughout the canal network and any associated off-line reserves.

I) Conservation objectives will be attained, through the positive management of:
i. A series of hydrologically connected nature reserves.
ii. The maintenance of the original canal channel to high ecological standards. The objective of the in channel management will be to maintain a diverse marginal vegetation and provide ecological connectivity between the nature reserves
iii. Long term partnerships to influence adjacent land management, to provide optimum physical conditions to achieve favourable condition or favourable conservation status of the canal.

J) Detailed standards have been agreed for the above criteria and are listed in Chapter 10, Monitoring.

K) The short term aim is to improve the English SSSI to unfavourable but recovering. In Wales the aim is to continue to maintain favourable condition of the canal habitat and the population of *Luronium natans* and to restore the population of *Potamogeton compressus* and other key species of aquatic plants to optimum historic levels.

6.3.4 Monitoring Informs Action

L) The fundamental principle for future management of the canal is that monitoring informs action. Action includes habitat management, navigation decisions and all restoration work.

This monitoring loop provides safeguards and protection primarily for nature conservation, but also for other interests. It enables the Partnership to check that management decisions have the expected effect, and modify proposals where necessary. It provides a mechanism where phased restoration and all management change can be introduced in a safe manner, and significantly reduces risk to nature conservation values.

M) Monitoring also needs to cover external factors such as management e.g. dredging, and factors beyond direct control for example pollution incidents.

N) Monitoring results will be shared with the Partnership and used by EN, CCW and BW to determine condition and any measures needed under the Monitoring Informs Action principle.

Monitoring results will be used to determine levels of navigation. Where positive management and designs can improve conditions, that improvement will enable additional levels of boat movements. Boating levels will be monitored, and adjusted to the maximum level consistent with always maintaining the conservation value of the canal, by adopting the precautionary principle.

O) Actions on a designated length will be determined based on monitoring results for the same length.

This will apply equally to positive nature conservation measures, improvements to the physical environment or canal restoration works. This principle recognises the linear nature of the canal and enables a focussed response. It also enables the proposed phased restoration, with changes in management, for example a phased re-introduction of navigation dependent on achieving the required conservation standards for that length, provided that the SSSI and SAC features for the whole site are either in favourable condition or unfavourable recovering. Condition will be assessed as per Paragraph 10.3.5.

6.3.5 Wider Corridor

P) The Partnership will support other initiatives in the canal corridor which contribute to the above policies, and conservation of the species notable in the canal.

Some of these are outlined in Section 6.3.7 and Table 6.4.

References for further information

J.D. Briggs (ed) (1988) Montgomery Canal Ecological Survey. Survey Report 1985-88. 237pp
BW Environmental and Scientific Services (1997) Montgomery Canal Ecological Surveys. @400pp
Newbold (2001) The Montgomery canal A Macrophyte Survey 38pp + 727 mapping sheets
Newbold (2003) The Montgomery Canal Reserves: A Macrophyte Survey 87 pp.
Ponds Conservation Trust (2004) A Spring and Autumn Survey of the Aquatic Macroinvertebrates of the Montgomery Canal 69pp.

6.4 NAVIGATION

This section sets out the guiding principles for the restoration in respect of the introduction and management of navigation. It draws on the results of the assessment in Section 3 of this document and relates closely to the nature conservation Section 6.3. Further details on implementation of all the principles in Section 6 is contained in Section 7.

6.4.1 Navigation and Nature Conservation

The assessment of the canal identifies the opportunity for safeguarding its long-term future and delivering sustainable benefits to the local economy and community through the introduction of full navigation to viable boat traffic levels.

Large parts of the Montgomery Canal have been designated as nationally or internationally important sites for aquatic plants and animals. These habitats have developed while the canal was un-navigable in the period from the 1930s to the 1970s and are vulnerable to changing conditions. British Waterways have a statutory duty to positively manage the canal to protect these sites, and any increase in navigation will always have to be balanced against this requirement.

The restoration can be seen as a series of separate sections, where the aspiration is either to introduce or increase navigation.

A) The Partnership supports the principle of restoring economically-viable levels of navigation to the Canal as part of its sustainable management.

6.4.2 Navigation Levels

B) The Montgomery Canal Partnership has agreed to design the canal restoration to cater for a target level of boat movements of 2,500 annually in Wales and 5,000 annually in England.

This level has been derived from the research predictions within the Eaton and Willby research report and is consistent with the need to provide economically-viable level of boat movements while retaining some nature conservation interest within the canal channel itself. Canoes and unpowered craft, including horse drawn boats, will be excluded from the boat movement numbers.

C) Within England the target is to lift restrictions on navigation, providing the new nature reserve area attains and maintains optimum quality standards.

In practice water supply and flows will continue to limit levels of navigation, but at significantly enhanced levels, potentially in excess of 5,000 boat movements per year. These levels are similar to the range found on, for instance, the Leeds & Liverpool Canal.

D) Actual numbers of boat movements permitted in any section of the Canal will depend on maintaining the conservation value of the canal. They will be allowed up to the maximum level consistent with maintaining the nature conservation value of the canal.

To adopt a precautionary principle, boat movements will start lower and work up. This will allow detailed proposals on management and monitoring to be proven before being fully implemented.

E) The process of adjusting levels of navigation must recognise and safeguard commercial operations on the canal.

Businesses need certainty in which to plan investment, for instance in visitor facilities and environmentally friendly boats designed to meet the specific needs of the Montgomery Canal. Such developments are vital to the overall sustainability of the restoration. No interest, whether navigation, nature conservation nor sustainable development will be well served by oscillations in boat movement numbers. Commercial agreements will therefore be based on proven sustainable capacity, and will be safeguarded if monitoring indicates cutbacks in navigation are necessary.

F) A transparent and impartial system will be established for making decisions on management of navigation issues.

6.4.3 Moorings

G) Planning for mooring provision needs to match expected levels of traffic, and previous plans for mooring locations need to be updated.

Visiting boats (private and hire boats not based on the Montgomery) will only need 48 hour visitor moorings and service facilities which will be created at key locations. However, local permanent moorings on the Montgomery will be an important part of the economic benefits of the restoration. For this reason, and to ensure no one section of the canal is over loaded with boat movements to and from a single large mooring site, there will be a presumption against large marinas.

H) Small scale mooring schemes, potentially as part of farm diversification, will be encouraged. Locations will need to address a number of practical issues such as suitable road access, and numbers will be informed by the boat traffic model.

Moorings are currently full on the adjacent Llangollen Canal. Additional moorings could be actively sought on the Llangollen Canal in order to relieve potential demand on the Montgomery Canal. Alternatively premium rates would be charged for Montgomery moorings. Looking wider, national British Waterways' policies to promote less frequently used sections of the inland waterways system will also assist in the long term management of demand.

6.4.4 Balancing Demand with Access

Unrestricted access would exceed both the available water supply and ecological capacity. Priorities between different types of user will therefore need to be agreed and management systems implemented to achieve this.

I) A balance will need to be achieved between visiting boats from the Llangollen, and boats moored permanently on the Montgomery Canal. A method of managing the step change between England (up to 5,000 boats) and Wales (up to 2,500) will also be needed.

This balance will remain the subject of review, but initial plans are based on controlling access through Frankton locks and at Vyrnwy Aqueduct. Additional capacity will be directed to moorings on the Montgomery, and the development of local businesses, within the agreed target levels of boat movements. This is essential to generate the sustainable development that is a key feature of the restoration.

6.4.5 Eco-Boating

J) In order to foster and promote increased levels of navigation within the agreed framework, British Waterways and the Montgomery Canal Partnership will promote modified boat navigation behaviour and excellence in environmentally friendly design.

This will draw on existing initiatives nationally and elsewhere on the inland waterways network. It will include research, field trials, management and commercial investment in such aspects as boat speed, hull design and propulsion, channel design and seasonal patterns of boat movement.

6.4.6 Channel design

K) Restored sections will comply with current BW national policies on channel dimensions, retain original channel profiles where they still exist and maintain some nature conservation value in-channel.

Restored channels must meet minimum navigational requirements. However, beyond this we must retain heritage and nature conservation features where it is practical to do so. It is likely that these requirements will complement each other rather than conflict. For instance the sloping channel margins are good for offside emergent or aquatic habitats, and the desire to deepen channels as far as possible to minimise suspension of solids that could blanket aquatic plants will create optimum clear draught conditions for navigation.

6.5 WATER AND ENVIRONMENTAL PROTECTION

6.5.1 Water

A) The Partnership will pursue a cross agency approach to water management.

The Environment Agency have a lead role in water management, but significant input is also required through management of, for example, minor inflows from land drainage. British Waterways, the Countryside Council for Wales, English Nature and the local planning authorities all have roles to play.

B) Water abstraction to support the canal will be reviewed, in order to ensure supplies consistent with environmental considerations and potential navigation levels.

C) Points and lengths of leakage along the canal will be identified and minimised.

D) Optimum water quality will be pursued through:

- Best practice on the canal
- Pro-active encouragement of adjacent landowners and users
- Back up of enforcement action through the legislative framework.

Water quality is being addressed through the Water Framework Directive, under the umbrella of the Environment Agency. However, in the context of the Montgomery Canal, the site's designation as a SSSI and SAC will impose more locally specific and higher standards, than is required by the directive.

6.5.2 Other Environmental Protection

The restoration proposals involve significant amounts of civil engineering and construction work, as well as other activities such as dredging, which all have the potential for environmental harm outside the topics already considered above through:

- Pollution of water, air and soil
- Interrupting water flows or placing additional demands on water resources
- Generating waste
- Use of finite resources
- Noise
- Traffic

There is a well-established legislative framework to protect the environment, but legislation has traditionally been aimed at establishing deterrents through prosecution and setting minimum standards. Newer legislation often takes the approach of enforcing best practice.

Environmental protection is a key indicator for sustainability and with the significant value of the canal corridor environment there are obvious environmental benefits from following best practice rather than the minimum statutory requirements.

Application of best practices also make good economic and social sense: it is far better and cheaper to prevent environmental harm, rather than to clean up afterwards.

E) Best practices for environmental protection will be applied to all parts of the restoration.

F) Renewable and sustainable supplies will be sourced and utilised when available.

6.6 COMMUNITY AND VISITOR ACCESS

6.6.1 Walking

The most frequent community use of the canal corridor is as a good place to walk.

A) Access to the towpath will be improved, for both local residents and visitors, through access points, surfacing, and signing, in ways consistent with sustaining the local environment.

While the official definitions of “people with disabilities” include 11% of the population, the modifications to designs and surfacing required to meet the necessary standards for “Access for All” actually improve access for all people, including, for example, the elderly and parents with young children.

B) “Access for All” will be considered in any provision of new facilities or development along the canal and in the management of the waterway.

C) Opportunities will be taken to encourage the use of the canal towpath for regular local journeys, as a safe, pleasant and traffic free route. This policy will seek to establish walking on the towpath as a replacement for some short car journeys.

D) Local circular routes will be developed and encouraged, to improve links to local communities and encourage greater use.

E) Greater use of long distance and recreational footpaths will be promoted.

6.6.2 Cycling

The Partnership wishes to encourage cycling where appropriate.

F) Responsible cycling will be encouraged, in accordance with British Waterways’ standards, where the towpath is of an appropriate width and surface, with links to other designated routes in the area.

G) Upgrades of the towpath to accommodate cycling will be promoted where they would be appropriate and will be designed to respect the rural character, and include speed control measures.

6.6.3 Angling

H) Responsible low key angling along the canal will be encouraged, through support of and partnership with local angling clubs. Angling will be promoted based on the current “natural” state of the fishery, with a presumption against any introductions of stock.

I) Commercial angling will be supported where confined to separate, specially constructed ponds or lakes.

6.6.4 Education and Interpretation

National British Waterways policy is to prioritise:

- Formal education resources for children aged seven to eleven, and linked to key stage 2 of the National Curriculum.
- Waterway events and activities for the under sixteens.
- Provide resources via an inter-active website.

Delivery will be by local staff, supported by national resources, and partnership with other agencies.

Locally, the Montgomery Canal Partnership will adopt the following policies:

J) Interpretative and education facilities and services will be provided to increase understanding of the canal environment and heritage, and encourage public participation in the canal's future.

K) Facilities will be developed to complement local provision by other organisations.

L) On-site interpretative signage will be sited and designed to impart maximum information in an unobtrusive way.

M) All general canal interpretative and educational materials, and all materials specific to Wales will be bi-lingual.

6.6.5 Car Parking and Public Transport

The Partnership seek to actively promote a sustainable restoration, and therefore wish to minimise the impact of visitors on the environment. There will therefore be policies that seek to encourage further exploration of the canal by means other than private cars.

N) Car parking will be sited to encourage further exploration on foot, and will include cycle parking facilities.

O) Location of new facilities will take into account public transport links where appropriate.

P) As the canal popularity increases increased further public transport links will be developed and promoted.

6.7 ECONOMIC AND RURAL REGENERATION

The restoration can contribute to economic and rural regeneration via three mechanisms:

- A temporary boost to local businesses through the implementation of the restoration work. Primarily, but not exclusively, this will be construction related.
- A long-term post-restoration impact through higher visitor spend associated with greater canal-based activity, both by local people and in-bound tourists and visitors.
- Through the role which the restoration can play as a catalyst for new commercial development.

6.7.1 Restoration work

How far the local economy benefits from spending during the construction phase will depend on the location of suppliers. Money does not always enter the local economy, or remain within it for long – the loss of money out of an area being referred to as leakage. Money spent with a local supplier will increase the spending power of that local supplier, with further knock on benefits. In addition, wages paid to people who live as well as work locally leads to more money being retained and re-spent in the local area. These effects are known as multipliers.

Local suppliers should still be expected to conform to best practice sustainability and environmental standards.

A) The Partnership recognises that good relationships with local suppliers, managed to high standards, can deliver a both a high quality and a good value service, therefore systems will be established that enable local firms to bid for supply and contracts throughout periods of major expenditure.

This will reduce leakage, increase the multiplier effect, and thus maximise local economic benefits, and further strengthen community links

B) Supplying companies will be monitored for environmental and sustainability criteria, and encouraged to adopt better practice (see Chapter 10, Monitoring)

6.7.2 Visitor spend

Visitor spend will be spread around an area, and will not only be in facilities directly associated with the canal. Development of the canal is expected to contribute to booking rates for local accommodation of all types: camping and caravan sites, bed and breakfast, self-catering and hotels and guest houses. Spending in local shops and facilities will increase, and an ambition of the restoration will be to contribute to the maintenance of local shopping facilities, and even the opening of new businesses.

Similar issues of leakage apply within the tourism economy, with the basic premise that the more money can be retained locally, for longer, the greater will be its local economic benefit. However, the extent of leakage here depends on the decisions of many, separate, tourism and leisure businesses. The Partnership has less capacity to influence these decisions, compared to the control it has over its expenditure. However, where practical, the Partnership will aim to encourage local tourism and leisure business to minimise leakages.

C) One of the key economic objectives of the restoration is to create a facility that will increase visitor numbers to the canal corridor, and encourage those visitors to spend more.

D) Tourism and leisure businesses operating within the canal corridor will be encouraged to adopt purchasing and employment practices which maximise the local economic impact of visitor spend.

Support mechanisms are available to help achieve this through Ruralscape's Canal Tourism Project, a similar new post in Powys (run by British Waterways) and Business Link. These schemes seek to support new businesses which make use of the green attractions of the area, and run in a sustainable manner, with minimum impact on the environment.

6.7.3 Associated development

The final mechanism by which the restoration project can boost the local economy is through the sensitive re-development of canal-side land and buildings for new commercial uses. It is now widely acknowledged that waterway-based developments can play a catalytic role in regeneration, within both urban and rural contexts. The lessons of recent research is that the canal can act as focus for new development, but that a pro-active approach is required from public and private sector partners.

The Montgomery restoration will provide the opportunity to investigate, promote and – where required – seek funding for new developments. Preliminary work of this nature has been undertaken and is the subject of the economic report produced by Rural Solutions. The developments featured in the report are unlikely to take place unless the canal is restored, will need to be promoted by the partnership, and will need to conform to local planning policies.

E) Private and third party funding for the re-development of canal side land and buildings will be sought as part of the restoration project.

6.7.4 Capital costs and funding

F) External funding will be sought in order to implement the proposals and values outlined in this Conservation Management Strategy.

Sources will be varied, and differ between England and Wales, but are expected to include European funds, regional job creation initiatives, and heritage or lottery schemes. These will require match funding to leverage the sums required.

G) All Partnership organisations will support the restoration through a combination of capital funding, technical expertise, and funding in kind.

6.7.5 Operation & maintenance costs

At present, most maintenance costs associated with the canal itself are met by British Waterways, with some contribution from Shropshire County Council and Oswestry Borough Council on the newly restored sections. As further restoration progresses, management of the canal corridor will diversify into a wider area and wider range of activities. Operation and maintenance costs will increase.

H) In recognition of the wider benefits that the restoration will bring to the local economy and the communities of the canal corridor, the associated increase in operation and maintenance costs will need to be quantified and supported at an early stage.

British Waterways will prepare a detailed estimate of the likely operation and maintenance costs that will arise from restoration. These costs will also reflect the potential incomes derived from the expected increased levels of navigation, which have been shown by the Options Appraisal to be an important factor in contributing to maintenance costs, and minimising net public expenditure. Securing an agreement between Partnership organisations, for long term maintenance and funding, will be an essential prerequisite of proceeding with capital works.

References for further information

ECOTEC Research & Consulting, 2001. The Economic Impact of Waterway Development Schemes.

Rural Solutions (2004) The Montgomery Canal and Canal Corridor – the Rural Regeneration Potential of Restoration.

7. MANAGEMENT PROPOSALS

Summary of chapter

One hundred and eighty three separate management proposals are itemised, which seek to meet and deliver the guiding principles outlined in the previous chapter. They range from greater sharing of information, through mechanisms to deliver priorities, to in places very detailed site specific or topic specific issues. The list of proposals will evolve with time, but must always stand the test of enabling delivery of the policies agreed and outlined in the previous chapter. The management proposals are listed in the following sections:

- **LANDSCAPE:** 11 separate proposals
- **BUILT HERITAGE:** 20 separate proposals
- **NATURE CONSERVATION:** 36 separate proposals
- **NAVIGATION:** 32 separate proposals
- **WATER SUPPLY AND QUALITY:** 22 separate proposals
- **COMMUNITY AND VISITOR ACCESS:** 33 separate proposals
- **EDUCATION:** 18 separate proposals
- **ECONOMIC AND RURAL REGENERATION:** 16 separate proposals

It is not possible to summarise one hundred and eighty three detailed proposals in one page, but they have been highlighted and numbered throughout the text of this chapter.

7.1 LANDSCAPE HERITAGE

7.1.1 Archaeological Landscape

- 1) Where work is planned on archaeological sites the following organisations, or their agents, will be consulted:
- | | |
|---------------------------------------------------------|-----------------------|
| Cadw: Welsh Historic Monuments |) Scheduled monuments |
| English Heritage |) Scheduled monuments |
| Clwyd-Powys Archaeological Trust |) Local sites |
| Shropshire County Council, Historic Environment Officer |) Local sites |

In practice the conservation officers within the local authority act on behalf of the statutory agencies.

- 2) A full archaeological evaluation of the impact of each restoration or development scheme will be undertaken.
- 3) During construction works an area of at least 5-10m wide will be left undisturbed beyond any archaeological sites. If crossing a site is unavoidable, mitigation will include timing for dry weather, or laying brash matting or similar materials which can be subsequently removed.

These precautions will extend to consideration of the effects of digging trenches for external services or inserting or removing telephone or electricity supply poles. Where appropriate sites will be fenced off or otherwise clearly demarcated prior to works commencing. Materials should not be quarried from archaeological monuments, and nor should anything be dumped or stored on them.

This policy will be particularly relevant when selecting sites for new habitat areas, and selecting disposal sites for dredging operations.

Site Management (Canal Corridor)

- 4) The Partnership will seek to raise awareness of the archaeological resource through:
- Standard contacts with neighbouring landowners
 - Availability of the archaeological assessment via a public web-site
 - Sharing of the archaeological assessment with planning authorities
 - Occasional articles in Montgomery Canal News
 - Provision of education materials
 - Visitor interpretation (see below)

Preferred management is to maintain the existing grass cover on a site, as this helps to protect it from erosion. Grazing at an adequate level helps to protect grassed-over archaeological monuments by keeping the grass and scrub growth in check; high stocking levels, though, may often cause erosion and threaten the monument.

Trees, whether individually, in shelter belts, or within small or large-scale commercial plantations, should not be newly planted on or around archaeological monuments.

In some special circumstances, existing trees may protect a monument from erosion, encroachment or plough damage, or provide some aesthetic enhancement to the overall landscape. These can be important factors in ensuring a site's survival. In some cases, trees may themselves be archaeologically significant e.g. as medieval estate boundary markers, or Turnpike way-markers.

Ploughing can be the single most destructive force in the landscape, completely destroying or severely damaging many archaeological sites. Where a monument is already under the plough the depth of ploughing should not be deeper than on previous ploughings. Likewise, pan-busting and sub-soiling are particularly damaging operations and should not be undertaken if at all possible.

Waterlogged sites, e.g. peat in the Welsh Frankton to Maesbury length, are a valuable archaeological resource (organic remains, leather, bone, etc.), and care should be taken to avoid drying out such sites. Some cutting sites have their own value with stacking mounds and old trackways.

Visitor Management

- 5) Where there is no conflict, visitors will be encouraged to visit archaeological sites, and interpretation provided, either on-site, or from the canal towpath, or through local literature.

However, visitors can damage monuments, for example, by wearing footpaths across sensitive features, so careful consideration should be given in planning any increase in the number of visitors.

7.1.2 Modern Landscape: Design Principles and Guidelines

- 6) National British Waterways guidelines (British Waterways, 1999), and local county policies, will be followed along the Montgomery Canal.

The philosophy of the British Waterways guidelines is based around an empathy with surroundings, and complementing existing features. More localised criteria are emerging from the developing landscape character assessments for Shropshire and the Landmap landscape characterisation in Wales. Landscape planting schemes should use appropriate local native species in rural locations, to reinforce the landscape character and integrate new facilities with their landscape setting. Upgrades to car parks, towpath surfacing and other visitor facilities need to respect their location, and complement existing features, local styles. Local sources of stone and other materials typical of the area will be used. It will be essential to avoid urbanisation of new visitor facilities, and a balance must be reached, for example in the amount of on-site interpretation.

- 7) All significant engineering or development sites will have individual landscape schemes drawn up and implemented.

Four important aspects of the canal restoration will influence the local landscape and will require special attention to landscape integration.

1. The reconstruction of dry channel sections, and major repairs to existing sections. Plans to use traditional techniques that safeguard the built heritage and marginal plant communities will also minimise landscape impact.
2. Re-instatement of road crossings. Major road bridges, with long approaches can be very intrusive.
3. New habitat areas. The wetland areas will blend into the landscape, reflecting the meres and mosses of Shropshire, and some of the pools of the Severn valley. However, care will be needed for the disposal of excavated material, which will be used on site to create low mounding and screening.
4. New visitor facilities.

- 8) Landscape impact will be assessed as part of the selection process for new road crossing solutions.

- 9) Land purchase for new habitat areas will be sufficient to undertake mounding of excavated soil in an unobtrusive way, and enable suitable tree and shrub planting schemes.

7.1.3 Sites for Local Action

- 10) Full canal restoration will be used to upgrade and improve landscaping of existing local sites; sites identified to date are listed below.

- British Waterways' Llanymynech maintenance yard will need relocating as part of plans to restore the historic wharves and develop the heritage area as a visitor attraction. The yard and depot opposite would also benefit from some additional landscaping.

- Welshpool townscape. A small study is in progress to look at the town landscape along the canal corridor. This will include liaison with local organisations and planners, but is intended seek to integrate the canal more fully with the town, through a series of improvements to landscaping and access links. Potential plans for the Welshpool maintenance yard site (currently Travis Perkins depot) and adjacent areas will also be a key development. This site is also covered in the companion economic study. Some possible improvements are shown in Figures 7.1 and 1.2.
- Redundant buildings. Seeking alternative uses for redundant buildings and sites along the canal corridor is an important way to improve the landscape as well as regenerate the local economy. The Severn Vyrnwy Project is pro-actively helping with a number of buildings in Shropshire. Former industrial sites requiring alternative uses at present include parts of Peate's Mill near Maesbury and empty premises at Refail.
- Canal hedges. These are a traditional feature of the landscape, although in the last century they were often laid periodically and kept well trimmed, with only occasional standard trees left to grow on to maturity. Generally, the hedges contribute to the landscape continuity, and there are a number of locations where planting of gaps is desirable e.g. Rednal and Abbey Lift Bridge. In England this work is already in hand through the Countryside Stewardship Scheme. Laying will be particularly considered in narrow towpath areas, where stock proofing is required, and where there are particularly valued local views. Gaps do have a value in revealing the canal to passing traffic, and this will be an occasional consideration. Where leylandii or other conifer hedges occur in rural or semi-rural areas, the Partnership will seek to encourage replacement with more appropriate local stock.
- New facilities will adopt BW guidelines for landscaping. They will be promoted and made available to potential planning applicants.

7.1.4 Wider Corridor Actions

The following schemes are integral to fulfilling our policy of pro-active engagement with wider schemes.

11) Promote Environmental Stewardship and Tir Gofal on neighbouring land, and seek to ensure that schemes in the canal corridor receive sufficient funding.

These agri-environment schemes subsidise traditional land management techniques, and foster lower input types of agriculture. Priorities in DEFRA (Environmental Stewardship) and Countryside Council for Wales (Tir Gofal) must continue to reflect the importance currently attached to the area. The Severn Vyrnwy Project (now continuing as Ruralscapes) has actively promoted Countryside Stewardship in the Shropshire length, through a partnership with British Waterways. More active promotion of Tir Gofal in the canal corridor in Powys is also an aspiration. Ruralscapes has strong links with the farming community, and will help deliver an increasing take-up of the new Environmental Stewardship Scheme.

12) The Partnership will support efforts of the planning authorities to designate the length of the canal as a conservation area, and any other designations or initiatives which seek to positively influence the landscape of the local area.

Conservation areas are designated under legislation designed to safeguard the built heritage, but also have a wider landscape role. Designated areas effectively pass protection to a range of structures, and also trees within the area and afford greater planning control on development or alterations to existing buildings. Such a designation should be managed with appropriate resources, in order to offer positive advice and guidance.

Shropshire County Council has launched a new landscape assessment of the county to help guide and support planning decisions. For the canal corridor, these policies seek to conserve and enhance or conserve and strengthen the landscape character of the area.

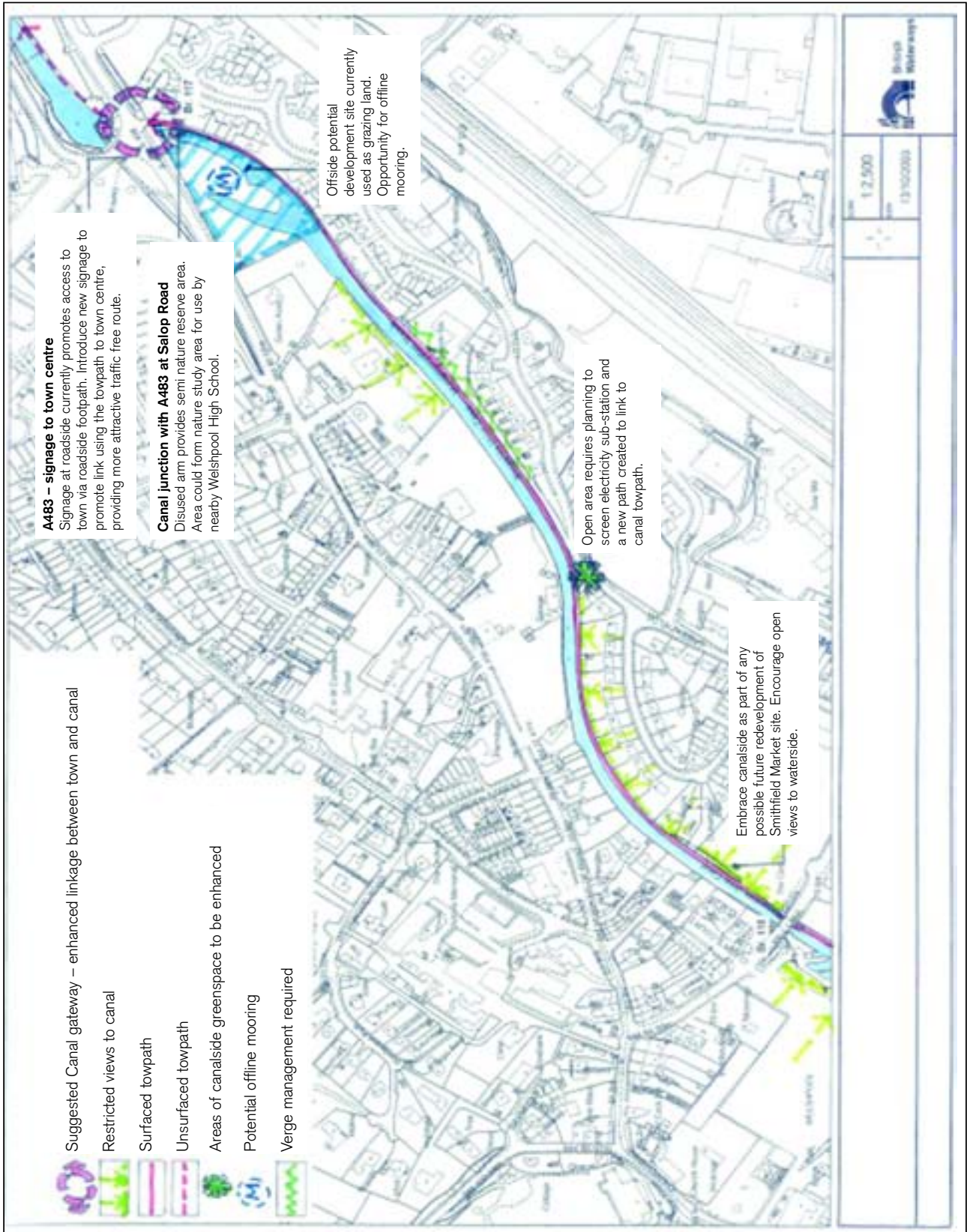


Figure 7.1. Possible improvements, northern centre of Welshpool.

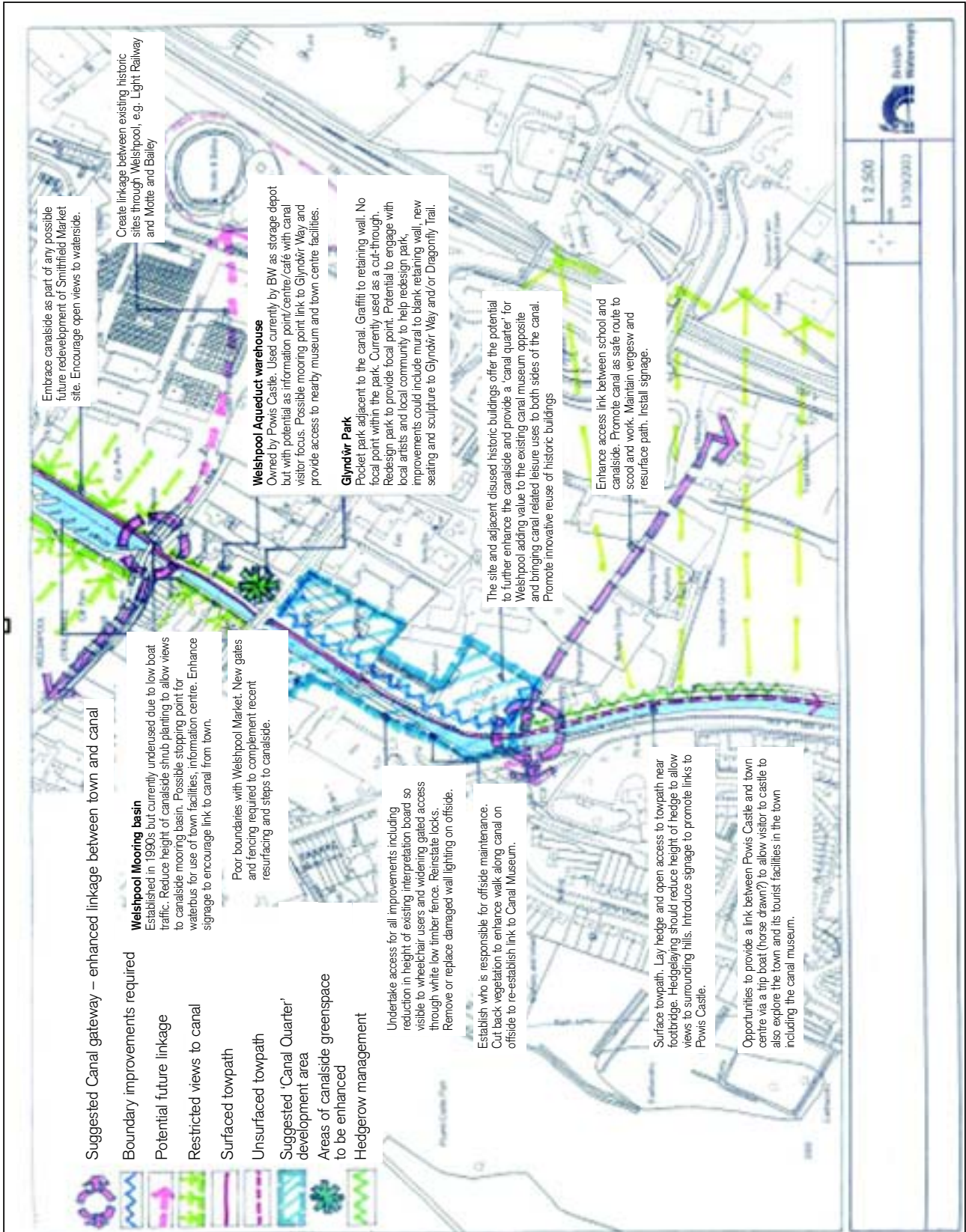


Figure 7.2. Possible town centre improvements: Welshpool.

References for further information

British Waterways (1999) Design Manual
Volume 1 Buildings and Facilities
Volume 2 Repair and Conservation
Volume 3 Landscape

British Waterways (2003) Welshpool Town Landscape Study

BWB (1980s) Montgomery Canal Environment Handbook 50pp

Kellett (2001) Sustainable Canal Restoration Final Report (Severn Vyrnwy Project/
British Waterways). 71pp.

Powys County Council, (1998) Montgomery Canal Corridor: Landscape Appraisal. 80pp.

Shropshire CC (2002) Shropshire Farming Study Sustainable Agricultural Landscapes in Shropshire. 18pp.

Shropshire County Council (2003) Draft Landscape Character Assessment

7.2 BUILT HERITAGE

7.2.1 Built Heritage Survey

- 1) A number of additional buildings will be added to the British Waterways heritage survey results (Table 7.1).

Table 7.1. **Additional structures for the Built Heritage Survey Records**

Object/building	Description
Basin and warehouse, Guilsfield	Dry stone pitching Warehouse 1 red brick and slate Warehouse 2 blue brick, corrugated iron top
Boundary mark, south Brithdir Aqueduct	Late C19 cast iron
Rope Guard, Abbey Lift Bridge	Wrought iron half-hoop
Welshpool maintenance yard	Major complex – see assessment
Office/stable, Welshpool Wharf	Small, brick, late C19
Warehouses at Welshpool Wharf	Terrace
Shed, north Bridge 137	Timber and corrugated iron, late C19
Crane base, Brithdir Lock	Unusual, by lock chamber
Wharf buildings, Berriew	Coal wharf, original corrugated iron building
Newtown: cottages and pump house	Outside of area, but integral to canal history

- 2) British Waterways' heritage register will be expanded to become a resource for the whole Partnership, and include non-listed heritage structures, and related buildings within the corridor, but away from the immediate canal.

The register covers structures both within and outside of British Waterways' ownership, and a partnership approach with local planning authorities will be essential to encourage and deliver better stewardship of heritage assets in private ownership.

- 3) The Heritage register will be shared with the planning authorities, conservation officers and the Shropshire Sites and Monuments Register, in order to promote understanding and sympathetic management.

- 4) The partnership will support alternative viable uses for historic buildings which respect their interest.

British Waterways' partnership with Ruralscapes is currently delivering a restoration programme to enable the use of six canal-side properties in Shropshire. As with canals, a long term and sympathetic modern use is the best long term safeguard for the future.

7.2.2 Conservation Areas

Designation of a conservation area along the canal has been considered for many years, and will be supported by the Partnership (see Section 7.1, Proposal 12). The built heritage assessment identified seven specific sites that are particularly worthy of such status for the canal. Two, at Llanymynech and Welshpool, are already within designated conservation areas. The proposed additions are at Carreghofa, Burgedin, Belan Locks, Brithdir and Garthmyl, and are shown in Figures 6.3 to 6.7 following.

It should also be noted that an existing conservation area at Berriew extends as far as, and includes, the canal aqueduct.

5) The Partnership will seek early recognition and protection of these areas, prior to any more general designation. The planning authorities within the Montgomery Canal Partnership commit to early consultation about the establishment of a series of conservation areas, and a wider corridor scheme.

7.2.3 Local Distinctiveness

6) For the Montgomery Canal, the following aspects of the built heritage are of particular importance, and will be fully safeguarded:

- George Buck paddlegear. Working examples remain at Carreghofa.
- Curved cast iron gates. The last pair on the canal were removed from Welshpool Town Lock and are now at the Stoke Bruerne Museum. It is proposed to relocate them back to Welshpool.
- Fish-bellied cast iron beamed bridges, as exemplified by Pentreheylin Bridge.
- Rural stone-pitched wharves such as Crickheath.
- Nineteenth century corrugated iron and timber sheds.
- Small structures such as crane bases and iron hoops included in the Heritage register.
- Cast iron and stone boundary markers.
- The larger buildings recorded within the Heritage Register.

7) Where properties are in the ownership of Partnership members, these structures will be positively retained and sympathetically restored during future restoration schemes.

8) Private owners of properties of heritage value will be advised and encouraged accordingly, through general promotion of the canal heritage, and advice from local authority planning staff.

9) Consideration will be given to seeking limited funding to support important heritage work to properties in private ownership.

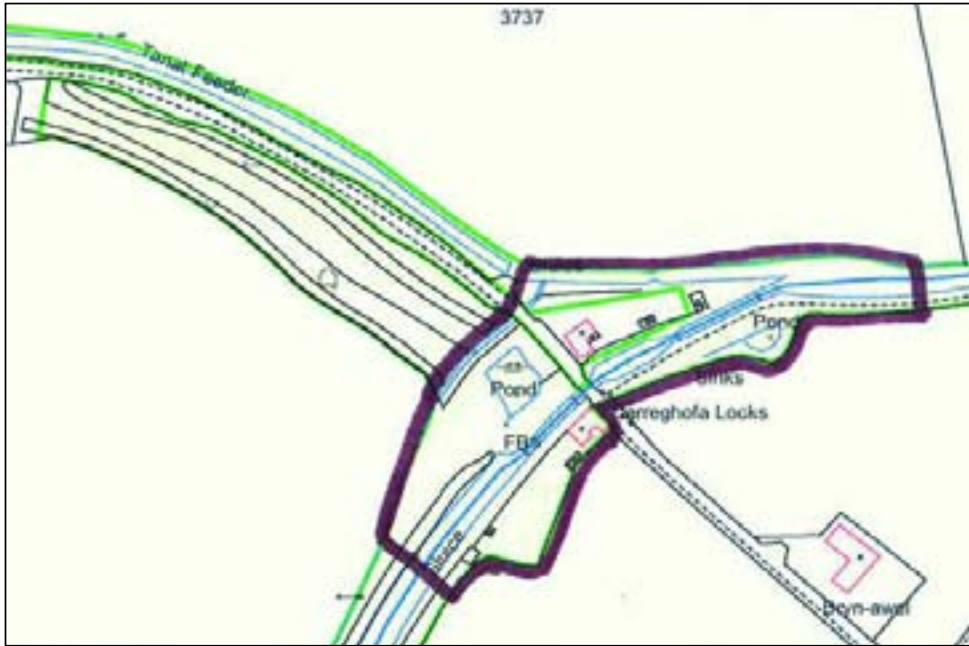


Figure 7.3. Proposed Conservation Area: Carreghofa.

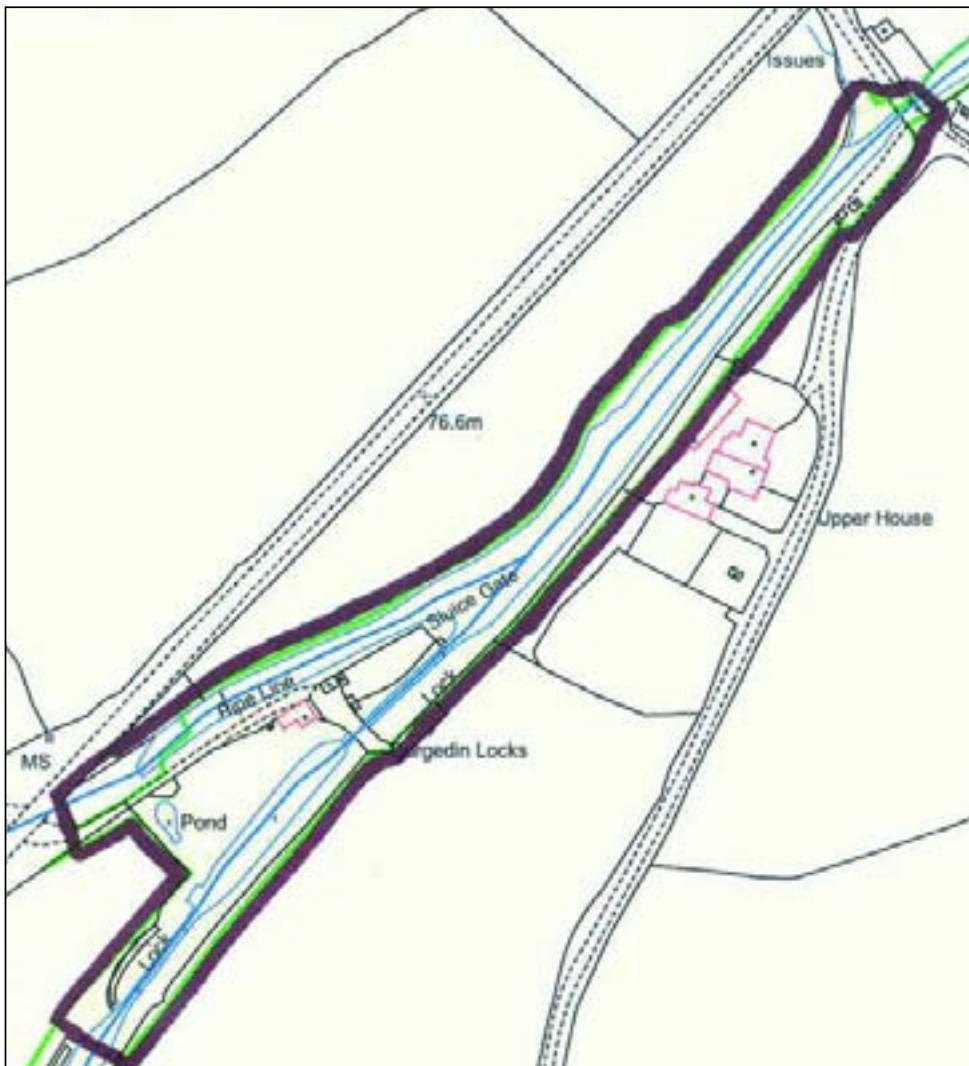


Figure 7.4. Proposed Conservation Area: Burgedin.



Figure 7.5. **Proposed Conservation Area: Belan Locks.**

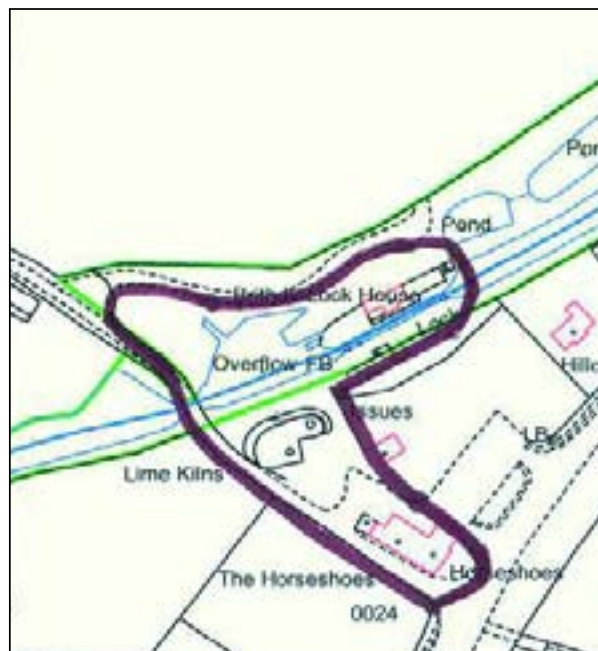


Figure 7.6. **Proposed Conservation Area: Brithdir.**

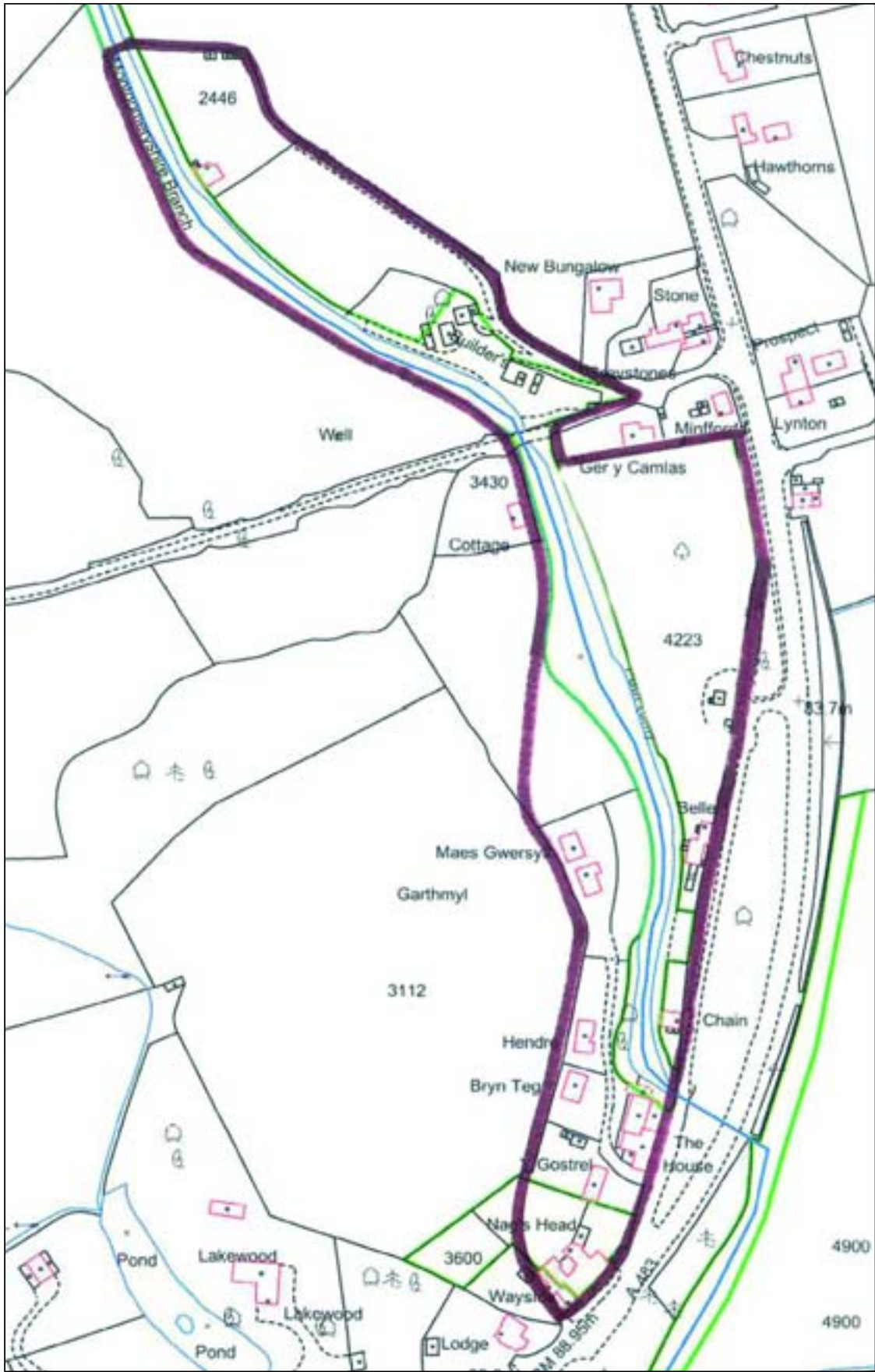


Figure 7.7. Proposed Conservation Area: Garthmyl.

7.2.4 Benign Neglect

This is often a problem with smaller buildings unsuitable for housing or accommodation. The fate of many of the nineteenth century timber and corrugated iron sheds is especially under threat, as the value of a rusty old shed is rarely apparent to the owner. Similarly ivy is spreading over some of the old warehouses now used as agricultural barns, and many of the lime kilns.

10) Steps to raise awareness will be taken as an essential first requirement, but selective protection through inclusion in restoration schemes will also be sought.

7.2.5 Sympathetic Restoration

11) The Partnership will seek to establish national British Waterways policy as standard practice, through careful briefing of contractors, and training of local staff.

National policies emphasise the nature of sympathetic intervention, using minimal techniques and local and traditional materials. The challenge ahead is to ensure increasing knowledge and commitment to these standards on the ground. The built heritage assessment has shown that there remains room for improvement on this topic.

12) Restoration of the currently dry sections will follow traditional puddled clay techniques, unless engineering dictates otherwise.

13) In order to assist best practice, the Partnership will seek to:

- Make advice available to private landowners.
- Update and make available existing information on local distinctiveness (British Waterways 1980s, Hughes 1989, Heritage Assessments Ltd 2003)
- Ensure detailed information on small structures is readily available through the British Waterways GIS system, and consulted as standard procedure.
- Provide ongoing training for local staff, and interested volunteers and residents, in heritage techniques.
- Major restoration schemes of listed structures will require close consultation with English Heritage and Cadw, and the preparation of individual conservation plans.

7.2.6 The Wider Corridor

Llanymynech

14) The Partnership will support schemes to safeguard the built and archaeological heritage of Llanymynech and the surrounding area.

Shropshire County Council are owners of the Heritage Area, and have plans to develop it as an outdoor industrial heritage and ecology centre and visitor attraction. In the shorter term the canal stable block is opening as a community information point, and the Parish Council have received funding for some modest access, interpretation and education improvements. The historic wharves are in British Waterways' ownership and need to form part of an integrated site and visitor facility.

15) The historic wharves at Llanymynech will be restored as an early phase of restoration. Main works are scheduled for completion in 2006.

16) The Partnership will support potential plans to designate the whole Heritage Area as a Scheduled Ancient Monument.

The plans will also link well with, and complement the Llanymynech HERS (Heritage and Environment Regeneration Scheme) area, which has made significant strides in sympathetic restoration and regeneration of important buildings in the village. Indeed this scheme is part funding the restoration of the stable block adjacent to the canal, as a community information point for the heritage area.

17) The Partnership will support any proposals to extend or replicate the Llanymynech HERS scheme to other settlements along the canal corridor.

Welshpool

18) The Partnership look forward to supporting an appropriate scheme for the redevelopment of the old canal workshops and adjacent area, part currently operated as a builders yard.

Welshpool town centre also offers opportunities to integrate the built heritage of the canal more fully with the town with which it is associated. Linking the castle, its estate, the canal and steam railway will strengthen appreciation of the built heritage and also the visitor appeal. Some initial town landscape ideas, included in Section 7.1 above, will help those links.

Newtown

19) Safeguarding of the remaining canal heritage in Newtown will be supported.

Buildings of particular note have been recommended for inclusion in the Heritage register, but a more thorough survey is called for, particularly if aspirations to restore beyond Freestone remain. Recent work on behalf of Powys County Council (Latham Associates 2003) has sought to enable current housing developments to be sympathetic and in keeping with the original canal-side location.

20) The canal route into Newtown will be safeguarded in future development plans, along the route identified in the recent feasibility study.

This is essential until the preferred southern terminus for the restoration is agreed. A recent study (Black and Veatch 2004), has recommended that the best route for the canal into Newtown is for it to cross the River Severn, in the area of Gro Trump, and have a new terminus on the eastern side of the river. Without the canal, it nevertheless provides a valuable green corridor, currently open at its southern end for all ability access and cycling. The route is thus a link from the historic terminus to the working sections of the canal, and merits protection for this alone.

These sites demonstrate the intimate connections between the canal and the settlements through which it passes, and the need for sympathetic planning and development.

References for further information

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Crowe (1994) Architectural Heritage Survey Montgomery Canal. Notes of non-listed structures and photographic record.

Deamer (1993) The Conservation of the Built Environment on the Montgomery Canal. A Memorandum addressed to the Montgomery Waterway Restoration Trust. 54pp.

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Heritage Assessments (2003) Montgomery Canal: Built Heritage Assessment 35pp.

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Institute of Industrial Archaeology (1987) Llanymynech, Heritage of the Borderlands. An Archaeological and Historical Evaluation. 26pp.

Latham Associates (2003) Newtown Canalside Design Study

Oswestry BC (2000) Llanymynech Village and Heritage Area: Heritage Economic Regeneration Scheme Implementation Programme. 48pp.

Ratcliffe Associates (2005) Llanymynech Limeworks Heritage Area Conservation Plan 150pp

7.3 NATURE CONSERVATION

7.3.1 Enhancements

Off-line reserves will be adopted as a major part of the nature conservation proposals because of the detailed research which shows severe decline in aquatic macrophytes with increasing levels of navigation (see Section 3.3). Marginal plants are much more resilient.

Nevertheless it is still the agreed policy to deliver net enhancements to nature conservation through the proposed restoration (Navigation policy A, Section 6.4.1).

This will be achieved through:

- Improved structural integrity, and less risk of major incident
- Improved connectivity and linking of populations. In Wales this will be through specific in-channel standards, and in England by constructing one new large nature reserve with integral connectivity
- Increased populations of aquatic macrophytes, through 100% in new reserves, and in channel plants providing net gains
- Increased areas of marginal vegetation
- Higher quality terrestrial habitats
- Improved access, interpretation and education of this unique habitat

These different enhancements are interwoven through the many proposals in the sections below.

7.3.2 Aquatic vegetation

- 1) The baselines for ensuring net gains during and after restoration will be the 2001 Newbold survey for Wales, and the 1980s and 1997 British Waterways data for England.

The Newbold data (2001) has been chosen for Wales as it is the most comprehensive information available, is available in digital format and was based on replicable methodologies. In addition to this older data from surveys in the 1980s and 1997, have been used to provide targets for increasing or retaining the distributions of nearly twenty locally distinct species (see standards tables in Monitoring, Chapter 10).

An alternative measure was required for England, as at the time of the Newbold survey, the majority of the England length of SSSI was classified as in unfavourable condition. The British Waterways data from the 1980s is very comprehensive, closely matches the methods proposed in Common Standards Monitoring, and provides a baseline for the canal's plant communities prior to any restoration work or re-introduced navigation.

- 2) The main means of mitigating and compensating for the loss of aquatic plants will be:
 - Specific on-line measures, to ensure continuity and linkage between the nature reserves
 - Creation of new off-line nature reserves (see below)
 - Undertaking a range of measures to improve water quality (see Section 7.5)
 - Mitigating effects of boat traffic, through management of numbers, speed of travel and excellence in boat design. (see Section 7.4)

In-channel Conservation

- 3) Within Wales in channel conservation standards are crucial to securing connectivity and demonstrable enhancement of nature conservation. They are based on Common Standards Monitoring Type C for SSSIs: canals with significant levels of navigation.

Separate standards have been agreed for the boated channel (focusing on emergent vegetation) and the proposed in channel reserves (focusing on submerged and floating leaved vegetation). In combination the standards are designed to exceed standard C.

- 4) Within England there will be no specific in channel conservation standards, but the channel will be developed and maintained to British Waterways' own standards for biodiversity. This will include maintenance of soft banks with a rich marginal vegetation and some aquatic plants.

These standards will apply to all of the English length south of Keeper's Bridge. Restoration of the section currently dry will provide an enhancement of a further 6 hectares of aquatic habitat. Following restoration of the dry section, there will therefore also be improved connectivity of the aquatic habitat, with an ecologically functioning link between the currently separated England and Wales SSSIs.

Table 7.2. **SSSI Standards for vegetation cover in canals**

Submerged + floating leaved vegetation cover	EMERGENT VEGETATION COVER				Rate <3%
	Dominant >70%	Abundant 30-70%	Frequent 10-30%	Occasional 3-10%	
Dominant >70%	A		B		
Abundant 30-70%					
Frequent 10-30%	C				
Occasional 3-10%					
Rare < 3%					

- 5) Special protection measures will be put in place for existing concentrations of rare species.

The major bed of *Luronium natans* over Vyrnwy Aqueduct to Pentreheylin Bridge (21% of the canal population based on Newbold area mapping) will be protected in situ by horse drawn passage over the bed (600 linear metres). Additional protection measures will be provided between Carreghofa Bottom Lock and the bed, to ensure water quality. This will include baffles on the outlet paddles, to prevent major currents on emptying the lock. Other measures to be investigated include either a single gate at Williams Bridge and Pentreheylin, or possibly extending the towage to the bottom lock.

A similar scheme could be considered for the *Luronium* bed at Red House/Brynderwen. Tickover speed only on individual sections has also been offered in principle for specially identified sites (see navigation section).

- 6) A series of in-channel reserves will be constructed along the Welsh length of canal, with boat barriers to exclude navigation, and silt membranes to protect water quality.

In channel reserves have been used previously, and successfully, on the Rochdale Canal (see Figure 7.8) will be an important element of in-channel works.

- 7) In-channel reserves will be sited at regular intervals along the canal length, and will average a minimum of 600 square metres per kilometre of canal open to navigation in Wales.



Figure 7.8. **On-line conservation, Rochdale Canal, with silt screen protection.**

Reserves will ideally be a minimum of 3 metres wide, but of variable length and will be located on the off-side. Reserves in shaded sections, constructed primarily for Floating Water Plantain will not be expected to achieve plant cover or diversity of the main standard.

8) A number of small on-line sites, previously classified as nature reserves in the 1980s, will be included in the in-channel reserves programme.

These include:

Park Mill winding hole
 Croft's Mill Bridge
 Wern Aqueduct
 Abbey Bridges

9) Dredging programmes in sensitive sections will include a rescue and recovery programme for aquatic plants. A proportion of recovered plants will be replanted in channel, in sheltered locations.

This system has been successfully employed on the Rochdale Canal.

10) In the main boated channel other suitable sites will be graded and seeded during restoration or dredging work, to provide aquatic plant habitat.

As on the Rochdale Canal, the ideal is that aquatic plants will be able to grow in the margins. On the narrower Montgomery Canal, the success of such an approach will have to be monitored.

Potentially suitable sites outside of the reserves will be graded during dredging, and other restoration work, and will have invasive species, primarily *Glyceria* controlled. The sites will be seeded with locally sourced material and monitored for establishment. If establishment is slow or inconclusive, these sites could be subsequently protected with a full silt curtain to form an in-channel reserve.

This approach will have a particular benefit on the inside of bends, where reserve barriers are not practicable. Also, partially shaded areas, in which *Luronium* is well adapted to compete, will be trialled.

11) Opportunities for on-line conservation zones, in conjunction with new on line mooring basins, will be explored and implemented.

See also Sections 6.4 (Navigation) and 6.5 (Water and Environmental Protection). These contain a range of management proposals that will enhance on-line conservation value.

12) Optimum channel profiles and linings will be researched and implemented where appropriate.

Funding for such work has been partly secured, and will include computer modelling and some trial works. The objectives are to find the best channel profile for minimising effects of boat movements, and the possible use of aggregates on the canal bed to provide a stronger rooting medium for the aquatic plants.

Off-line Reserves

Offline reserves were first established on the Montgomery Canal in the mid 1980s, and recent survey work (Newbold 2003) demonstrates that where fully managed, these reserves have a flora that is representative of the adjacent length of the canal. Research (Eaton and Willby 2002) has been used to predict the area of new open water habitat required to compensate for the increased boat traffic following restoration.

The figures in the table below are based on ensuring a sufficient area of habitat to fully support the aquatic plant populations present in the canal, to the agreed baseline i.e. 100% of the population. This will demonstrate enhancement, as the populations remaining in-channel will be **net gains**.

13) Detailed standards for the new nature reserves are based on Common Standards Monitoring Type A, the standard for non-navigable waterways.

The areas of new nature reserves in Wales have been calculated based on achieving full compensation for the aquatic plants, based on the 2003 baseline data and are shown in the table below. In addition to these reserves, there will also be previously established reserves, and major in-channel conservation at Vyrnwy Aqueduct and the proposed Maerdy crossing diversion.

In England the reserve area is a straight replacement in area, but managed to higher standards than previously attained. There is thus a slightly greater emphasis on off-line conservation, and a corresponding reduced emphasis on in-channel conservation.

Monitoring will be the mechanism to ensure that the required standards both in-channel and in the new reserves are met and maintained.

Table 7.3. **Theoretical Levels of New Habitat Required to Compensate for Re-introduced Navigation**

LENGTH	Current Navigation Level (bmy)	Target Navigation Level (bmy)	CALCULATION (open water)	CALCULATION (aquatic area)	Number of reserves
England SSI	2,500	5,000	3.75 ha	4.5 ha	1 large reserve
Gronwen – Llanymynech	0	5,000	Net gain	2.7 – 3.9 ha	Net gain
Llanymynech – Arddleen	0	2,500	3.6 ha	4.32 ha	3 minimum
Arddleen – Welshpool	500	2,500	3.2 ha	3.84 ha	2 minimum
Welshpool – Refail Bridge	500	2,500	2.4 ha	2.88 ha	2 minimum
Refail Bridge – Freestone	0	2,500	Up to 6.6	7.92 ha max	2 minimum
Freestone – Newtown	0	2,500	Net gain	Net gain	Net gain

NOTES TO TABLE

1. Aquatic area in England includes area already constructed at Aston Top Lock.
2. Numbers of reserves in Wales are minimum on each length, to ensure that conservation interest is maintained along the entire canal length.
3. The figure for reserves south of Refail is for restoration south of Refail. For phase 1 restoration north of Refail, a maximum of 2 hectares of reserve may be constructed to the south.

14) New habitat areas will be situated at a range of sites along the canal, to reflect its linear nature.

Indications are that there are many more suitable sites, in terms of topography and location, than are required. The list below indicates the minimum requirements for each length, in order to protect the linearity of the site.

Keeper's Bridge – Aston Bottom Lock (one location)	4.5 hectares
Llanymynech – Arddleen	3.0 hectares
Arddleen to Welshpool	1.8 hectares
Welshpool to Refail Bridge	2.0 hectares

Due to the connectivity of the whole canal system, during the first phase of the restoration, reserves may also be installed south of the English SSSI, and to the south of Refail Bridge (maximum 2.0 hectares), as part of the overall total.

15) In addition to the new reserves, existing reserves will be positively managed to achieve Common Standards Monitoring Type A.

These reserves, and areas, are:

Aston Locks Reserve	0.4 hectares
Maerdy diversion (if/when constructed)	0.9 hectares
Guilsfield Arm (east)	1.2 hectares
Wern Reserve	0.3 hectares
Whitehouse Reserve	0.3 hectares
Brithdir Reserve	0.1 hectares

16) Plans for restoration will seek to secure land suitable for creating this size of new habitat, through negotiation in the open market.

17) Design guidelines, provided by the Wetlands Advisory Service, and summarised in Table 7.3 will be used as the basis for constructing these new habitats.

18) Following agreement of the Conservation Management Strategy, British Waterways and the Countryside Council for Wales, on behalf of the Partnership, will jointly seek support from the Welsh Assembly Government, to steer these proposals through the European Habitat Regulations.

This approach will also involve other competent authorities within the Partnership, chiefly Powys County Council and the Environment Agency. There are two potential paths through the legislative process, which is outlined in Figure 4.1 (see chapter on Options Appraisal).

- The Partnership's preferred option is to seek to extend the boundaries of the SAC to incorporate the new nature reserves. This will have to be after they have reached the sufficient standard, but would enable the restoration proposals to proceed on the basis that they have no net impact, or an overall enhancement, on the SAC designation.
- The alternative path will be to argue for a case of over-riding public interest. If the boundaries of the SAC are left at their current point, the restoration proposals will have a clear significant and harmful impact on the SAC. While there is no overall impact, the value in the SAC would decline, with the nature conservation gains being outside of the notified boundary.

The extended SAC is the preferred option because the Partnership believe that the proposals, which enhance the overall nature conservation interest, are not fairly reflected in a process which relies on an over-riding public interest.

19) The Countryside Council for Wales will recommend the extension of the SSSI designations to include new reserves, once they have reached sufficient quality to merit designation.

20) Criteria for designation, based on Common Standards Monitoring type A, are defined in the standards table in Chapter 10.

Table 7.4. **New Aquatic Habitat Design Guidelines**

- Distribution along the full length of the canal.
- A variety of sizes, but generally larger than present.
- Waterproof lining (puddled clay where possible), to prevent water loss from the system.
- Careful attention to depth, to ensure relatively low level of intervention management.
- Shallow enough for key aquatic species.
- Maximum width will be no more than 30 metres, primarily to reduce problems from disturbance by wildfowl and bottom feeding ducks.
- Marginal vegetation designed to discourage Canada geese.
- Inflows designed to minimise ingress of silt and filter out nutrients.
- Access required for long term dredging and other management.
- Maintenance of a flow of water, either by use of the by-wash at Locks, or by the installation of pumping and aeration systems.
- Inflows will be designed to enable shut off of water flows to protect against a major pollution incident (reed filter, sluice, or inflow by wind pump).

Adapted from Wetlands Advisory Service (2003)

As well as providing open water habitat, these reserves will increase the area of marginal vegetation, and provide scope for marsh, scrub, woodland and rough grassland, thereby providing enhancements for other habitat types.

21) There will be a presumption in favour of having the sites open to the public, with appropriate facilities, including paths, trails and interpretation.

22) The first reserves will be allowed a minimum of three full growing seasons to establish before navigation is re-introduced or increased in the currently isolated length. Subsequent reserves will have a minimum of two full growing seasons to establish. Monitoring will take place over this period.

23) The reserves will be managed as part of the overall canal ecosystem, by British Waterways, with appropriate annual management to maintain optimum conditions.

In areas of eutrophication this may include annual cutting and removal of aquatic plants, to prevent vigorous and common species out-competing the rare and sensitive species. Cutting of marginal vegetation to prevent succession and occasional dredging will also be undertaken as appropriate.

7.3.3 Marginal vegetation

Marginal vegetation is an important habitat in its own right, and while less sensitive to effects of navigation, must also be protected. The plant communities also host a diverse range of associated invertebrates e.g. dragonfly larvae, and levels higher up the food chain e.g. birds. There are many examples of schemes and special protection measures for canal marginal vegetation, including geotextiles. A full report on these systems, and other aspects of channel design is in preparation (Liverpool University, 2005), and will provide further information to guide future restoration work for the Montgomery and other canals.

24) Management will seek to attain an average width of one metre each side of the canal, for a target of 75% of the total length, south of Keeper's Bridge.

Marginal vegetation in offline reserves will further supplement this habitat. Because research indicates that marginal vegetation is relatively unaffected by boat movements, the area present will broadly reflect conservation value. Re-watering the dry section to Llanymynech will further increase the area of marginal vegetation, over a distance of approximately six kilometres.

25) Innovative piling methods used on the Maesbury to Gronwen restoration will be used when appropriate. This has included piling in the middle of the bank, rather than water's edge, and also double piling, with a front piling sunk in to water level.

Maintenance of marginal vegetation will necessitate careful location of hard edge moorings or facilities, which should also refer to built heritage constraints.

26) There will be a presumption in favour of allowing or encouraging soft vegetation edges, on both the off-side and towpath, except for built heritage or visitor facilities.

Where hard edges are required on the towpath side, which could be for structural reasons, built heritage purposes, or moorings, consideration will be given to allowing a wider marginal zone to develop on the off-side.

27) New off-line reserves will be designed to incorporate a full marginal fringe of vegetation.

The area of marginal habitat likely to be created through the reserves is estimated at 2 hectares.

7.3.4 Canal Fauna

28) In order to better inform monitoring, continued research and survey will be encouraged and commissioned, as data is less comprehensive than for the flora.

Some invertebrates are particularly sensitive to change in micro-environment, but often because of their dependence on a particular type or species of vegetation, or a requirement for high water quality. Practical measures will therefore focus on maintenance of the plant communities and water quality.

There have been some significant declines in the canal bird population over the last twenty years, but these are thought to be primarily due to changes in agricultural practice on the adjacent land holdings. The continued development of the Environmental Stewardship Scheme and Tir Gofal will help to address this problem.

7.3.5 Other habitats

The new nature reserves will require a larger land take than the proposed aquatic habitat, as additional land will be required for the placement of soil from excavations.

29) Additional land will be used to enhance other semi-natural habitats, especially native woodland and species rich grassland or marsh.

Hedges and boundaries will be managed to maintain stock proof barriers, and will also take into account maintaining good towpath access, shading requirements of the canal flora, views from the canal, and the role in linking landscape together.

30) Management will be by careful machine trimming, supplemented by a programme of hedge-laying, and retention of standard trees. In suitable locations a taller hedge or woodland fringe will be allowed to develop.

Length specific proposals will be incorporated into maintenance plans and procedures.

31) Summer towpath mowing will be confined to a central walking strip, in order to continue to promote species rich grass margins. Full cuts will be undertaken in late summer and early spring.

32) Offside buffer zones will be encouraged, and used to develop wider marginal vegetation and new hedgerows or woodland strips.

7.3.6 Managing Undesirable Species

Aquatic habitats are prone to sudden infestation of introduced plant species such as Floating Pennywort and Water Fern.

33) The canal will be regularly monitored by canal staff in the course of their normal work regime to enable a quick response to any occurrences of undesirable species.

34) Steps to eliminate Japanese Knotweed along the canal will be taken, through a planned spraying programme.

Elodea species are generally a sign of poor water quality, out-compete the ecologically valuable species, and are a major hindrance to navigation.

35) Annual weed cutting of the canal will continue, and expand if necessary, with removal of cuttings. Steps to investigate better collection systems will be pursued.

This will help remove nutrients from the system, and further optimise habitat conditions.

Fish introductions will not be allowed. Partnership with local angling clubs will provide a mechanism for ensuring this. Measures to control **mink** will be reviewed if the water vole populations appear to be declining.

7.3.7 The Wider Corridor

It is a continuing theme of nature conservation in canals that management is seeking to protect a habitat that is both man-made, and subject to rapid ecological succession if unmanaged. Modern propeller craft are more damaging than the original horse-drawn traffic, and management is therefore often a compromise between conflicting aims. Looking to the wider canal corridor is an increasingly important way of addressing these issues. This is not to negate the value of the canal, or its protection, but does point a way forward for the long term development of a complementary strategy to seek to re-create suitable habitats for these species beyond the canal system.

Creation of new off-line habitat areas is a start to this process, but it is pertinent to review a range of other initiatives in the local canal corridor, which have links to both this strategy and shared interests with the Montgomery Canal Partnership. A summary of these schemes is given in Table 7.5.

36) The Montgomery Canal Partnership will actively support wider environmental schemes which have shared or complementary objectives.

Table 7.5. **Complementary Environmental Schemes in the Canal Corridor**

Organisation	Description
Montgomeryshire Wildlife Trust	Land acquisition along the River Severn for reversion to semi-natural habitat. This includes land at Glanhafren, adjacent to both the river and the Montgomery Canal.
Shropshire Wildlife Trust	Financial support for lapwing and wader habitat creation and management
Ruralscapes (working jointly with British Waterways)	<ul style="list-style-type: none"> • Funding through Environment Agency for several major pond creation schemes, within Shropshire canal corridor. • Stewardship advice and applications • Extended area of operation into Powys (2004)
RSPB	Severn Washlands proposals
Environment Agency	<ul style="list-style-type: none"> • Enforcement of pollution legislation, and improved water quality. Dealing with point source pollution. • Severn CAMS • Wetlands for Wales
DEFRA	Environmental Stewardship This can include creation of wetland areas, but also buffer zones with low stocking levels and fertiliser inputs.
English Nature	<p>Wildlife Enhancement Scheme; a scheme to support management of SSSIs. Potential use for water quality improvement issues.</p> <p>Shropshire Meres and Mosses; natural habitat area, in Shropshire, for much of canal fauna and flora.</p> <p>SSSIs; Morton Pool and water meadows adjacent to canal.</p>
Countryside Council for Wales	Tir Gofal
Ness Botanic Gardens, University of Liverpool	Proposal to develop a Waterplant Conservation and Research Unit
Llanymynech Partnership	Development of heritage area, nature reserve and environs, under Shropshire County Council leadership.

7.3.8 Risk Management

An important consideration in the Options Appraisal (see Chapter 4) was a review of the risks associated with each option. It should be noted that there are a number of proposals within both this section, and other parts of the Strategy, which reduce the level of risk to the nature conservation value of the canal. These, while not a direct enhancement, are important gains for nature conservation, over and above the enhancements listed above. The full risk analysis is available in the full Options Appraisal, but some points to note are:

- Monitoring informs action – careful monitoring throughout the process.
- Phased approach – enables monitoring, establishment periods and recovery times.
- The off-line reserves protect the populations from major incidents such as pollution.
- Enhanced structural stability reduces risks of major failure e.g. of an embankment or aqueduct.
- Conservation measures are commitments, whereas navigation levels are targets.

Navigation will be monitored, and adjusted to the maximum level **consistent with always maintaining the conservation value of the canal.**

References for further information

British Waterways (2001) British Waterways and Biodiversity: A framework for waterway wildlife strategies. 220 pp.

Countryside Council for Wales and English Nature (2005) Montgomery Canal Conservation Objectives and Standards 24pp.

Eaton, J., Willby, N. and Hatton, K. (2003) Aquatic Macrophyte Research Summary

Wain, Eaton and Johnson (2003) A Proposal to Develop a Waterplant Conservation and Research Unit at Ness Botanic Gardens, Cheshire. 23pp.

Wetlands Advisory Service (2003) Design Guidelines for New Aquatic Habitats.

7.4 NAVIGATION

This section expands on the policies established in Section 6.4. It sets out some of the details of how the objectives of the restoration will be met, and which partners or external bodies will be responsible for them.

7.4.1 General management of navigation levels

There is a long-standing arrangement (dating back to the 1987 Act) for the introduction or increase of navigation on any one section of the Canal to be accompanied by the creation of suitable compensatory habitats and the implementation of appropriate management and monitoring.

1) Levels of traffic, the status of the nature conservation value and other relevant parameters will be assessed annually and then new levels of traffic and changes to the management regime for the coming year agreed.

2) The target level of navigation in Wales is 2500 boat movements per year.

The actual number will reflect the monitoring informs management principle, and subject to achieving the required ecological standards (defined in Chapter 10) may be higher or lower.

3) Within Wales, navigation will be re-introduced at a precautionary level, with small and steady increases towards a dynamic balance. It is not assumed that all changes in nature conservation value in the canal itself are automatically due to boat traffic and other parameters will be monitored and controlled too.

4) Within England, navigation levels agreed within the Partnership (currently 2,500 boat movements per year), will only be lifted after the full area of new nature reserve is fully established.

Levels of navigation may therefore vary along the canal, for instance to allow for localised trip boat/day boat operations or to take account of local conditions without this necessarily affecting numbers of visiting boats.

This process is summarised in Figure 6.8. Increases in navigation are therefore tied to overall improvements in the ecological resource, or to change in management that offsets any potential impacts. Improved boat design, reductions in boat speed along sensitive sections and encouraging out of season navigation are all ways to mitigate impacts, and will help achieve higher levels of navigation than would otherwise have been possible. Figure 6.9 demonstrates a potential shift of navigation away from the sensitive spring season to the autumn.

5) Navigation will be held at current levels (2,500 in England, 500 in Wales and 0 in non-navigable sections) until the offline reserves and in channel measures for the relevant length have been established.

In addition positive management of other lengths must also be underway (see “Monitoring Informs Action”, Section 6.3.4).

6) The first reserves will be allowed a minimum of three full growing seasons to establish before navigation is re-introduced or increased in the currently isolated length. Subsequent reserves will have a minimum of two full growing seasons to establish. Monitoring will take place over this period.

The likely phased funding for the restoration will therefore seek to support the new habitat creation early in the process, to ensure that the reserves have had time to establish sustainably before the restoration of navigation is complete.

7) In areas where navigation is currently zero or 500 bmy (Wales and dry sections in England) the first step increase (once reserves are fully established) will be to 1250 bmy.

8) From this point (and initially in existing navigable lengths in England) navigation levels will be reviewed annually and increased only in small increments in accordance with Monitoring Informs Action.

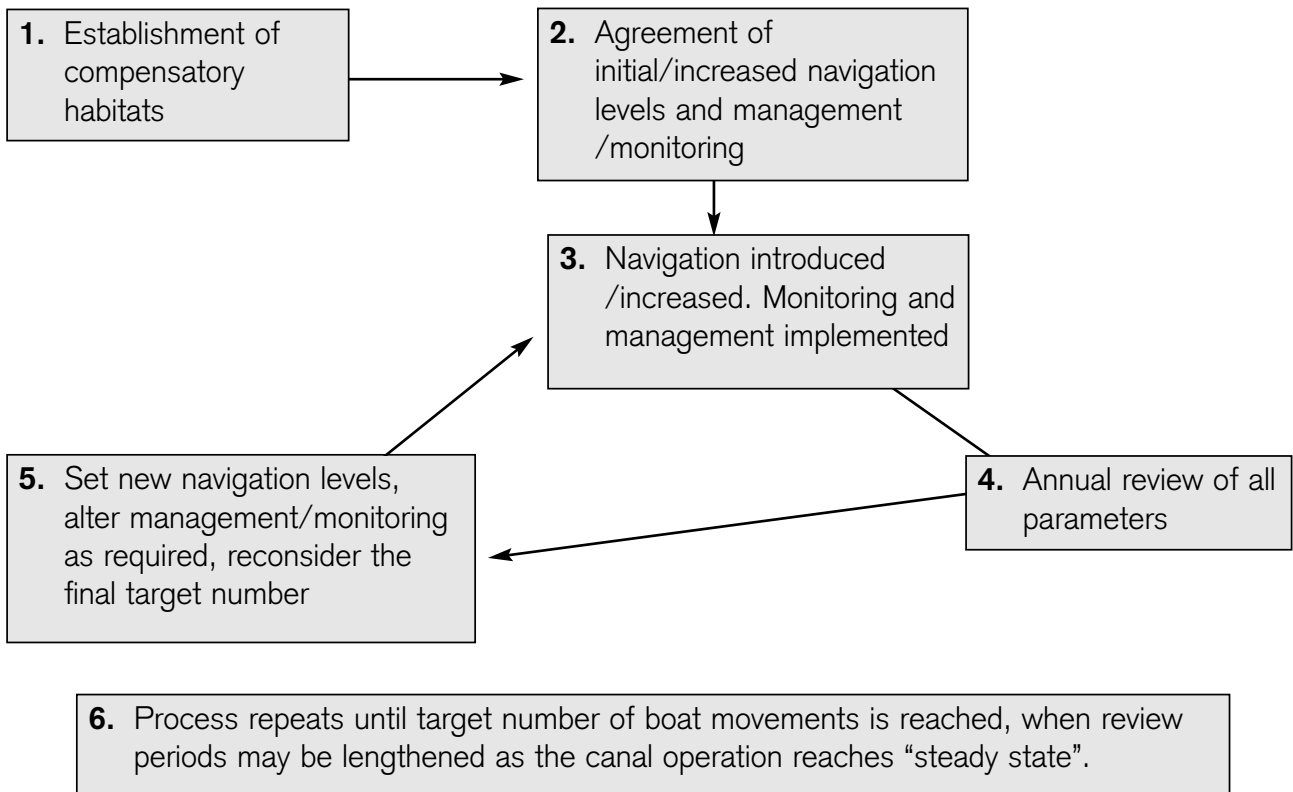


Figure 7.9. **Monitoring and Review Process.**



Figure 7.10. **Potential for shift in the navigation season.**

9) Although target levels of 2,500 and 5,000 are included in this strategy, the actual “steady state” level of navigation for any given section of canal will depend on maintaining the required ecological standards.

7.4.2 Moorings and Navigation Levels – use of the Boat Traffic Model

The base mechanism for determining likely boat movement numbers from various activities is British Waterways' Boat Traffic Model. This utilises known annual averages for trips by private and hire boats, including distances travelled, and factors them in to the potential mooring sites identified. For example, an average private boat undertakes about 17 movements per year, made up of five short, two medium and 1.5 long trips per year, where the average distance of each type of trip is:

- Short = 26km round trip
- Medium = 77km round trip
- Long = 386km round trip

Figure 7.10 shows two versions of the boat traffic model, worked out for the Montgomery Canal, following completion of Phase 1 restoration to Garthmyl. These versions demonstrate how boat movements change based on different assumptions for number and location of permanent moorings, trip boats/hire boats etc.

Since the number of visiting boats and the number of moorings is to be managed, the basic model will provide a reliable guide to boating activity along the entire length of the canal. Its accuracy is further enhanced once the results are complemented by data from automatic boat and lock counters. A network of these counters will be installed ahead of restoration. Different parameters can be used within the model if and when required – for instance to reflect changes in management rules on the Montgomery which influence boating behaviour.

10) The boat traffic model, supported by a network of automatic boat and lock counters, will be used to guide the creation of new moorings for the Montgomery Canal and to manage the boat movements to agreed levels.

The parameters that can be changed within the model, and therefore need strategic decisions are:

1. The numbers, or proportions, of visiting boats from the Llangollen Canal. Current numbers are effectively limited by the relatively short section of canal open, and the defined opening times at Frankton Locks.
2. The number and locations of moorings for private craft.
3. The numbers and locations of commercial craft, covering holiday hire boats, day boats, and local trip boats.

The boat model can therefore be used to assess implications of new mooring proposals as well to identify number of visiting boats that can be permitted within the agreed targets. The annual assessment allows visiting boat numbers (the most flexible component of boating figures) to be fairly flexibly controlled, on an annual basis. Other elements (moored boats and trip/hire boats), which depend on some form of commercial or legal agreement of longer duration, can only be controlled on much longer timescales, once capacity is clearly available.

Model run version 1: maximising private permanent moorings

This run begins with the target of 5,000 boat movements in England and 2,500 in Wales. Visiting boats are assumed to be managed at levels of 1,500 boats through the Frankton Locks per year (3,000 boat movements) and 625 boats across the Vyrnwy Aqueduct (1,250 boat movements). Commercial operations comprising six hire boats, 4 day boats and 2 trip boats are then assumed, just below current levels. Day and hire boats are assumed to be ‘eco-designed’ (see below) and to have only half the impact of conventional boats. Trip boats are assumed to be horse-drawn (see below) and have only a tenth of the impact of conventional boats.

Within these constraints, the model then maximises the number of private, permanently moored boats on the canal in accordance with the following assumptions about trip choices for boats based at ten separate mooring locations.

Table 7.6. **Private boat moorings and assumptions about trip choices.**

Mooring location	Short trips		Medium trips		Long trips	
	% to Frankton	% to Garthmyl	% to Frankton	% to Garthmyl	% to Frankton	% to Garthmyl
Queen's Head	50%	50%	60%	40%	100%	0%
Maesbury	50%	50%	60%	40%	100%	0%
Croft's Mill	50%	50%	60%	40%	100%	0%
Llanymynech	50%	50%	60%	40%	100%	0%
Four Crosses	50%	50%	70%	30%	100%	0%
Arddleen/Burgedin	50%	50%	80%	20%	100%	0%
Cabin Lock	50%	50%	100%	0%	100%	0%
Powys Estate Welshpool	60%	40%	100%	0%	100%	0%
Brithdir	95%	5%	100%	0%	100%	0%
Berriew	100%	0%	100%	0%	100%	0%

The result is that a total of 168 boats could be accommodated. One potential arrangement is shown below, but it is possible to vary the locations of moorings, to meet the requirements of opportunity and planning requirements. **It is also essential to be aware that these numbers are based on optimum long term conditions, and minimum hire craft; they do not represent current opportunity.**

Table 7.7. **Montgomery Canal: maximising private moorings.**

	Private	Hire	Day	Trip
Queen's Head	90			
Maesbury	5			
Croft's Mill	10			
Llanymynech	25	6	2	1
Four Crosses	5			
Arddleen/Burgedin	10			
Cabin Lock	3			
Powis Estate	15		2	1
Berriew	5			
TOTAL	168	6	4	2

The overall result in terms of boat movements is an average density for the English section of 4,571 across all km points, with a maximum of 4,830 at Pant. In Wales the average is 2,247 with a maximum of 2,498 in the Four Crosses area.

Model run version 2: maximising commercial moorings

An alternative model run is to maintain the assumptions about overall boat movements, and visiting boat numbers, but then to maximise commercial operations over private. If only commercial boats were permitted on the canal, the following schedule of boating bases could be achieved:

Table 7.8. **Montgomery Canal: maximising commercial boats**

	Private	Hire	Day	Trip
Queen's Head	0	20	20	
Llanymynech	0	5		
Powis Estate	0	3	3	2
Berriew	0	3		
TOTAL	0	31	23	2

Assumptions about trip choices used in the model were:-

- 50% of hirers at Queen's Head go onto Llangollen/50% down the Montgomery
- All of hirers at Llanymynech head to Garthmyl
- Half of hirers from Welshpool head towards Garthmyl

In practice it is very unlikely that there will be sustainable commercial demand for hire operations at this level.

Option 3: maximising visiting craft

There are approximately 16,000 annual boat movements on the Llangollen Canal past Frankton Locks, and previous modelling has indicated a unchecked demand of approximately 8-9,000 boat movements down Frankton Locks, with about 5,000 movements at Welshpool. This is well in excess of both ecological capacity and water supply, and will have to be managed down. Visiting craft also produce smaller gains to the local economy.

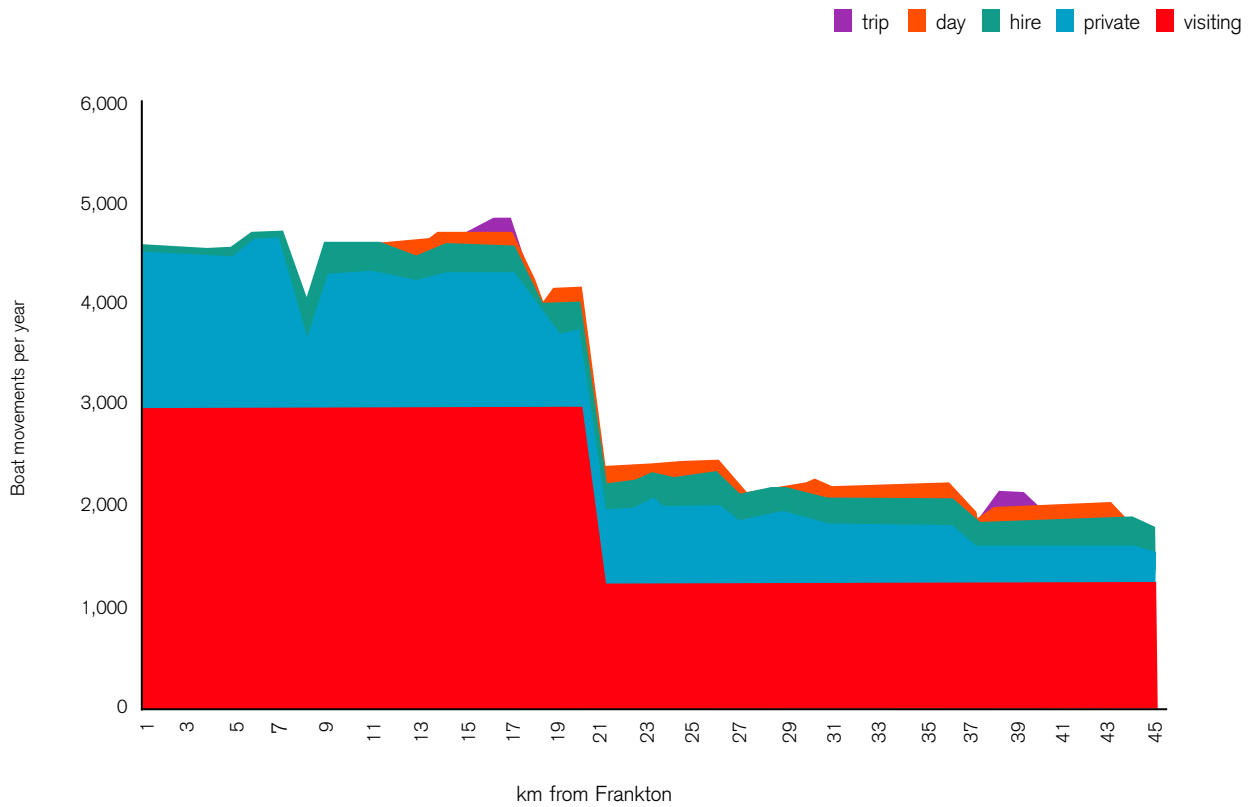
11) Strategic decisions will be required about the balance between the visiting boats, hire craft and private moorings.

These decisions need to take into account:

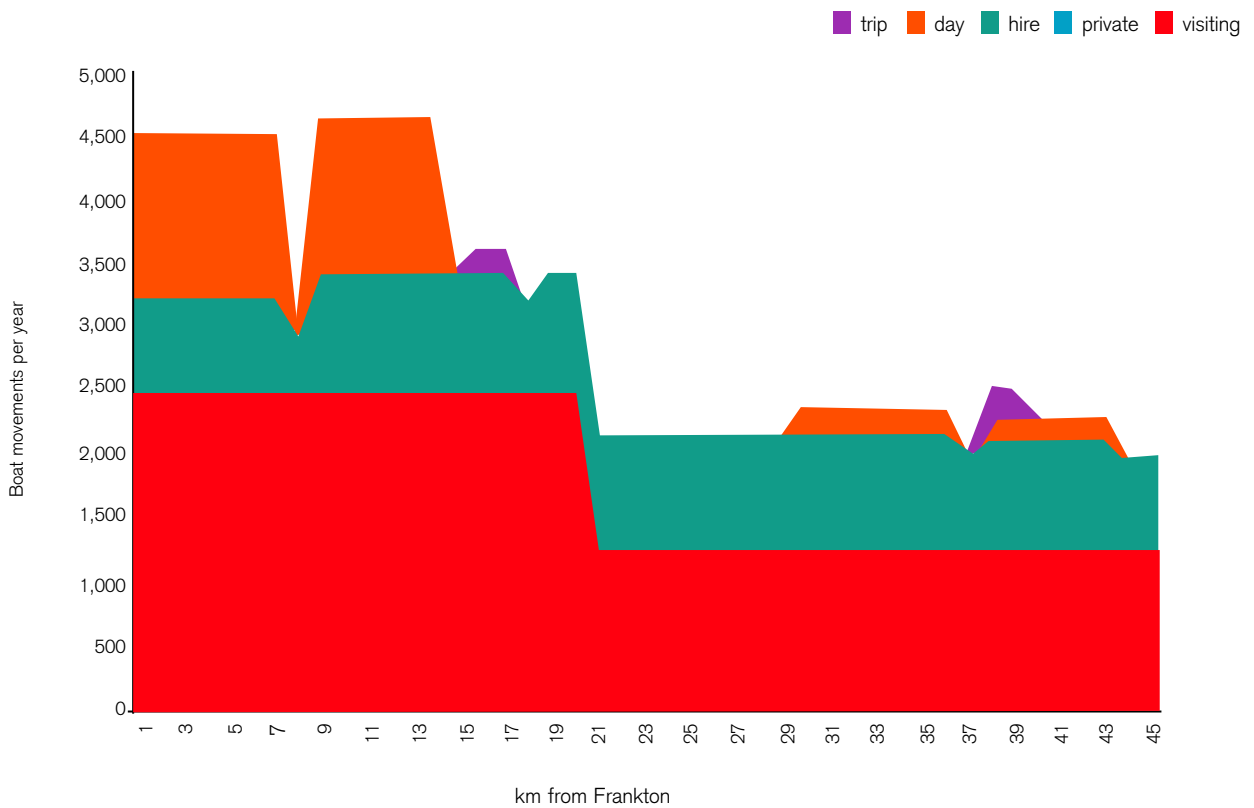
- Economic impact
- Ability to respond to management change
- Opportunities for optimum ecological design
- Demand

12) The balance will require regular review, but initial plans, subject to achieving the habitat enhancements, are:

- Maintain current numbers of visiting boats
- Prioritise horse drawn short trip boats
- Develop and prioritise environmentally friendly day hire boats, allowing numbers to expand to meet demand
- Establish a small base for a hire fleet of optimum eco-design traditional narrowboats
- Reserve the majority of additional boat movements for private moorings along the canal



Boat movements graph A



Boat movements graph B

Figure 7.11. Boat traffic model: maximising private moorings (graph A) and maximised hire craft (graph B).

7.4.3 Moorings Management

Numbers of moorings depend on the number of boats entering the system at Frankton Locks, and the number of trip boats and hire craft based on the canal. Indications are that at the target levels currently proposed, the canal will support up to 170 private moorings (see Figure 7.11 for the boat traffic model).

At these levels of boat numbers it is essential to redefine the numbers and locations of marinas previously envisaged in earlier development plans. A modern marina generally needs to have high mooring numbers (over 100) to justify the capital costs, and this will not be acceptable in the context of sustainable restoration for the Montgomery Canal.

13) To deliver local economic benefits in a sustainable manner, the general presumption will be to encourage small scale schemes, with offside moorings or small widened basins to enable finger moorings.

This will enable even spread of boat traffic, and can be developed as part of local farm diversification schemes.

14) To ensure economic viability, moorings agreements will be for a minimum 10 year period. It must therefore be clear that boat numbers can be kept at appropriate levels for that period before new moorings are approved.

It is essential to develop alternative and appropriate commercial activities for the sites previously earmarked for marinas. This issue is addressed in the Montgomery Canal economic study, and other sections of this document.

15) In order to secure the economic opportunities in a sustainable fashion, Local Authority members of the Partnership will update their development plans to take account of this change of emphasis and adopt this Conservation Management Strategy as Supplementary Planning Documents.

Many customers will wish to have private moorings on the Canal, at the end of a garden or moored at offside land in their ownership. These private mooring sites are normally issued and renewed annually as part of the normal British Waterways' craft licensing procedures. British Waterways has the right to refuse private mooring where it conflicts with the running of the navigation.

16) Applications for such private moorings on the Montgomery will be tested against the boat traffic model and will only be approved where there is capacity to absorb them.

7.4.4 Commercial Boats

17) The recent fleet of three hire boats based at Welshpool was a very small unit for viability, and the boat traffic model has therefore been based on a potential increase to six or ten boats.

Consideration should also be given to basing some or all of the fleet at Llanymynech, or another location in England, for two reasons:

- i) to avoid movement restrictions at Welshpool when the River Severn goes into drought regulation.
- ii) to match capacity as shown in the boat traffic model.

18) The design of these hire boats will be based on minimising ecological impacts through optimum hull design, pollution control measures and alternative propulsion systems.

This design will help meet sustainability objectives will provide the operator with unique selling points to help the marketing of a Montgomery Canal experience holiday.

19) Ecologically friendly boat design must never be seen as a restriction, but rather as an opportunity to create unique selling points for the Montgomery canal experience, and a means of increasing the navigation available within the ecological capacity of the system.

Day hire boats offer particular opportunities for eco-friendly boating, and a range of fibre-glass designs exist that would provide a different experience. Electric designs have been pioneered on the Norfolk Broads; the great gain from electric boat design has been to maximise efficiency, and therefore range for a given charge. This has been achieved by reducing drag, and wash, thereby meeting environmental objectives as well. Two designs in use elsewhere are shown in Figures 7.12 and 7.13. Further work needs to be undertaken to determine the best designs to reduce turbidity and drag. The aim is to seek the best of both traditional design and modern techniques. Day boats also maximise economic benefits and would enable boat use to be concentrated in appropriate areas, with lower levels of (visiting) traffic elsewhere.

20) As part of the unique experience of the Montgomery, eco-friendly day boats/trip boats will be encouraged over other boat uses.

Short distance trip boats operate a large number of passages in a small section, and for this reason it is recommended that serious consideration be given to using traditional horse drawn methods for such trip boats. As well as reduced effect on wildlife, the horses will be an attraction in their own right. Welshpool, travelling south, is a prime potential location.

21) Commercial licences for trip boats and hire boats will be issued for five years. Adjusting levels of navigation must recognise and safeguard commercial operations on the canal, so new licences will only be issued when it is clear that they can be supported.

7.4.5 Balancing Demand and Access

It is essential to have a series of management methods for matching demand for navigation to the available access to each section of canal. There is also a need to distinguish between access to the English section (which is likely to have higher levels of permitted boat traffic) and Wales.

Three systems are envisaged:

22) Management of boats through Frankton locks will continue, with a booking system, or defined opening hours, to even out the permitted number of passages and prevent queues.

Numbers through the locks will initially be kept at similar levels to current usage, or a small increase so that additional capacity is taken up by boats based on the Canal itself.

23) Increased boat movements will primarily be made available, via mooring licences and commercial agreements, to boats based on the canal, especially eco-friendly day-boats and trip-boats.

An emphasis on locally moored boats has three main benefits:

- i) Numbers of boat movements can be predicted accurately.
- ii) Resident boats can have additional eco-friendly design requirements fitted eg oil filters on bilge pumps.
- iii) There are bigger gains to the local economy, compared with visiting craft, contributing to the sustainability of the Restoration.

24) A towed passage system will be introduced across the Vyrnwy Aqueduct and south to Pentreheylin.

This manages the step change between Wales and England but it also allows the largest bed of *Luronium natans* in the canal (21% of the total – see Figure 7.14) to be protected in-channel, with no propeller action impact. The length of the towed passage may be extended back to Carreghofa Locks, if funding for the additional operating costs becomes available.

Various methods could be used, interchangeably, but the preferred option is horse drawn passage, which will also act as a tourist attraction. Field trials will be undertaken, before re-opening, to assess and develop the most practical systems. Trials will also investigate potential effects of winter passage at tickover speed.

25) A stop lock gate will be installed at Llanymynech, in order to link passage beyond Llanymynech to the towed passage system operating at the Vyrnwy Aqueduct. Llanymynech will be further developed as a destination in its own right.

This is to ensure the step change in navigation between England and Wales happens at the start of the SAC at Llanymynech, which will be the control point for passage over the Vyrnwy aqueduct. This will be either through a bookings system or defined hours of opening. Advisory information to inform boaters entering the canal will be provided at Frankton Locks.

7.4.6 Eco-Boating

Boat Speeds

Reducing boat speeds will significantly reduce the effect of boat traffic; the power required is approximately proportional to the cube of the speed. Thus a boat travelling at 3mph will require only 27/64ths (i.e. less than half) of the power of a boat travelling at the recognised speed limit of 4mph.

26) British Waterways' literature should alert all users to this information, and give speed guidance for different sections of the canal.

This may be by markers at fixed intervals, or guide times between fixed points, or by the introduction of speedometers based on GPS systems. Speeds are already recorded by the existing automatic boat counters on the canal, and these will be monitored to monitor compliance with advisory limits.

27) Sections worthy of protection by lower speed limits will be identified and agreed, within the Partnership, in advance of increased or re-introduced navigation.

Speed limits, or advisory guides could be based on 3mph, 2mph or engine tickover speed in sensitive sections. The narrow nature of the canal encourages slower speeds than normal, so these restrictions are less than at first seems, and are intended to enable more navigation.

Hire Boat Design

As set out in Proposals 9 & 10 earlier in this section, BW and other partners will support the use of eco-sensitive boat designs for the hire boat/trip boat operations on the Canal.

Marketing the Experience

As demand will exceed capacity on the Montgomery, there is an opportunity to market the Canal as a high quality experience, focussed on the unique built and natural heritage. An eco-boat fleet will further emphasise this selling point, and the relatively quiet nature could also be marketed to beginners.

Extending the season should also be a prime aim of commercial operations, to both maximise use of assets, and also develop use outside of the more sensitive ecological season, which is generally spring and early summer.

28) A means of promoting this exclusivity, and pride in a local canal, would be to develop a Moorers' Club or mailing list. This would provide a range of information and news that could be used to build identity, a sense of ownership, awareness of the canal's heritage, and responsible use.

The Friends of Montgomery Canal could be used as a vehicle to achieve this.



Figure 7.12. Dutch design electric day boat, from River Thames.



Figure 7.13. Electric Regatta Launch, Norfolk Broads.

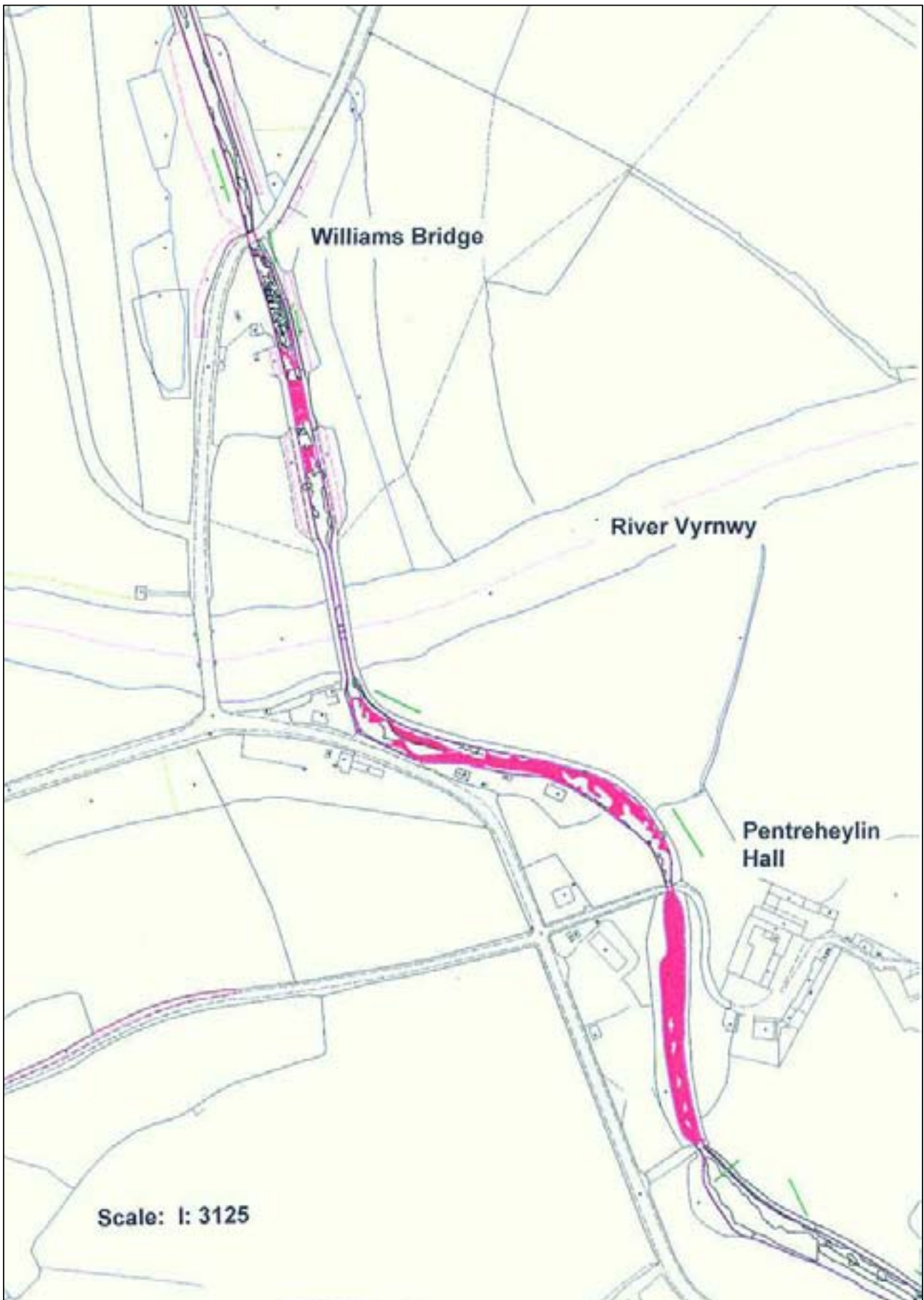


Figure 7.14. *Luronium natans* beds by the Vyrnwy Aqueduct.

Paddlesports are popular on the Montgomery, in part due to the relative lack of powered narrowboat traffic. This creates a particular opportunity south of Garthmyl, where restoration will not happen for a long time.

29) Facilities for parking and developing the section south of Garthmyl will be pursued by the Partnership.

30) The Partnership will also support Shropshire Paddlesports' intended development of facilities at Queen's Head, including:

- Plans for disabled access and usage
- Backing for grant applications for club facilities
- Reserved space for launching craft
- Information and a code of practice to narrowboats about paddlecraft

Links with other clubs, centres and individuals will be fostered, with particular emphasis on the southern section. Advice and support will be sought from the British Canoe Union. The potential for use of the canal for canoeing holidays will be researched. A watersports tourism action plan for Wales has recently proposed the use of the Montgomery Canal.

31) Canoeing on the canal will be promoted through Environment Agency publications linked to the River Severn.

32) The Partnership will investigate and encourage the use of the canal for canoeing holidays.

References for further information

British Waterways (2003) Boat traffic model update.

L&R Consulting (2003) 'Catching the Wave' A Watersports Tourism Action Plan for Wales (Draft)

www.electricboats.co.uk

7.5 WATER SUPPLY AND QUALITY

7.5.1 Water Supply

i. Llangollen Supply

Resources indicate that there is sufficient water capacity to supply up to around 5,000 lockages per year, double the current levels of agreed navigation. At present the combined aspects of limited water supply and the staircase lock at Frankton mean that the locks are opened at agreed times twice a day, with permanent staff supervision. Water flow is maintained via by-wash when lockages are low.

1) The current assisted passage through Frankton will continue, with additional flows through the by-wash.

ii. River Morda

A leat supplying Peate's Mill enters the canal, and there are problems with water quality with this supply (see Section 3.5).

2) It is essential that BW achieve control of the volumes of water entering the canal at this point and minimise the volumes, to emergency use only.

Requirements for the adjacent mill could be met through arranging the standard discharge of the leat to be back directly into the River Morda. This can be reviewed when the proposed improvements to Oswestry Waste Water Treatment Works have been implemented.

iii. **Tanat and Penarth Feeders**

The Penarth feeder supplies the canal from the current southern end near Freestone Lock. The Tanat feeder enters the canal at the start of the old East Montgomeryshire Canal Company, just to the north of Carreghofa Locks. Ecological interest is particularly high near this source, seemingly due to the water quality and the influence of the limestone geology. The volumes of water allowed under the abstraction licence, for both the Tanat and Penarth feeders are sufficient to meet anticipated levels of boat movements, but some engineering work will be essential to secure the intakes.

3) Engineering work to secure the Penarth and Tanat feeder supplies will be developed and implemented.

4) To maintain water flow volumes a phased programme of dredging is essential, including significant lengths of the section only open to trail boats.

Water supply is limited from both the Tanat feeder and the Penarth feeder when the Environment Agency put the River Severn into regulation, and the abstraction volumes are reduced severely. This is a major reason for possibly basing the hire fleet at Llanymynech.

5) The volumes available during regulation will be reviewed.

6) In general minimisation of water loss by leakage will be essential, to maintain and increase flows.

Increased water supply, especially in the winter, may help mitigate effects of eutrophication on the aquatic macrophytes. It will also aid water currents, seen as desirable for the new aquatic habitats, which will be generally wider than the current canal. Increased lockages for navigation will also require an increased flow.

7) The feasibility of increasing water supply will be explored with the Environment Agency.

Increases may be possible within current abstraction limits, by in channel works and improvements to sluices, and a phased programme to reduce leakages.

v. **Newtown**

If the canal is restored to Newtown, then a new supply to the levels above Freestone Lock will need to be found, that is also compatible with the conservation of the aquatic plants. The old pumphouse in Newtown is not an option, but a modern electric pumping system could replace it. Volumes available for abstraction are not a problem, but additional extraction for the top pounds may require a balancing reduction in the abstraction at Freestone. Further details are in Black and Veatch Consulting (2004).

7.5.2 **Water Quality**

8) The Environment Agency will undertake an assessment of the current water quality and an investigation of the possibility of modelling the effect of the restoration of the canal on the water quality of both sections (including the Welsh SAC site)

This will be particularly relevant to proposals to reconnect the English and Welsh sections of the canal, and the possible introduction of a stop lock, with changed flows in the Pant area (see Proposal 9, below).

i. **Llangollen supply**

The Tanat supply is better quality than the Llangollen feed water and has a positive effect on the aquatic habitat. Also, the water chemistry differs as a result of differing underlying geology (see Section 3.5).

9) It is proposed to keep the separation of the Llangollen and Tanat supplies through the installation of a stop lock between Aston Bottom Lock and Llanymynech.

The most practical place for this would be under the new road bridge required for the Llanymynech by-pass (see Figure 7.15). This will mean only a small quantity of water passing on south with each lockage, and will enable the extension of the high water quality currently at Llanymynech a further 2.2km north.

10) The water flows and discharges for this solution will be reviewed with the Environment Agency.

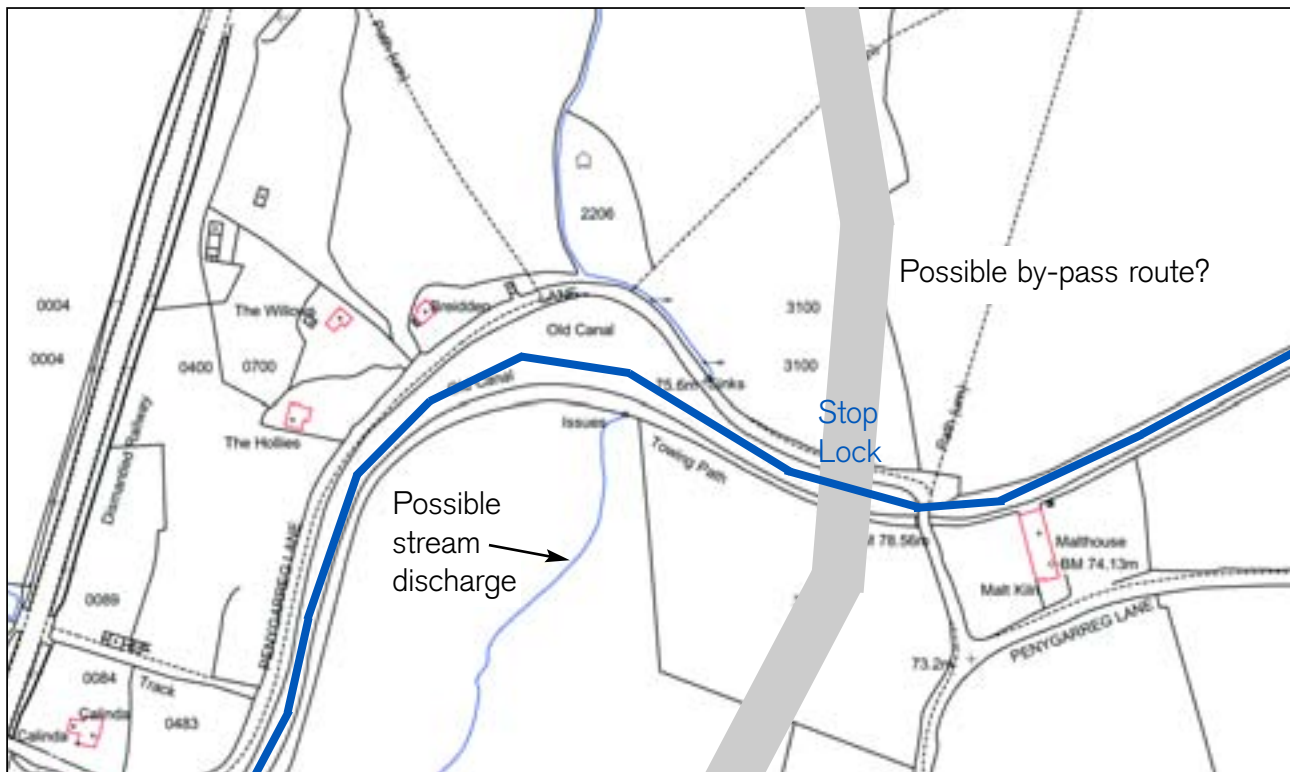


Figure 7.15. Location of potential stop lock, to facilitate high water quality in Wales SAC.

ii. Dredging

The requirement for clear clean water, and minimum turbidity caused by boat propellers indicates a strong presumption in favour of dredging to original profile. To be compatible with nature conservation this must be undertaken in a planned manner, and start at the earliest practical time.

11) Dredging must be planned in discrete lengths, to allow recovery of plant populations, by colonisation from adjacent undredged sections. Particularly important plant lengths must be programmed to be spread out in time, and subject to a rescue and replanting programme.

This has been successfully undertaken during the earlier restoration of the Rochdale Canal SAC.

iii. Major point pollution

The Water Framework Directive will require and support measures to deal with water quality, tackling major point sources of pollution and diffuse pollution. However, duties to positively manage the canal's nature conservation interest, due to its SSSI and SAC status, also require close attention to sources of pollution and eutrophication.

Localised sources of pollution, when identified, will be the subject of priority investigation and remedial action. Initial action will be advice and support to the polluter, but backed by potential legal action if necessary. An area of particular concern is from Pool Quay to Bank Lock, where nutrients entering the canal appear to be significant contributors to the summer weed growth in the Wern pound, and associated de-oxygenation problems.

Oswestry Waste Water Treatment Works discharge into the Morda, with consequent high levels of nutrients and phosphate in particular.

12) The Partnership (including the Environment Agency) will investigate and will work with relevant landowners to seek to deliver a solution.

13) British Waterways are seeking to have the treatment works upgraded in the next round of the water authorities' capital investment programme (AMP 4), but before then water from this source must be minimised.

The Rednal feeder was the site of a major pollution incident in 2001, with large amounts of farm slurry entering the canal. The cause of this pollution has now been rectified with co-operation between the farmer and the Environment Agency.

14) Future developments on adjacent land must be designed to ensure minimum risk of canal pollution.

iv. Diffuse pollution

Unfenced pasture on the canal offside harms water quality in two ways: damage to the banks introduces silt into the canal, and stock drinking also leads to eutrophication from excretion.

15) A policy of working with farmers to erect stock fencing will be pursued, with grant aid from the Environmental Stewardship Scheme and Tir Gofal being made available. Drinking troughs will need to be provided to protect farm interests, and occasional defined hard ramp drinking points.

16) Buffer zones, with fencing set further back, will be encouraged where landowners are interested.

These can moderate the influence of agricultural run-off, and provide a wider wildlife corridor on land, increasing hedgerow/woodland edge and also water vole and otter habitat. Wider sections of the canal could be allowed to develop wider bands of marginal aquatic vegetation, or adjacent fields excavated to form major scrapes, for sustaining marginal vegetation as a natural filtration mechanism.

17) Opportunities to install silt traps and/or vegetation filtration systems eg reeds on minor drainage inflows will be taken up.

Riparian vegetation of sufficient density will itself act as a natural filter, and can be encouraged in such situations.

18) Tir Gofal and Environmental Stewardship schemes on adjacent land will be promoted, as they further encourage extensive farming, and reduced run-offs of fertiliser and pesticide.

Boat pollution comes from two sources: oils from pumping out bilges and grey water discharge.

19) Effective oil filters can be installed into existing boats, and this should become a requirement for all boats based on the Montgomery Canal.

Grey water is a wider issue, but there is an opportunity to consider designing grey water tanks into future commercial craft on the Montgomery.

Urban areas and road run-off are important areas of concern, and which practical measures should be taken to minimise. This is particularly true of new plans and developments, but a review of road drainage is also desirable.

20) Further research to determine the various loadings, from agricultural run-off, main feeder supplies, grey water, urban run-off and point sources will be encouraged.

21) Planning applications that are within the potential catchment of the canal will continue to be scrutinised to ensure best practice, and minimise potential pollution or eutrophication.

7.5.3 Management of other environmental issues

Following the established principle of implementing best environmental practices, the Partnership will ensure this is carried through in all physical works for the restoration. Best practices will include use of EA Pollution Prevention Guidance, other published guidance on good management of construction environmental impacts and site-specific sustainability management plans. Specific measures cannot be established at this stage as best practice is continually evolving.

22) During the design, planning and implementation of restoration works, the Partnership and appointed consultants/contractors will establish appropriate environmental management systems to implement best environmental practices in the works.

References for further information

Black and Veatch Consulting (2004) Feasibility Study to explore the possibility of extending the Montgomery Canal into Newtown. 102pp + appendices

British Waterways (2002) Border Counties Waterways Water Management Plan. 41pp.

BWB (1986) Water Supply and Discharge Points. Series of 1:10,000 maps.

Environmental Simulations International (esi) (2001) Upper Severn Area Hydrogeological and hydrological assessment of selected wetland sites. Montgomery Canal. 35pp.

Smith (Oct 2002) Montgomery Canal Water Quality Review 1990 – 2002 Queens Head and Rednal Moss Feeder. 24 pp + graphs.

7.6 COMMUNITY AND VISITOR ACCESS

An access audit commissioned as part of the Conservation Management Strategy includes a review of related initiatives, and a full audit of the canal towpath. The audit includes current conditions, the state of existing connections, and provides a comprehensive list of recommended improvements. The audit will be used to provide detailed proposals for achieving the aims and delivering the schemes outlined in the following sections on walking and cycling.

7.6.1 Walking

i. Local Walking

- 1) Formal connections to highways, and villages/settlements will be enhanced, in order to encourage access by local people, and where appropriate encourage canal visitors into the wider corridor.

This will include:

- Better signing of the public footpath network connections to the canal towpath
- Removal of stiles and other barriers at access points from roads
- Improvements to stiles onto public footpath network
- Replacement of steps with access ramps where appropriate

Detailed measures have been identified in the access audit.

- 2) Towpath surfacing will be upgraded, with priorities drawn from the access audit. Regular simple wooden benches will be provided along the towpath.

- 3) All ability access will be particularly catered for at Queen's Head, Llanymynech, Burgedin, Welshpool and Berriew. Further sites will be identified for later phases of restoration.

The flat nature of the towpath, and many small car parking facilities make the canal an ideal location for such use. Such use is the first priority of the local authority highways and countryside teams, and other uses will therefore be dependent on compatibility.

- 4) Local Circular routes will be researched, with priority to routes from villages and local car parks.

These routes will require waymarking over and above normal highway standards, and should be developed in consultation and partnership with landowners and Parish and Community Councils. Routes will be of variable length, and designed to connect with adjacent sites of interest e.g. Llanymynech Heritage Area. Existing published routes will be incorporated into this network. Resources are currently available through both the Ruralscapes and the County Council Countryside Service, to take this forward in Shropshire.

- 5) Special routes with individual themes will be explored, to complement the Dragonfly Trail in Welshpool.

Existing resources, including Denton, and old British Waterways built heritage walks can be updated, and new themes based on the rich local cultural heritage, social history, and arts developed.

- 6) The creation of new nature reserves will be used to establish further opportunities for local walks and there will be a presumption in favour of access to reserves.

Where appropriate short nature trails, with on-site interpretation and hides should be installed. Key larger sites can be further developed for educational access. Improved access to Aston Nature reserve, and installation of interpretation, is in hand.

ii. Long Distance Routes

7) The Partnership will support initiatives to promote existing routes (Offa's Dyke Trail, Severn Way and Glyndŵr's Way).

8) The Partnership will support the Wat's Dyke Association in the establishment of a long distance route along the dyke.

This route, if established is likely to follow the canal towpath from Maesbury, to a terminus at Llanymynech.

iii. Wider Initiatives

9) Links with national related initiatives to encourage more walking will to be regularly reviewed and strengthened.

Schemes include:

- Walking to Health Initiative
- Safe Routes to Schools. Possible links could be developed for Carreghofa Primary School and perhaps Welshpool Secondary School
- Greenways
- Sustrans route developments
- Environments for All, a Countryside Council for Wales initiative, which targets a number of local authority wards under the Communities First programme, including Oldford in Welshpool.

7.6.2 Cycling

i. The Towpath

The available towpath width is a constraint to cycling along the canal towpath, and this will limit sections that are suitable for cycling. However, where cycling can be accommodated it will be welcomed in principle. Width can not be extended into the canal channel, and there is limited scope for widening the hedgerow side.

10) The minimum width which will be regarded as suitable for shared use is two metres.

Full cycle route width as recommended by Sustrans for a designated cycleway is 3.5 metres, but it is considered that with appropriate speed control measures and regular wider sections narrower widths are acceptable. Sections of the current permissive route, from Frankton to Queen's Head is actually narrower than this in short sections.

11) Lengths of canal which have been identified as potentially wide enough for cycling are listed in Table 7.9.

Table 7.9. Canal Sections With Potential for Cycling.

1997 and current BW information

Frankton to Queen's Head: designated for cycling. Currently (2003) surface would benefit from upgrading.

Aston – Maesbury: good access to Aston Bottom Lock. Shropshire CC have expressed interest in local circular route utilising this section. Good width to Gronwen.

Gronwen – Llanymynech: Potential to incorporate cycling facility during restoration.

Wern to Pool Quay: route acceptable, narrow in places, calming measures required (1997).

Pool Quay to Welshpool: route acceptable, narrow in places, calming measures required (1997).

Welshpool centre: frequently used at present in an unofficial capacity. Town centre routes useful, but route less than required widths.

Welshpool South: too narrow (1997), but remains an option for regional cycle route, as far as Berriew.

Berriew: short section of suitable width, can accommodate mixed usage with calming measures (1997), north to Brithdir narrow length.

Newtown: route from Llanllwchaearn already established for local commuting

12) Subject to funding, the Partnership will promote the use of the canal towpath for hosting sections of regional cycle-route 31.

Current proposals would seek to utilise the towpath from Pant to Llanymynech, as part of the restoration of the dry section, picking up the cycle route where it leaves the Cambrian Railway line. More detailed work will be required to review potential routes on the Wales length.

13) In assessing potential cycling arrangements priority will be given to schemes which:

- Provide linkages to other routes and local services
- Offer safety improvements for existing cycle use
- Offer alternatives to road traffic
- Include comprehensive calming measures

14) Opening of existing facilities to permissive cycling, but with no promotion will be trialled and monitored to assess compatibility with other uses.

15) All schemes must be fully funded, for both construction and maintenance, and must contain full measures to protect the interests of other users.

ii. Wider Linkages

16) Regional and national cycle-routes will be used as a tool to market the Montgomery Canal experience, and a series of cycle parking facilities will be provided, in order to encourage cyclists to use the canal as a destination, in preference to a through route.

Within the constraints outlined in Section 5.8.1, stronger links will continue to be explored with highways authorities and Sustrans, in order to seek to provide additional cycling facilities.

17) The following Initiatives will form the basis of improved links and future wider developments.

- National cycle route 81 (includes Welshpool to Newtown)
- Regional cycle route 31 (includes Oswestry – Llanymynech)
- Newtown to Llanllwchaïarn (south end of canal), constructed to provide a local commuter route for planned new housing
- Associated local circular routes. Potential routes or small schemes have been mooted for:
 - local circuit including Aston-Maesbury length
 - Llanymynech/Carreghofa area
 - Welshpool to Belan Locks and Llyn Coed y Dinas Nature Reserve
- Supportive of cycle hire facilities

Route development plans are more advanced in Shropshire, where the emphasis is on implementation of identified routes. In Powys further survey and research is required.

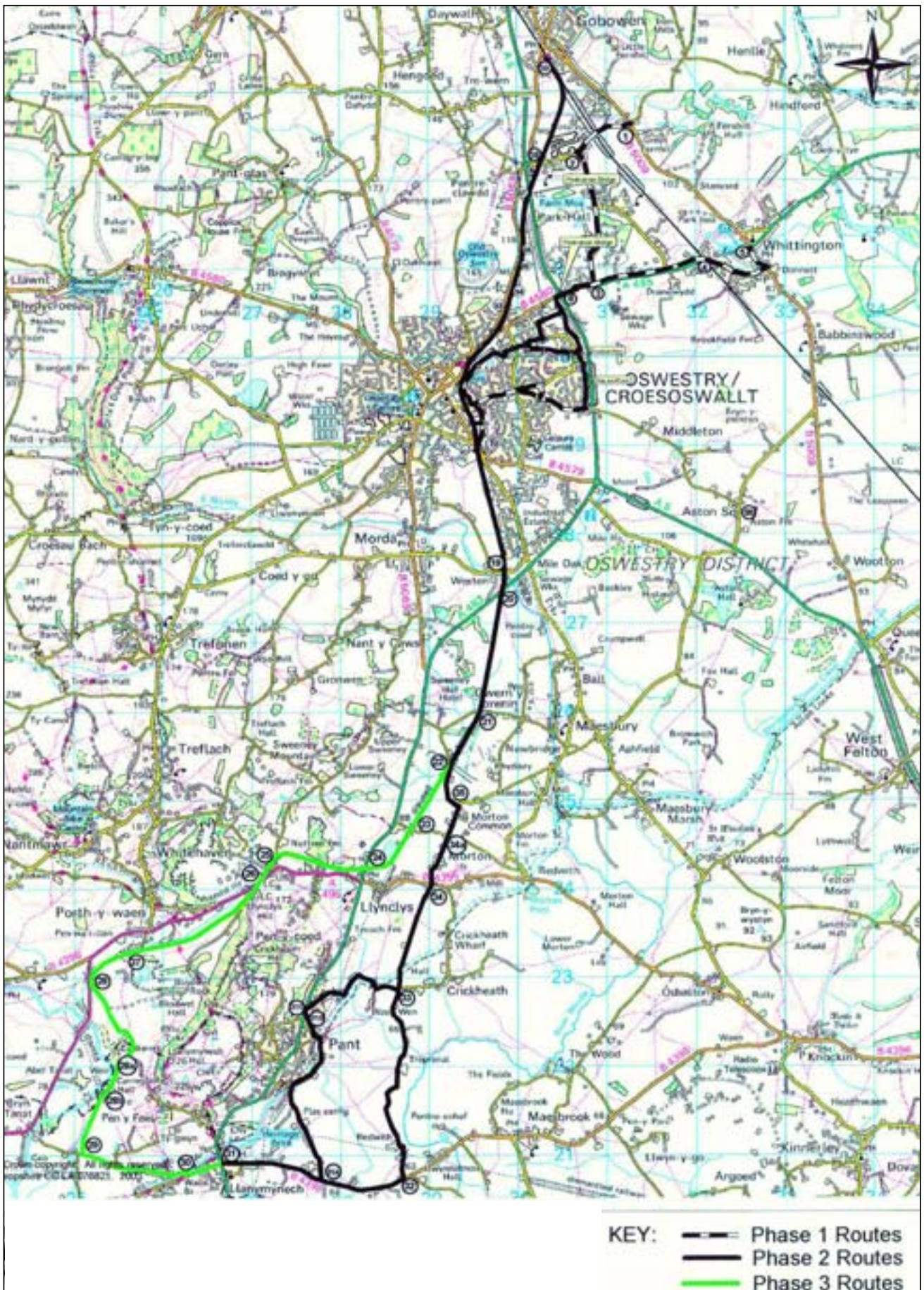


Figure 7.16. Proposed Cycle Routes in Shropshire.
 Information from Shropshire County Council Highways.

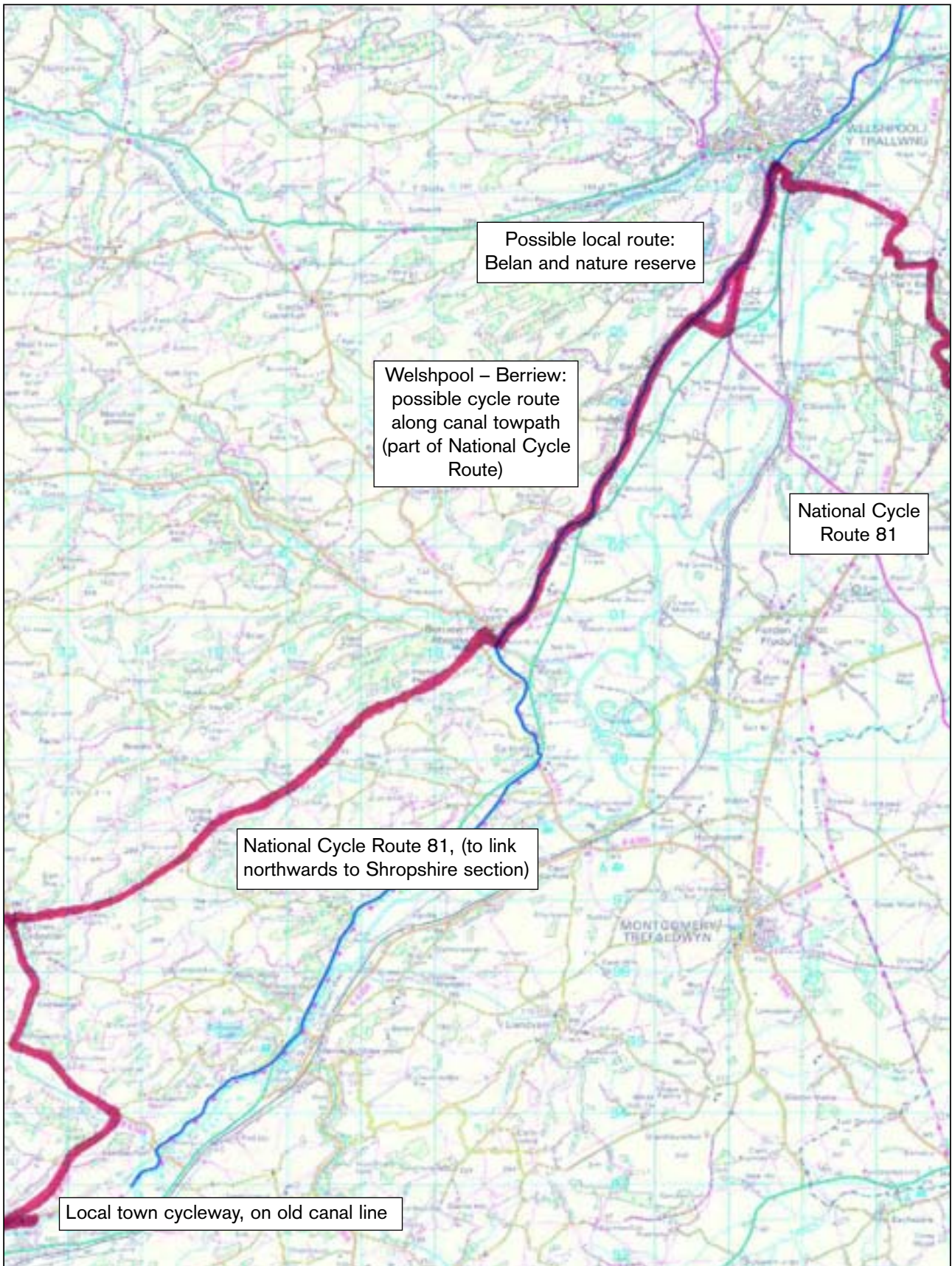


Figure 7.17. Cycle route options in Powys.



Figure 7.18. Suggested cycle route and parking improvements in Welshpool (1997).

7.6.3 Horse Riding

Two potential areas of access for horse riding require consideration:

1. The use of the canal towpath as a safe means of crossing the A483, which is often a barrier to accessing more bridleways in the western hills.
2. To provide links, through key short sections, to the wider bridlepath network. Potential areas or lengths identified by the access audit are:
 - West Felton/Queen's Head area
 - Pant to Carreghofa
 - Refail to Garthmyl
 - Fron road crossing
 - Abermule to Newhouse

18) All future road crossing designs will seek to incorporate facilities for dismounted access along the towpath.

At this stage shared use of the general towpath with horse riders appears to pose too many challenges, due to increased maintenance costs and narrow widths. Previous canal schemes have tended to maintain separated routes. Local options can be reviewed when major investment schemes are planned.

19) The Partnership will seek to establish a dialogue with representatives of horse riding groups.

Angling

i. Club fishing

Policies have identified an opportunity to expand the levels of fishing, although this will always need to be based around naturally occurring native species that will co-exist with the aquatic vegetation, for example tench, which feed lightly on the bottom and cause very little sediment disturbance.

20) British Waterways will seek to work with Powis Estate, who retain ownership of significant fishing rights, to ensure a consistent approach to angling on the canal.

21) Local clubs will be sought for letting lengths of canal currently not rented out.

Letting to organised and responsible clubs will provide opportunities to run joint advisory events, to inform on canal nature conservation value, and both good and inappropriate weed control. Removal of e.g. Canadian Pondweed, carefully undertaken, has conservation gains, and is recommended elsewhere as a management technique on nature reserves. The planned dredging programme, required for ecological and navigation purposes will improve fishery conditions. Links with clubs also meets the theme of increasing community links and use of the canal, with a particular appeal to a younger age range than some other canal activities.

22) New habitat areas may be designed to provide optimum aquatic vegetation, but within that constraint high quality, low key fishing will be allowed.

23) Clubs renting fishing rights will be expected to take an active role in monitoring compliance with environmental guidelines by individuals.

ii. Commercial Fishing

24) Commercial coarse fisheries will be supported in sites adjacent to, but separate from, the canal.

The opportunity for expanding coarse fishing on a commercial basis are best served by adjacent purpose-built ponds or lakes, which are kept hydrologically separate. New ponds or lakes will provide some ecological gains, for example marginal vegetation, reed beds and tree and shrub planting around a site, and these can enhance the wider corridor. Rare aquatic plants, however, are too sensitive for a commercial fishing regime, which is therefore not compatible with either the canal or the proposed new reserves.

25) Commercial fisheries must be located with suitable access, and be based on interest from the landowner.

Fisheries are a strong alternative economic use for sites previously identified for possible marinas, and would contribute to the sustainable tourism of the locality. Two possible locations could be in the vicinity of Queen's Head, and south of Welshpool.

26) Other sustainable angling use will be explored.

Tench breeding is a possible use for the nature reserves, although this would require periodic drainage, possibly every third year, to harvest the young fish. Tench are native and generally compatible with the aquatic ecology. Any such programme will require an assessment of potential environmental impacts, and would be secondary to the nature conservation purpose of the reserve.

7.6.4 Car Parks and Public Transport Linkages

27) To maximise walking potential it will be necessary to co-ordinate/plan parking facilities and also provide information with links to public transport.

These need to be regular and small; some only require space for perhaps four cars – a well structured lay-by will suffice. All sites to be:

- stone surfaced, to avoid muddy conditions
- have a map of the canal, the immediate area, any suggested circular walks, and details of local bus connections
- provided with limited picnic table facilities
- designed and sited to minimise impacts on the local community and landscape.

28) Proposed locations/number of car parks are given in Table 7.10. The frequency may depend on the size. Car parks in bold are those that do not currently exist.

Table 7.10. **Existing and potential local parking areas.** (Potential sites in **bold**).

- Frankton
- Weston Arm
- Rednal: across the road from the canal
- Queen's Head: increased capacity, and liaison with other facilities required
- **Maesbury Marsh:** possible opportunity to link up with proposed parish council playing field
- **Crickheath:** wharf is designated for low key tourism in local plan
- **Pant:** links to village need to be improved
- Llanymynech Yard: major changes to layout likely
- Vyrnwy Aqueduct: horse drawn towing of craft potential attraction
- **Four Crosses**
- **Arddleen**
- Burgedin: further development of whole site, will require more parking
- Wern Nature Reserve
- Pool Quay: historic connections to river
- Buttington
- Welshpool: much larger demand and provision
- Brithdir
- Berriew: potential to develop links and services here, while this is the likely southern terminus for some years
- **Garthmyl:** useful for paddlesports, pub and built heritage
- **Brynderwyn:** site of planned slipway for trail boats
- **Aberbechan:** most southerly road access to Phase 2

29) Links with existing public transport should be made wherever possible.

The Montgomery Canal is not well served by rail connections, but the main connections are:

- Newtown
- Welshpool
- Gobowen – needs bus connection
- Cambrian Railway (potentially at Oswestry and Pant)

30) Bus connections will be promoted and marketed for the following locations:

- Welsh Frankton (for Frankton Locks)
- Queen's Head (connections to Shrewsbury and Oswestry)
- Llanymynech (connections north/south and east/west)
- Welshpool (market town)
- Berriew (connections north/south and to Montgomery)
- Newtown (southern terminus of canal)

31) Canal events will seek to link in with and publicise public transport connections.

32) Links will be fostered with other public transport strategies eg Powys County Bus Strategy, Shropshire Local Transport Plan.

33) Methods of transport to the canal will be monitored as a sustainability indicator.

There are no current plans to provide services specially geared to the canal, but there is an expectation that as its popularity increases, services may be adapted to meet increasing demand. The Partnership will work to promote more sustainable modes of transport, particularly to key nodes along the waterway and linking with other attractions.

References for further information

GENERAL

BTCV Conservation Contracts (2003) Montgomery Canal Access Audit

BT Countryside for All. A Good Practice Guide to Disabled People's Access in the Countryside. Fieldfare Trust.

WALKING

CCW: economic assessment of Offa's Dyke Walk

Denton (1984) Montgomeryshire Canal and the Llanymynech Branch of the Ellesmere Canal: Towpath Guide No. 4. 100pp.

Environment Agency (1999) Severn Way Official Walkers' Guide 103pp.

Shropshire County Council Countryside Service (2002) Heritage Walks: Maesbury. Pant. A3, folded.

www.whi.org.uk

CYCLING

Allott (1997) Cycleways Report for Powys CC

Powys County Council (2003) Welshpool Canal Cycle Path Feasibility Study. Report No. 1264/F/001

Sustrans Information Sheets

Shared Use Routes FF04

Access Controls FF22

www.sustrans.org.uk

7.7 EDUCATION AND ORGANISED VISITS

7.7.1 Themes

- 1) A library of local educational resources will be collated and made available to outside groups.
- 2) The use of British Waterways' national educational web-site and literature will be promoted (WOW! – Wild Over Waterways).
- 3) Other support services, will be drawn upon to deliver educational packages (see below).

- The Waterways Trust: resources for canal history
- English Heritage: schools education programme
- Powys LEA
- Shropshire LEA

The canal is perhaps the best in the country for nature conservation, and has a nationally important built heritage, but the opportunities for good education and interpretation extend well beyond these subjects. The range can be as wide as the imagination, but includes:

- Local history, including social and cultural history
- Built heritage
- Wildlife and nature conservation
- Leisure and recreation including boating
- Transport
- Archaeology (under-used)
- Art: community projects, Dragonfly Trail, Andrew Logan Museum

- 4) Educational use of the canal will be developed across all subjects and aspects of the curriculum.

7.7.2 Formal Education

- 5) A currently small programme of organised visits will be further developed, with assistance from the Friends of Montgomery Canal.

- Primary school visits. Many of the primary schools are within walking distance of the canal, and some use the canal with no input from British Waterways e.g. Arddleen Primary School. The proximity of so many schools makes closer links a priority.
- Secondary schools. Links require establishing, especially with Welshpool High School, whose campus is very close to the canal.

- 6) Major development will be promoted, but will require additional funding, from either external sources or the local education authorities.

- 7) Links with other educational organisations using the canal will be fostered.

These include:

- **Field Studies Council.** Preston Montford Centre, near Shrewsbury, currently use the canal for field trips, covering both ecology and built heritage.
- Powysland Museum, Welshpool host regular visits from local schools, and closer links need to be fostered.
- Higher and further education institutions. The canal has been used as a source of numerous student projects over recent years, at HND, undergraduate and postgraduate levels. Frequently this provides useful data for further research and practical management of the canal. As agricultural colleges expand into courses for leisure development and countryside recreation, these opportunities will continue to increase.

8) In order to maximise useful research, a register of potential research projects will be established, and made available through the public web-site.

Case Study: Northern Reaches Canal, Lancashire

Sixth form pupils from Kirkby Kendal School and Queen Elizabeth School, Kirkby Lonsdale, have already carried out some of the advance design work for the project as part of a national Engineering Education Scheme. Kirkbie Kendall sixth formers have been working on the Natland Road Bridge and Queen Elizabeth pupils have come up with bright ideas for Howards Aqueduct which will cross over the A590. Tania Snelgrove, British Waterways project manager for the Northern Reaches, said: "The quality of work which the students have produced has been impressive. They have displayed skills in project management, research, technical ability and presentation which has combined with their enthusiasm and organisation to produce imaginative work. It has given them a great taste of civil engineering as a profession."

NFU Countryside Rural News, 24.03.03

7.7.3 Informal Education

Staff resource is a significant constraint on future development and growth in this sector, unless specific education funding can be identified. Existing resources can be maximised and used most effectively by working in partnership with other local and community groups. On-site interpretation will be a major method of communication, as it requires a relatively low level of staff input, and works well along a diverse and spread out location.

Priority areas of development are listed below.

9) Boards and maps will be provided at all car parks along the canal, and further interpretation information at the most visited sites and nature reserves.

10) A co-ordinated signage system will be resourced and implemented.

The access audit identified these two proposals for priority action, with current emphasis geared towards prohibition or safety eg "No Angling" signs under power lines. A planned signage system is essential to realise objectives of increased use of the canal by local people and visitors alike.

11) Community art projects will be supported.

12) Organised visits will be catered for, dependent on staff resources.

13) Community organised events will be encouraged. A guided walks programme is possible with volunteer support.

7.7.4 Linkages

14) It is essential that education developments are integrated with other provision in the area, and are designed to complement and expand choice, rather than compete for the same market.

Existing provision in the area includes:

- Park Hall Countryside Experience: commercial enterprise near Oswestry
- Severn Farm Pond Education Reserve (Montgomeryshire Wildlife Trust): currently under-used
- Powysland Museum, Welshpool
- Preston Montford Field Studies Centre
- Powis Castle, National Trust: specialised subject and appeal

7.7.5 Infrastructure

Signage, parking and interpretation have already been referred to, but there are other requirements necessary for successful educational use of the canal.

15) Three main sites will be key to the education resource available:

- Welshpool, based at Powysland Museum, run by the County Council Museums Service.
- Burgedin Lock Cottage, near Arddleen, British Waterways' local office, with scope for development
- Llanymynech Heritage Area, which Shropshire County Council are proposing to develop as an open air heritage area (Limestone Lives), with a possible indoor facility.

This provides two major sites in Wales, and one in England, run by three separate members of the Partnership. The package on offer to schools, other groups, and individuals must be a co-ordinated and shared one.

Smaller sites also have value, and the existing and proposed nature reserves are a prime opportunity. A timber decking boardwalk and pond-dipping platform have recently been constructed at Wern Reserve, increasing accessibility and usage.

16) The canal stable block at Llanymynech will open in 2006 as a community information point, run by local volunteers.

It will also function as a facility for group visits until such time as Shropshire County Council develop a larger facility within the Heritage area.

17) The 500 metre length of canal in England, at Llanymynech will be restored and opened for use by an education trip boat, run by volunteers from the Packet Boat Duchess Countess Trust.

18) All sites will be reviewed and assessed, in order to identify opportunities to meet and service similar demand. This may include signed trails, site-specific interpretation, all-ability access, hides, and parking.

References for further information

<http://accessibility.english-heritage.org.uk>

<http://powysmuseums.powys.gov.uk>

www.field-studies-council.org/prestonmontford/

www.wildlifewatch.org.uk

www.wow4water.net

7.8 ECONOMIC AND RURAL REGENERATION

7.8.1 Overview

Full details of the economic and rural regeneration potential of the restoration are contained in the economic report produced for the Partnership by Rural Solutions. In summary, the economic impacts of the restoration will be delivered through a combination of: direct waterway management, increased visitor spend within the wider tourism and leisure economy; the re-development of canal side land and property. In addition, there will be temporary benefits to local business during the course of the restoration, through construction work and associated activities.

The indication is that the numbers of permanent jobs created by the restoration will be in the order of 120 jobs. This compares favourably with previous studies, despite managed levels of navigation, and reflects policies to use retain money in the local economy e.g. small scale mooring schemes on farms, and the emphasis on wider use by other groups including walkers. When the analysis is widened to the associated developments possible, which are reviewed briefly in Section 7.3, the overall number of jobs created could rise to around 250.

i. Direct Jobs in waterway management. These will be a relatively small part of the economic gain to the area. It includes jobs directly created or safeguarded for people working on the canal. This includes boat operators as well as British Waterways staff. In the future, as restoration continues, the numbers will increase. From this strategy they may include education jobs, additional supplies and services at Llanymynech, and new mooring facilities. Jobs can be part-time equivalents, for example small scale moorings run as part of a farm diversification scheme will supplement income rather than lead to a change of career.

ii. Indirect Jobs within the tourism and leisure sector. Visitor spend will be spread around an area, and will not only be in facilities directly associated with the canal. Development of the canal is expected to contribute to booking rates for local accommodation of all types: camping and caravan sites, bed and breakfast, self-catering and hotels and guest houses. Spending in local shops and facilities will increase, and an ambition of the restoration will be to contribute to the maintenance of local shopping facilities, and even the opening of new businesses. These impacts are being assessed through an ongoing economic analysis using the British Waterways economic demand model. This model has been widely used to predict and evaluate the tourism and leisure related impacts of other canal restoration and regeneration projects, in terms of extra visits, additional expenditure and new jobs. The model analyses increased visitor spend within the local authority districts which the canal passes through. It incorporates a whole range of sources, including visiting boats, resident holiday makers and day trip visitors. Activities include walking, cycling and fishing as a well as navigation. At this stage, the model indicates that the number of tourism and leisure related jobs created by the restoration will be between 100 and 120.

iii. Improved Business Environment. The setting of mid Wales and rural Shropshire is potentially a big draw for businesses wishing to re-locate to new areas in order to achieve improved quality of life for their staff. Modern communications make this an increasingly realistic option for some businesses, and the canal has been referenced as a quality of life attraction in a number of regional development studies, with particular reference to Welshpool. Many canal and waterside schemes have been the catalyst for urban regeneration, but schemes in more rural areas also exist for example Market Harborough and Banbury shopping centre. Another feature of canalside properties and developments is a resulting increase in property values. Nationally averaged, the 'waterfront premium' for a new property is in the order of 18%.

iv. Temporary benefits during project implementation. There should be opportunities for local business to benefit from contracts awarded during the actual process of restoration work. Predominantly this is likely to be related to construction and physical restoration work, but could also include environmental services, education and training, publicity and marketing amongst others. A £40 million restoration could be expected to generate in the order of 500 - 600 jobs for one year.

7.8.2 Tourist Destination

The objective economically is to increase the number of visitors to the area, and the canal is a key destination in that objective. Community views from the consultation support a sympathetic restoration, in order to retain the character of the canal. This supports the aims of the strategy, which is to secure the future of the canal through a sustainable restoration, including safeguarding of both the natural and built heritage, and retaining the rural character of the canal and its landscape.

Managed levels of navigation are integral to the conservation, and it is essential to both consider and maximise the wider gains and attractions as well. This requires positive promotion of alternative environmentally friendly forms of tourism and local visitor use. The unique combination of built heritage, nature conservation and local landscape give the Montgomery Canal a unique package to achieve this. The development of environmentally friendly boats for the canal will further enhance the marketing package available.

The strategic aim is to expand the visitors to the canal, whose interests extend beyond navigation. They will include walkers, cyclists and people who value the canal as a setting. Opportunities here include facilities in both Welshpool and Llanymynech, and Garthmyl and Newtown for later phases. The use of the canal for short trips must also be remembered, but here there are again opportunities to create environmentally friendly and different experiences. Done well, they will also be valued by local residents, and their family visitors.

However, to be successful, it is essential that the canal works with other local attractions (Table 7.11), to promote the whole area. For success will come from sharing visitors, and persuading day visitors to return, or come for a weekend, or convert weekend visitors to main breaks. There is synergy in joint marketing, and attractions should see themselves as colleagues rather than rivals. The Partnership will seek to promote these linkages, through connections within the local authorities and through the regional tourist boards.

Table 7.11. **Montgomery Canal Corridor: “Green” And Rural Tourist Attractions.**

Park Hall Countryside Experience, nr Oswestry
Queen’s Head Arts Centre
Day boat hire, Peate’s Mill
Llanymynech Heritage Area
Llanymynech Hill Fort and Nature Reserve (SWT)
Proposed Cambrian Railway restoration (Oswestry to Llanymynech)
Powysland Museum and Montgomery Canal Centre
Red Ridge Outdoor Centre, Welshpool
Powis Castle and Estate
Welshpool and Llanfair Light Railway
Andrew Logan Sculpture Museum, Berriew
Jewellery workshop, Berriew
Glansevern Gardens, Berriew
Montgomery
Dolydd Hafren and Pwll Penarth nature reserves (MWT)
Newtown Textile Museum
Robert Owen Museum, Newtown
Severn Way
Offa’s Dyke Trail
Glyndŵr’s Way
Developing cycle routes
Borderland motte and bailey castles
Waterside pubs
Network of canal car parks, picnic areas, nature reserves and built heritage

7.8.3 Proposals

- 1) Local suppliers: main contractors will be required to monitor local expenditure. Positive action will be taken to make potential local suppliers aware of opportunities to tender or deliver major supply contracts.
- 2) Environmental supplies: main contractors will be required to monitor supply sources. In line with British Waterways procedures, targets will be set for use of recycled materials, and materials sourced from sustainable sources where available.
- 3) Developments which support strategic aims will be particularly welcome at the following locations:
 - Queen's Head (main road connections)
 - Llanymynech (key destination and turning point for boats)
 - Welshpool (major focal point)
 - Berriew (southern destination, Phase 1)
- 4) The local planning authorities will prepare development briefs for the main sites.
- 5) Community support for and involvement in such developments is essential. Developments must be in scale and keeping with the local environment.
- 6) Conclusions from the Newtown Feasibility Study, when confirmed, will be incorporated into future planning, including the protection of the identified route. Developments adjacent to the route will be planned to function with green space in the short term, with scope for re-instatement of the canal in the long term.
- 7) Alternative land uses for sites previously allocated to marinas will be supported and encouraged.
- 8) Canal boat businesses will be supported within the framework of the strategy. Priority will be given to boat building, and environmentally friendly design hire operations.
- 9) Land owned by Partnership organisations, chiefly local authorities and British Waterways, will be used to help deliver regeneration objectives.
- 10) Commercial partnerships will be entered into with private developers or landowners, to enable access to joint grants and funding. Two possible examples are eco-boat fleets and Welshpool opportunities with Powis Estate.
- 11) The Partnership will work with development agencies to attract inward investment for new businesses which seek to share a vision of sustainable development.
- 12) Tourism will be promoted through marketing of the canal as a unique and special environmental experience. The canal's status as the best canal in the country for conservation is an asset that should be harnessed to support a sustainable future.
- 13) Networking with other local tourist attractions and places of interest will be explored, in order to help promote the area as a destination more widely.
- 14) The following activities will be supported and promoted as part of the holiday experience:
 - cycling
 - long distance walking
 - paddlesports
 - commercial fisheries
 - a horse drawn trip boat at Welshpool
 - horse riding and trekking

15) Schemes that contribute to farm diversification will receive priority. This will include:

- Small offside mooring basins and facilities
- Agri-environment schemes
- Accommodation (camping, bed and breakfast and self-catering)
- Farm trails and other visitor or education facilities
- Farm produce sales
- Commercial fisheries

16) Community support and sustainability will be required to underpin new developments.

References for further information

Black and Veatch Consulting (2004) Feasibility Study for the Restoration of the Montgomery Canal Into Newtown

British Waterways Economic Research (2000) The Montgomery Canal, Economic outputs from restoration assuming managed boat movements. 29pp. [1000my and 2000my]

British Waterways (2003) The Montgomery Canal, Updated Economic Outputs from Restoration.

Gordon Lewis Associates (1998) Welshpool Town Centre Improvement Strategy

Rural Solutions (2004) The Montgomery Canal and Canal Corridor: The Rural Regeneration Potential of Restoration.

Shropshire County Council Tourism Strategy

Urban and Economic Development Group (1998) Revitalising Town Centres in Powys

www.foc.org.uk Festival of the Countryside, an organisation promoting sustainable tourism in Wales.

www.visitheartofengland.com Heart of England Tourist Board web-site.

8. PHASED RESTORATION

Summary of chapter

Due to the scale of the project, national boundaries affecting funding allocations and the requirement to deliver successful compensation and mitigation before navigation levels increase (inline with the principal of Monitoring Informs Action), the Strategy proposes a series of phases to restoration.

The major engineering works for each phase are:

Phase 1 (England):

- New bridge (86), School House Lane, near Pant
- Major channel engineering around east of Pant
- Site and wharf development, Llanymynech

Phase 1 (Wales):

- New bridge, Walls Bridge, Carreghofa
- New crossing, bridge 96, Williams Bridge, near Carreghofa
- Bridges 102 and 103 Maerdy and Arddleen crossings. A significant diversion is currently most favoured at Maerdy

Phase 2 (South):

- Refail Bridge (could be included in Phase 1)
- Road crossings, Nags Head pub, Garthmyl
- Bridge 136, Fron, Garthmyl
- Bridge 141, Red House

Each phase will be independently funded and developed in sequence. All three elements need to be preceded by construction of offline nature reserves, in-channel conservation measures and access/interpretation improvements. Relevant nature reserves will have to fully establish to Favourable Condition before navigation levels can rise on any given length, and the whole canal must also be moving towards achieving optimum standard.

A “critical path” for the whole restoration is presented; as some works must precede others, but some phases and elements may overlap. No exact timetable is offered, as the restoration will depend on grant aid, but the estimated time required for each block of work is shown.

Associated developments, of appropriate scale, are likely at Queen's Head, Croft's Mill, Llanymynech, Burgedin, Welshpool town centre, Powis Estate, Belan Locks, Berriew, Garthmyl, Brynderwen Lock and Aberbechan but these should only take place within a development framework established by the partnership. This is to attract private investment for appropriate developments, to replace the series of large marinas envisaged by the 1980s proposals and currently included in the relevant local development plans.

8.1 THE KEY ELEMENTS OF PHYSICAL WORK

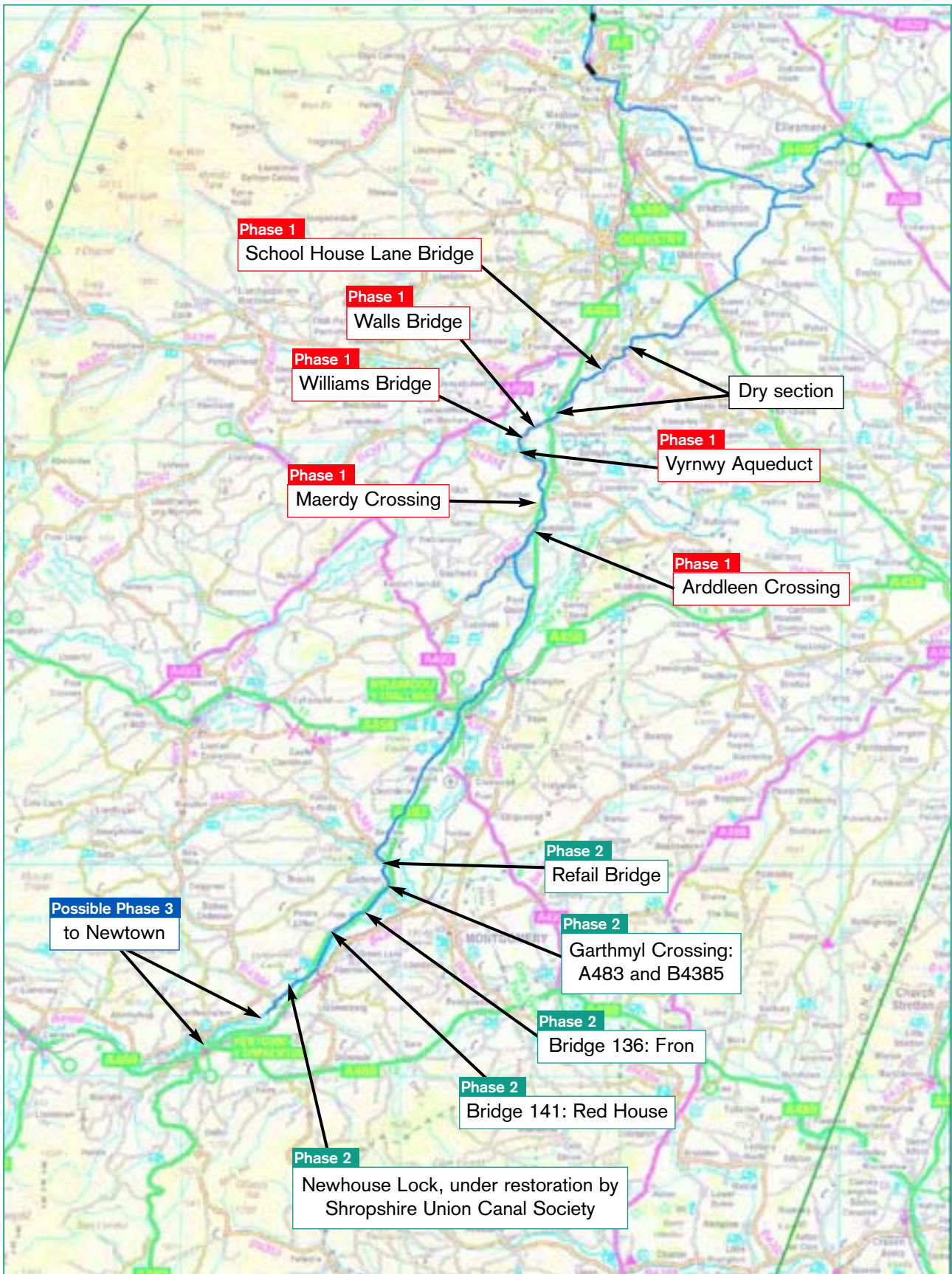


Figure 8.1. Map Showing the Major Engineering Works.

8.1.1 Context

Although this is a conservation strategy for the canal, it is recognised that the major engineering sites will have a major impact on landscape, disturb the community while in progress, and affect some households in the long term. It is therefore appropriate to briefly outline some of the potential solutions here. It must be emphasised that some of these plans are at an early stage in thinking, and local consultation will follow when more detailed plans are prepared. Some plans from the 1987 Parliamentary Act no longer meet current standards, due to increased traffic on the A483 and improved safety requirements.

8.1.2 Phase 1 Works (Gronwen to Arddleen)

- Bridge 86 School House Lane, near Pant. A small brick or brick faced bridge to the south of the current crossing, as in 1987 plans, remains the preferred solution.
- Bridge 93 Walls Bridge, Carreghofa. A possible detour, as shown in Figure 8.2, seems likely. This takes the junction further away from the local primary school, and also the bridge from the road junction. Earlier plans also diverted the canal to take the bridge further away from the junction, but this may not be necessary.
- Bridge 96 Williams Bridge. A new structure over the canal at this point, with current visibility and safety requirements, would be extremely expensive and dominate the immediate area. The preferred options under consideration is an electrically operated lift bridge with traffic lights.
- Bridge 102 Maerdy Crossing and 103 Arddleen. Plans for these two crossings are complex and need to be considered together. A detailed study looked at seven different options, and was stimulated by plans for a new road junction between the A483 and B4393. Option 4A, shown in Figure 8.3 is perhaps the most likely option. It has a low landscape impact, and will have relatively low disruption during construction. The diversion enables the canal to cross under the A483 at a slightly higher point, with a very tiny raising of the final carriageway. Under this scheme, two options remain at Arddleen:
 1. The canal can be lowered for a short length, and operated by a modern drop lock and pumping system.
 2. The carriageway can be raised over a long incline, with a new and higher bridge installed, similar to the work at Whitehouse Bridge, Welshpool.

The first option is currently considered the more likely solution.

Phase 2 (Refail Bridge to Freestone)

- Refail Bridge, the current southerly limit of navigation, needs further study. It is very near the A483 for either a hump-backed bridge or a lift bridge. Plans to divert the canal through a tunnel to the west of the current route exist, but have many problems. Garthmyl is the historic terminus of the East Montgomeryshire Canal, so a viable resolution of this crossing is very desirable.
- Bridges 131 and 132 Nag's Head, Garthmyl. Plans for this crossing may need major revision from those agreed in the 1986 Parliamentary Act. In order to make full use of the feasibility study for work into Newtown, the engineering and costings of this crossing need to be revised.
- Bridge 136, Fron, Garthmyl. The route remains essentially the same, as in 1986 plans, to divert the canal slightly north.
- Bridge 141, Red House. 1986 plans to divert the road over the canal, slightly to the south of the current alignment remain.

Phase 3

The land is not in British Waterways ownership, and there are many obstacles in the way, including minor road crossings, Newtown's main sewer, River Severn flood defences, and development within Newtown. These issues were addressed in a recent study commissioned by Powys County Council, which concluded that the preferred route should include an aqueduct over the River Severn and a terminus to the east of the river.

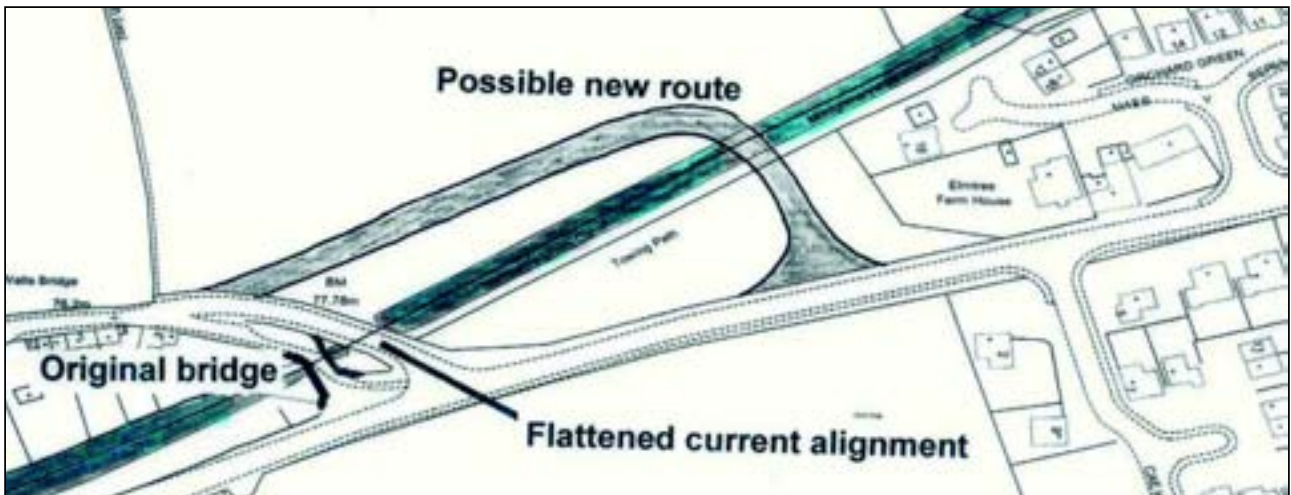


Figure 8.2. Possible diversion for Walls Bridge.

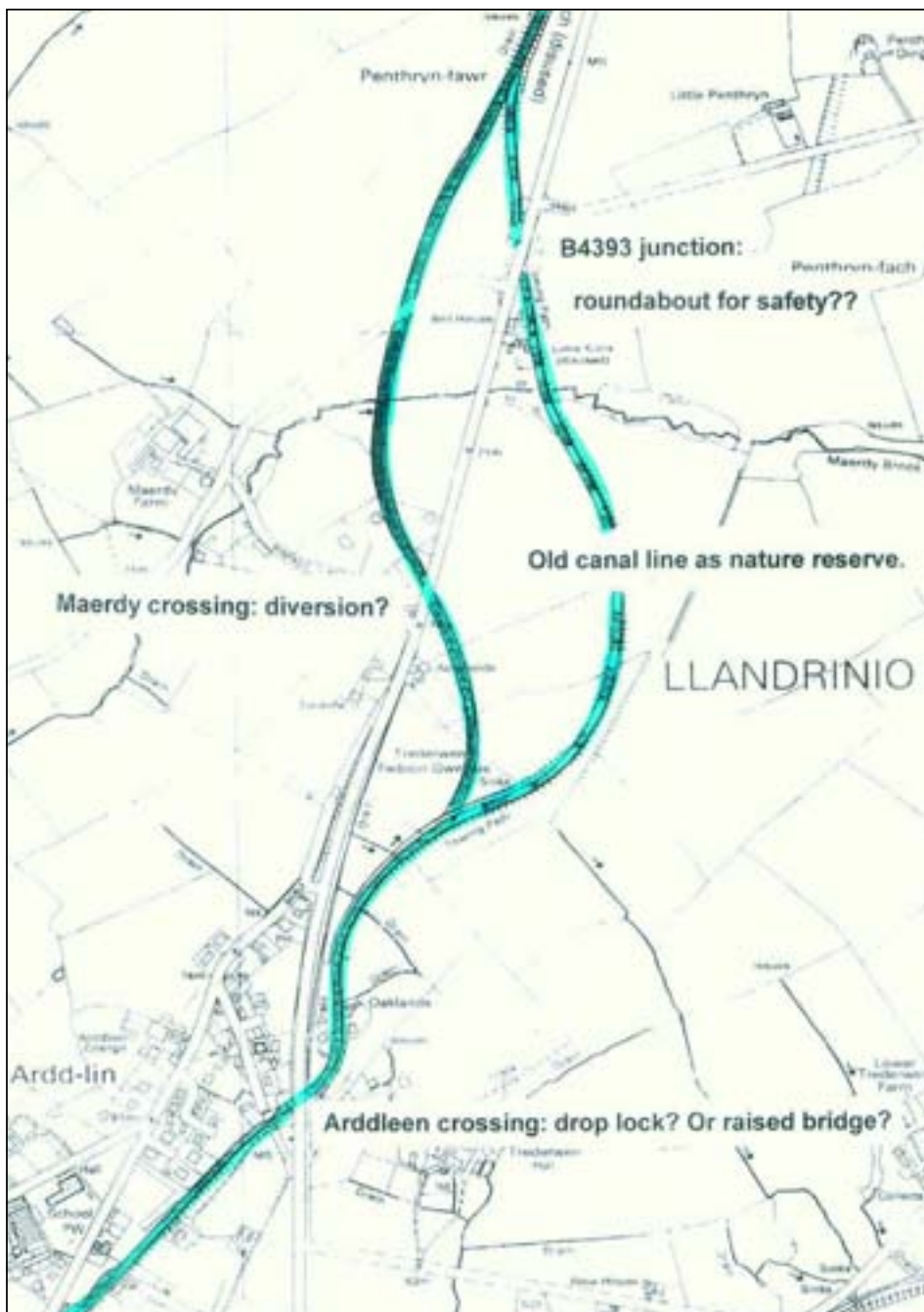


Figure 8.3. Maerdy and Arddleen crossings. Option 4A.

8.2 THE CRITICAL PATH: PHASING

Timetables for the restoration will depend on external funders, and must therefore remain flexible. Separate organisations in England and Wales necessitate a twin track approach, and progress could happen at either end first. Different elements of work may attract different funding opportunities and it may not be possible or desirable to deliver each “phase” as a single large block of works. For instance dredging works form an essential part of positive management of the nature conservation value as well as maintaining/restoring navigation and therefore could be carried out as a rolling programme from the very start of restoration through to the final re-opening of navigation.

However, there are a number of processes that must be undertaken sequentially and form a critical path, notably the construction of the new habitat areas in advance of increasing or re-opening navigation, through the principle Monitoring Informs Action. Similarly a phased dredging programme has been identified as essential for a variety of reasons, and must be started at the earliest opportunity. Furthermore it is essential that positive management to improve the condition of the SSSIs continues at all times, on the whole canal, and not just on sections being restored to navigation.

The diagrams below (Figures 8.4 and 8.5) lay out a basic arrangement for this process. It demonstrates that some activities must happen in sequence, whereas others can continue in parallel to each other and illustrates the influence of monitoring informs action approach on the build up of navigation. Such flexibility is essential in order to enable a coherent approach to funding the full project, but with the ability to respond quickly to new opportunities. Flexibility will allow for grant applications of a range of sizes, but with the overall objective of securing resources as soon as possible to realise the full vision.

All physical works need to be preceded by a period for securing funding, agreement of relevant maintenance arrangements, regulatory approvals etc.

Each block of work should be able to stand alone, justifying funding in its own right as well as contributing to the continuum of overall benefits, for example by tying in to one of the associated developments discussed in 8.3.

Phasing has been arranged to take on board Partners' views expressed during the Options Appraisal process that we should aim to deliver early gains from the “Option 1B” approach initially, as a stepping stone to delivery of “Option 3” as the end result. Consequently the pre-requisite works are packaged as the early gains envisaged by Option 1B – nature reserves, in-channel protection and non-navigation based access and tourism improvements.

8.3 ASSOCIATED DEVELOPMENTS

A number of sites will have opportunities opened up as a result of the continued canal restoration, and some of these are outlined below. The consideration of the restoration as a driver for a wider canal corridor is an important consideration when assessing potential economic impacts. Jobs created will depend greatly on the scale of any future developments, but it can be estimated that taking this wider view will increase potential jobs created from around 120 to 300. Any schemes will be required to go through full planning processes, with relevant details addressed at that stage and public consultation at all appropriate stages.

These sites are largely areas identified in existing local development plans for canal-related developments such as marinas. As the plans are based on 1980s restoration proposals, with much higher levels of boat movements and less emphasis on environmental issues, they need to be updated to align with the Strategy agreed by the Partners.

It is envisaged that all members of the partnership will assist local authority partners (who will lead) in developing new frameworks for each of these sites to attract appropriate private sector investment and support the process of capturing value from these developments (e.g. through voluntary planning gain arrangements, via Section 106 agreements).

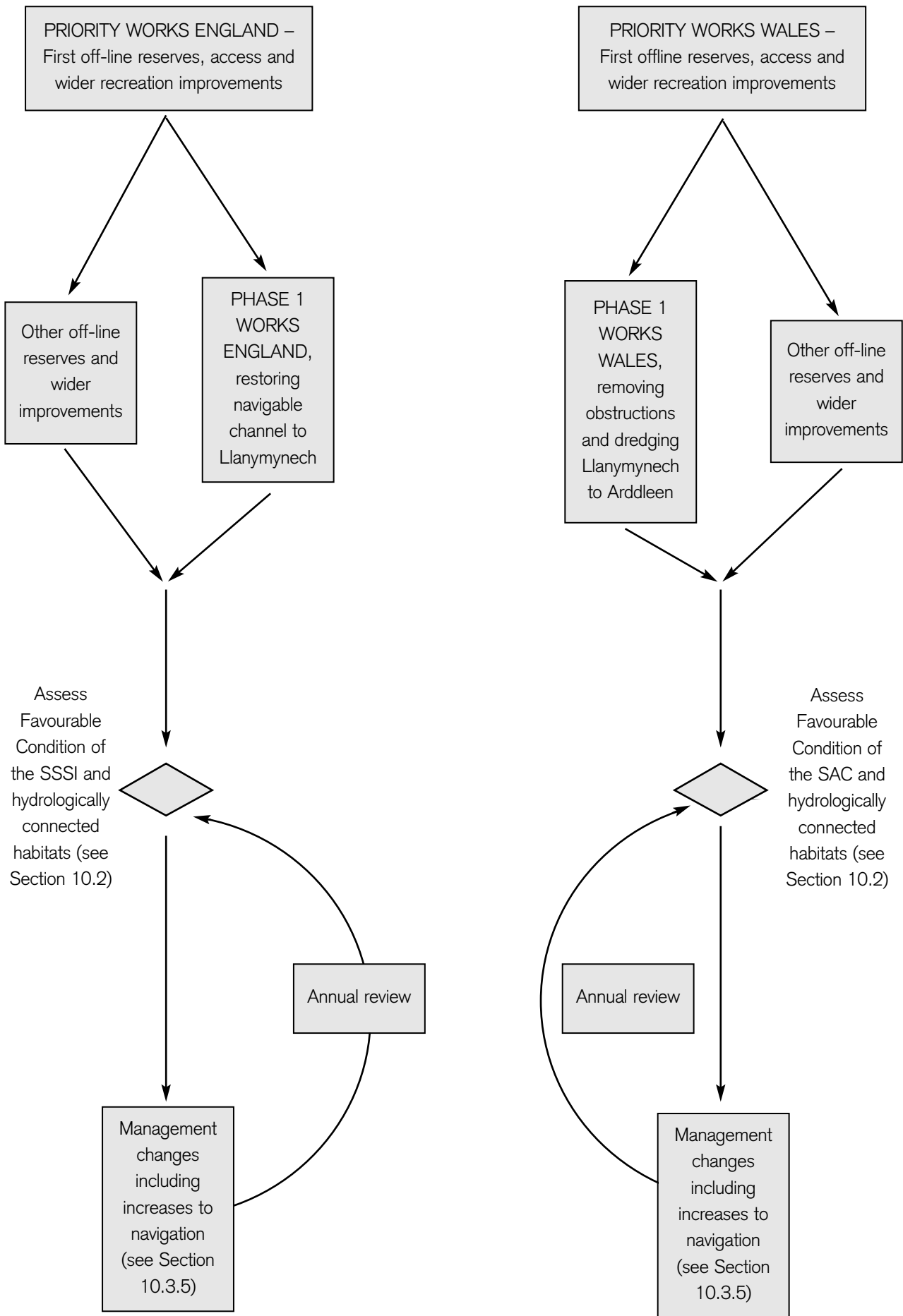


Figure 8.4 Outline of phasing process.

Timescale is an indication, and will depend on both availability of external funding and monitoring results.

	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR	Ongoing
PHASE 1 ENGLAND										
Priority Works (Off-line nature reserves, some in-channel protection, access & interpretation improvements)	Funding etc starts	Physical works	Establishment period – management action if required standards are not being met							Ongoing "Monitoring Informs Action" to ensure standards are maintained
Physical Works (Reconstruction of channel from Gronwen to Llanymynech, School House Lane Bridge)	Funding etc starts	Physical works								
Dredging and associated in-channel works (A rolling programme from the start of the Phase through to increase in navigation)	Funding etc starts									
Wider Corridor (Community based tourism initiatives and development framework for associated sites)		Ongoing programme involving all partners								
Navigation (Currently 2,500 bmy Frankton to Gronwen; zero bmy Gronwen to Llanymynech)		Manage existing navigation in accordance with the aim of achieving required in-channel standard								Annual review of navigation levels on the "Monitoring Informs Action" principle with small steps towards the target of 5,000 bmy Frankton to Llanymynech.
PHASE 1 WALES										
Priority Works (Off-line nature reserves, some in-channel protection, access & interpretation improvements)	Funding etc starts	Physical works	Establishment period – management action if required standards are not being met							Ongoing "Monitoring Informs Action" to ensure standards are maintained
Physical Works (Modifications to four bridges obstructing navigation and repairs to Yrmyw aqueduct). Funding for this cannot be achieved until funding secured for Phase 1 England		Funding etc starts	Physical works							
Dredging and associated in-channel works (A rolling programme from the start of the Phase through to increase in navigation)	Funding etc starts									
Wider Corridor (Community based tourism initiatives and development framework for associated sites)		Ongoing programme involving all partners								
Navigation (Currently 500 bmy Arddleen to Refail; zero bmy Llanymynech to Arddleen)		Manage existing navigation in accordance with aim of achieving required in-channel standard								Annual review of navigation levels on the "Monitoring Informs Action" principle.
PHASE 2/3 SOUTHERN EXTENSION										
Extension of navigation beyond Refail is an objective, but cannot be implemented until Phase 1 reconnection is complete and shown to be working. "Phase 2" would extend navigation beyond the current southern limit at Refail to a terminus somewhere on the BW-owned length to Freestone. "Phase 3" would reach Newtown. Ideally, they would be combined. The general process/timescale for Phase 2/3 would be the same as Phase 1 Wales.										Phase 2/3 development

Figure 8.5 Potential phasing of Restoration Works

i. Queen's Head

This site already has good road communications, parking, a very popular and successful pub/restaurant, a recently developing arts centre, a canoe club (with funding approved for major investment in their former warehouse canal-side building), and a nearby nature reserve. The field adjacent to Queen's Head was earmarked for a boatyard and associated facilities in the Council structure plan.

Possible Suggestion: An opportunity exists for a 'visionary' development here which exploits the site's unique position at the intersection of the canal and the A5 – already a major tourist route between Wales and the Midlands. There is potential to develop the site further, to provide facilities for canal users, but also as an enhanced destination for further canal-related tourism, building on the facilities which already exist or are proposed. The Borough Council is prepared to work with the partner organizations to bring forward development proposals, if necessary through the production of planning and design briefs.

ii. Peate's Mill

Part of this is technically a brown field site, and while access is poor, it has some historic buildings, and was the site of a commercial wharf, which remains partly intact below ground level.

Possible suggestion: Support the development of the current boat building business. Develop other units on the site for rural workshops, with canal connections if demand exists. Allow permanent moorings, but difficult site for trip boats and significant visitor numbers.

iii. Llanymynech

The two big attractions of Llanymynech are the adjacent industrial heritage area and the potential to develop the village as a destination, and encourage turnarounds before the sensitive Wales length. The County Council are progressing plans to improve interpretation and footpaths, and potentially open up an educational resource. British Waterways have a large quayside area, currently under-used as a depot. The adjacent stable block has recently opened as Llanymynech Wharf Visitor Centre, and an educational trip boat will be running from 2006.

Possible suggestion: Heritage area is subject of planned HLF bid, to develop site and surrounding area for as a low key visitor attraction and education site. Proposals include relocation of BW depot to alternative site, freeing up yard for appropriate associated development. Potential for hire boat base, with small basin to accommodate hire business and visitor moorings (possibly on allocated development land on the Wales side of the village). Promote the site for its industrial and built heritage.

iv. Burbedin

The office at Burbedin is due to be extended shortly, and is a possible "site" office for the restoration planning and management. The Guilsfield Arm nature reserve is in the immediate area.

Possible suggestion: Site could be used as an education and wildlife centre, but would need additional land for parking etc.

v. Welshpool Town Centre

Existing facilities: town moorings, Montgomery Canal Cruises (and Anglo Welsh pick up point), Powysland Museum, Dragonfly Trail, links to other attractions. Greatly under-used canal running through back of town. Travis Perkins yard, with contemporary canal buildings available for potential redevelopment. Welshpool livestock market, adjacent to the canal, has plans to relocate.

Possible suggestion: Opportunity to refocus town centre to include the canal and open up canal from main car park. Livestock market provides an opportunity to start this process. Develop area around Powysland Museum and yards opposite as a "Harbour Quarter", with mixed area of housing, small retail units, residential boats, canal-side café etc. Horse drawn trip boat running to the south (Powis Estate). Promote links to other town attractions.

vi. Powis Estate/Castle

The estate own land to the south of the town which has potential for a range of developments.

Possible suggestion: Further develop retail sales with add on value and/or convert buildings to high quality business units. Develop mooring basin to encourage visitors to and from the castle, and act as destination for horse-drawn trip boats.

vii. Belan Locks

Previous temporary home of Anglo Welsh hire boats (2003).

Possible Suggestion: Provide facilities for small hire fleet and/or other commercial operator including service block for all canal users.

viii. Berriew

This is an attractive village with many half-timbered buildings, and a range of small visitor attractions including the Andrew Logan Museum of Sculpture, Glansevern Gardens nearby and a jewellery workshop.

Possible suggestion: Improve visitor moorings and footpath links to village, promote as a local destination, until restoration takes the canal further south.

ix. Garthmyl

Original terminus of the eastern branch of the Montgomeryshire Canal, with historic wharves, buildings, and a pub.

Possible suggestion: Site can be reached by narrowboat, if a solution can be found for Refail crossing. Possible centre for paddlesports, with additional parking, and an improved setting for the canal-side pub.

x. Brynderwen

Planned location of slipway for trail boats to use section south to Aberbechan. Depending on exact location, this could be further developed as a canoeing base and picnic area.

xi. Aberbechan

This is the last village at the southern end of British Waterways' ownership. There are no significant developments at present, but good road access and a mooring basin would be needed, unless the canal extended on towards Newtown. Early schemes had a site designated for a hotel development.

xii. Newtown

Newtown is beyond the scope of the Conservation Management Strategy but there are no major ecological issues with re-watering the dry section. However, the presence of a major terminus would impose boat management issues, as it would increase demand from visiting boats and also create an internal economy of boat movements in Wales. Gains would include the improved environment of the canalside as a driver for other economic investment. Even without full restoration of the canal, there remains significant scope for developing the route as a green corridor link between the town and canal. It is probable that full restoration to the town will require significant economic gains from stimulating urban regeneration and associated developments around the new terminal basin e.g. leisure, retail, and offices.

9. A COMMUNITY PARTNERSHIP

Summary of chapter

The philosophy for the restoration and future use of the canal is to strengthen local and community links, and build a greater affinity with the canal. The improvement of these links will be through local groups and organisations, and through greater communication and sharing of information. Particular support will be given to enabling the growth and development of the Friends of Montgomery Canal.

As part of the preparation of this strategy, the Partnership engaged in a very thorough public consultation exercise. This included attending eight local fairs and events, three public meetings, in Oswestry, Welshpool and Newtown, and a range of visits and meetings with special interest groups and parish councils. During this time 500 questionnaires were returned and analysed. Further responses have been received to the consultation draft of this document.

Key results were 94% strongly agreeing with restoration, with a majority for low key restoration orientated to conservation. An important minority were supportive of a more commercial scheme seeking to generate jobs through greatly improved visitor facilities. Pedestrian access and better mowing of the towpath were the areas most favoured for improvement, and built heritage, followed by wildlife, were the aspects most valued at present.

9.1 PHILOSOPHY

The Montgomery is a rural canal, and passes through a range of small settlements, as well as having close links with the market towns of Newtown, Welshpool and Oswestry. While the canal is undoubtedly an economic resource and tourist attraction, it is also vital that it is valued by local residents, as a local facility meeting local needs.

This is one reason for the major public consultation exercise that was undertaken through the summer of 2003. The process and summary results are outlined in Section 9.2 below. A fuller report is also separately available (Rural Resources and Godfrey, 2003).

The Montgomery Canal Partnership is an example of building relationships to achieve shared objectives, and it is intended to continue to develop this philosophy. If the community vision is realised then a wider range of groups need to be involved, but through more informal involvement processes such as customer forums, and a wider circulation of British Waterways' newsletters.

This wider vision should include improved links with:

- Community Councils
- Parish Councils
- Town Councils
- Welshpool and Newtown Partnerships
- Oswestry Market Town Initiative
- Llanymynech Heritage Partnership
- Severn Vyrnwy Project
- Memberships of Partner organisations
- Non-narrow boating user groups e.g. paddlesports, angling, rambling groups.

There are particular reasons to develop links with, and help support The Friends of Montgomery Canal, a steadily growing group with around 150 member addresses. The Friends have a very local membership, and include a diverse range of interests, extending well beyond navigation, but with a shared and active concern to safeguard the Montgomery Canal.

Gains from community partnership:

- Greater affinity with the canal for local residents
- A voluntary resource for events, publicity, and possibly management and fundraising
- Demonstrating support and commitment for future restoration and developments.

It fits in with the changing agenda at various levels of government, including:

- Central government initiatives, such as the Active Community Unit and the Community Cohesion Unit (both within the Home Office) and the requirement for local authorities to prepare community strategies (Office of the Deputy Prime Minister)
- Powys, Shropshire and Oswestry Community Strategies. They contain a number of references to the Montgomery Canal.

Not government, but an important national policy is from the Heritage Lottery Fund Area Partnership Guidelines

Volunteering and community involvement are about developing a greater sense of ownership and a sense of place. The objective is to harness that involvement and make everyone value their canal.

9.2 COMMUNITY CONSULTATION

9.2.1 Previous Work

Prior to the consultation, some useful information was obtained by a survey of local residents, chosen at random from the electoral register, and undertaken in 2000 (Wozencraft). Some of the more interesting results of that study are shown in Table 9.1, below. They demonstrate a range of interests and values in the canal, with peace and tranquillity and walking particularly valued. 27% of residents claimed no specific interest in the canal, which demonstrates untapped potential and the need to continue to develop awareness and links.

Table 9.1. Key results from 2000 survey (Wozencraft).

1. How important is the Montgomery Canal and its associated landscape?			
Very Important: 39%	Important: 39%	Not important: 22%	
2. What are your specific interests in the canal?			
Walking	46%	Cycling	2%
Boating	14%	Fishing	2%
Exercising dog	5%	Live by it	6%
Wildlife observation	13%	None	27%
Industrial heritage	6%	Other	7%
3. Why is it special to you?			
Know you're allowed to be there	4%	Peaceful and unspoilt	30%
Industrial heritage	11%	Live nearby	17%
Safe	30%	Familiar landscape	11%
Nature and wildlife	12%	Other	8%
4. What would you most like to be conserved or protected along the Montgomery Canal?			
Waterway itself	27%	Waterside trees & Flora & fauna	58%
Hedgerows	14%	Industrial heritage	22%
It's OK	12%	Other	1%
5. What would you like to be improved or changed along the Montgomery Canal?			
Towpath surface	27%	More restoration works to canal	3%
Hedges trimmed	3%	Stop dog fouling	9%
Left as it is	31%	Other	8%

9.2.2 Consultation Process

During the preparation of this Strategy a combination of techniques, both quantitative and qualitative, was used to inform the public and receive information, feedback and opinion. The results are fully documented in a separate report (Rural Resources, 2003).

Techniques and events included the following:

- Attendance at eight local fairs and events.
- Three public meetings, at Newtown, Welshpool and Oswestry, attended by over one hundred people.
- Specialist focus group meetings for navigation groups, nature conservation, and local businesses.
- Use of a structured questionnaire at all events and Montgomery Canal News.
- Passing information updates via the newsletters, and developing the mailing list to include over 600 individuals and organisations.
- Reactive visits based on letters to local councils and other organisations.

Unlike Wozencraft's study, which obtained its information from randomly selected members of the public (though subject to those willing to be interviewed in their own home for an hour), the audience for this study was largely self selected, being those who were prepared to attend public meetings or focus groups or who wished to comment at the CMS stand at local shows.

This is not necessarily a problem, provided that it is recognised, as it is felt that those who are motivated to participate are likely to have the most developed views about the canal.

9.2.3 Results

Approximately 500 questionnaires were returned. Only 3% of returns were from under 25s, which is a gap in the statistics. 94% strongly agreed with restoration. Full details are in the main consultation report.

Current importance of canal: The profile for visitors and local people is virtually identical. Mostly used for walking with peace, built heritage, wildlife and landscape being dominant.

Values to protect: Buildings and structures just outscored canalside plants and animals, with current navigable sections third in order of priority.

Improvement Priorities: The ranked order for the attributes is:

1. Restoration to navigation, low key and favouring conservation.
2. Pedestrian access
3. Towpath surface
4. Nature reserves
5. Restoration to navigation, with increased visitor and tourist facilities.
6. Educational opportunities
7. Visitor facilities
8. Information boards on canal
9. Dog mess
10. Grass mowing on towpath
11. Vehicle access and parking
12. Seating
13. Signage to canal
14. Public events
15. Leave canal as it is

There were some differences in results between visitors and local people. Visitors more greatly in favour of low key restoration and pedestrian access whilst local people have more immediate concerns – grass mowing and dog mess. Some of these results are shown in Figure 9.1.

There were a few differences in results based on geography, perhaps summarised as two significantly different strands, around the towns of Welshpool and Newtown. Welshpool particularly recognised and valued the economic gains from restoration, no doubt due to existing small businesses that would expect to benefit from restoring the town length to the national network. At Newtown, and in the south, there was a small but distinct minority who questioned the cost benefit of restoration of the southern section.

The results showed one marked difference with those of Wozencraft, which was only a tiny number of respondents favouring no restoration.

There would appear to be two reasons for this: probably the more important is that we have been seeking to design a scheme with clear safeguards for the values identified from the consultation process. To a lesser degree, there was some self-selection in who chose to stop to speak to us. However, attending existing village events did enable us to reach a wide target audience, including residents who were happy with the status quo.

Some follow-up street work was therefore undertaken, in order to obtain a more random sample of the local population. This showed a lower figure, but still substantial majority of 84% in favour of restoration. 130 individuals answered a range of questions, with a key finding being 85% in favour of the canal restoration, 7% against and 8% undecided. The 7% against were concerned about privacy and keeping the canal nice and quiet, although wildlife was cited on two occasions. This figure is lower than the events consultation (94% in favour), but nevertheless confirms substantial public support for a sensitive restoration.

Some quotes from the consultation

“Getting people to visit the natural world is more important than the conservation of individual plant species”.

“Develop the cycle route down to the Queen’s Head into a circular route by working with heritage railways to utilise their spare track bed through Oswestry”.

Local resident: “Whatever happened to the ice breaker boat that used to be on the bank near Aston Lock?”

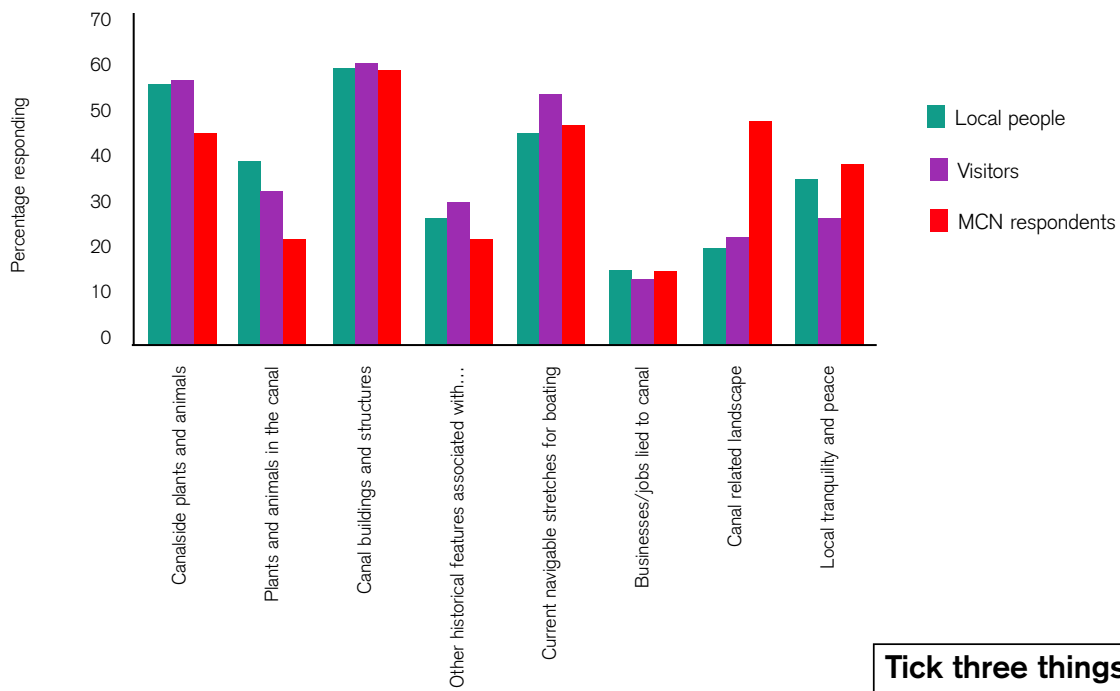
Local student: “Market horse drawn dayboats and additional nature reserves as an attraction to tourists.”

Local farmer: “There is money to be made from anglers by providing fisheries well stocked with carp and tench”.

“My grandfather was the last operator of the engines (of the Newtown Pump House)”

“Stop talking and get on with it!” Welshpool public meeting.

What do you want conserved or protected?



What do you want improved?

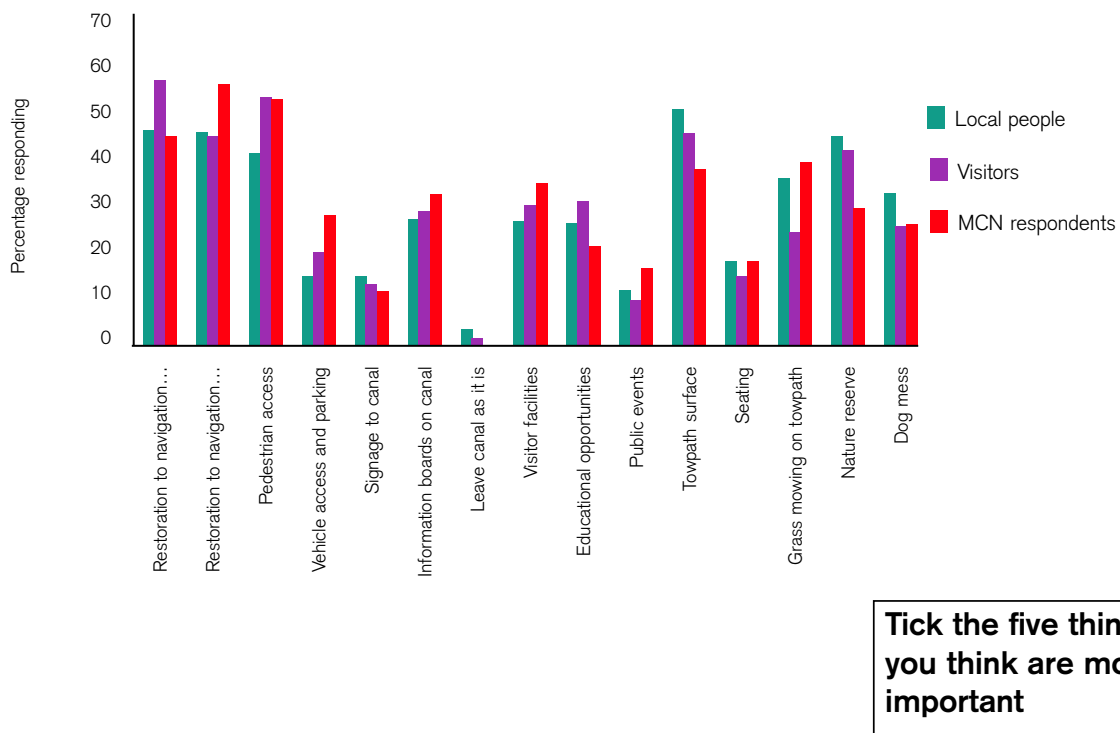


Figure 9.1 Results from the community consultation questionnaire.

9.3 PROPOSALS: COMMUNITY GROUPS

9.3.1 Friends of the Montgomery Canal

- 1) British Waterways and the Montgomery Canal Partnership will be pro-active in supporting and helping the Friends to grow.

Subject to sufficient resources, the Friends will seek to expand their role in the following areas:

Extra hands at big events

Organising events, and presence at local shows

Helping with school visits, guided walks and talks

Helping with monitoring

Develop representatives with particular briefs eg built heritage, local history, bird/butterfly/plant surveys, archives (already started)

Forum for channelling local views

Specifically ensure all interest groups are represented and involved

9.3.2 Other Organisations

Many other voluntary groups have a direct role in the canal at present, and these are summarised in the Table 9.2.

- 2) British Waterways will provide support to the Packet Boat Duchess Countess Trust, who are organising the running of the Llanymynech community information point, and will run educational boat trips at Llanymynech from 2006.
- 3) The Partnership values the active participation of community groups and will continue to support them in their work.

Table 9.2. **List of Community Organisations Currently Active Along Canal**

Group	Role
Montgomery Waterway Restoration Trust	Links with community and councillors, active promotion of restoration proposals
Friends of Montgomery Canal	Walks and events; local membership, part of MWRT
Shropshire Union Canal Society	Current restoration of Newhouse Lock; long term supporters, fundraisers and event organisers
Heulwen Trust	Two narrowboats for trips for the disabled
Shropshire Paddlesports	Canoeing, major catering for youth groups
Montgomery Angling Association	Fishing, club rights for Powis Estate, partner for British Waterways in Welshpool
Duchess Countess Packet Boat Trust	Plans to build replica traditional packet boat and provide educational visits
Inland Waterways Association	Funders and supporters; local branch organises events.
Waterway Recovery Group	Major restoration projects in Shropshire, work at Llanymynech
BTCV	Nature reserve management work
Oswestry and Welshpool Ramblers	Guided walks, bigger future role?
Arddleen Community Association	Establishment and maintenance of local picnic and amenity area
Llanymynech Heritage Area Group	Major involvement in development of adjacent County Council heritage area
Llanymynech Partnership	Overall co-ordinating role
Newtown Rotary Club	Canal based sponsored walks

4) A database of customer groups is being developed, and will be maintained and updated in the long term.

This information base will further develop communication and links with the community, and it is anticipated that some groups will develop stronger links in time and become active supporters.

5) Individuals also have a role to play, and should be utilised in areas of special interest. This should be via existing groups where possible, and may include the roles listed below.

- Working with visiting groups
- Staffing visitor facilities
- Informal wardening of sites
- Guided walk leaders
- Wildlife recorders
- Archive research
- Local history research

9.3.3 Communications

6) The Partnership will continue to develop contacts with the community, through a range of media, including:

- Local notice boards
- Publications
- The Llanymynech Wharf information centre
- The British Waterways web-site
- Other related sites

7) Current regular customer forums will be widened, or supplemented, to include more feedback from non-boating customers.

8) To integrate a number of existing local events eg annual dinghy dawdle, Friends of Montgomery Canal Family Fun Day, consideration will be given to an annual Montgomery Canal Festival, probably with a rolling location.

References for further information

Oswestry BC (2002) A Community Strategy for Oswestry 48pp.

Powys Community Strategy (in preparation)

Rural Resources and Godfrey (2003) Montgomery Canal Conservation Management Strategy: Community Consultation

D J Wozencraft (2000) A Public Perception Study on the Montgomery Canal. Welsh Institute of Rural Studies, Aberystwyth. 150pp.

10. MONITORING AND REVIEW

Summary of chapter

In order to monitor the progress and development of the restoration, the Partnership will monitor and publish an annual report. This report will be tested against the policies and management proposals committed to in this strategy.

To support this monitoring process, a very detailed standards for monitoring the ecology and safeguarding the nature conservation interest is laid out. In addition there are a series of indicators set out that will be measured over a much wider range of uses and outcomes. These indicators will provide the wider test of sustainability and success, and fall into the following categories:

- Wildlife
- Built Heritage
- Visitor Use
- Education
- Social inclusion/community involvement
- Economic development
- Community Identified Targets

10.1 NATIONAL SUSTAINABILITY INDICATORS

Government has been developing a range of indicators in order to measure and monitor performance, in order to assess against policy. This applies to sustainable development as much as any other sphere. Indeed, sustainability indicators have also been produced by Shropshire County Council and British Waterways. The table below lists the main national indicators (from a list of 147) which the Montgomery Canal restoration will make a strong contribution to.

Table 10.1. **List of UK Sustainability Indicators contributed to by Montgomery Canal restoration.**

No:	Description	Comment
H15	Waste arisings and management	Recycle dredgings to adjacent farmland
H1	Output measured as GDP	Increased visitor spend and job creation
D9	Greater use of sustainable construction materials	Recycled, heritage sensitive clay, and materials
D13	Areas in Countryside Stewardship	Promoted via Severn Vyrnwy
D16	Sustainable tourism	Underpins whole project
D17	Integrate with public transport	Aspiration
E4	Promote local business diversity (start-ups net of closures)	New businesses from increased visitor numbers. Local moorings policy.
G2	How children get to school	Towpath as green walking route
J3	Access for disabled	"Waterways for All", access audit proposals
J4	Participation in sport and cultural activities	Club events e.g. Shropshire Paddlesports; community arts, Dragonfly Trail, schools programme
K5	Look for opportunities to conserve local heritage	National indicators are grade 1 and 2* listed properties. Montgomery Canal indicators are grade 2 and heritage register.
L2	Voluntary Activity	Partnership with groups e.g. Heulwen Trust, Friends of Montgomery Canal, Shropshire Paddlesports
L3	Community Spirit	Consultation, partnership, sharing, valuing
Q1	Nutrients in water	National target is for rivers, but very applicable to canal.
Q6	Sites affected by abstraction	Need to safeguard and increase supply
H13	Populations of wild birds	Some gains from new habitat creation
S4	Biodiversity Action Plans	Two national species, many local targets – see Section 3.3.5
S5	Landscape features	Ponds one national indicator; see also chosen community consultation indicators
S6	SSSI management and extent	Proposed increase to include new habitat areas
S7	Countryside Quality	Tranquillity identified, no national indicator, local indicator via survey
S8	Promoting Access to Countryside	Underpins whole project
S9	Native species at risk	Commitment to Species Action Plans, corridor approach
S14	Use of recycled aggregates	Use of existing clay liners, recycled heritage building materials
T6	Enforcement of Govt regulations	EA water, ecological monitoring programme
T7	Public understanding of sustainable development	Promotion throughout project
T8	Awareness of sustainable development in schools	Promotion through schools' programme
T9	Individuals to do their bit	Active volunteer programme e.g. SUCS

A number of others could also be included, but will impose requirements on suppliers to achieve. These will be reviewed and implemented where possible.

Table 10.2 UK Sustainability Indicators we could choose to support.

No:	Description	Comment
C4	Businesses recognised as IIP	Could favour in suppliers
D4	Adoption of environmental management systems	Could favour in suppliers
D5	Corporate environmental reporting	Could favour in suppliers
D6	Environmental reporting	Could favour in suppliers

The National Assembly for Wales is developing a national version of the UK indicators, which are intended to take account of the more rural nature of much of Wales. This work is being undertaken by the Centre for Business Relationships, Accountability, Sustainability and Society at Cardiff University.

However, for the Montgomery Canal it is perhaps more pertinent to seek a range of more local indicators that meet local aspirations and provide objective tests to measure progress against the policies articulated in this strategy. These could be aligned within the frameworks of national and regional indicators, and approach put forward and already used by British Waterways. A set of proposed indicators is given in the following section.

10.2 PROPOSED SUSTAINABILITY INDICATORS FOR THE CANAL

The following indicators are open to the consultation process, and can also be modified in the light of experience. However, considerable continuity is essential to monitor trends and progress.

The Partnership will publish an annual review on progress and sustainability, which will report against the indicators below.

WILDLIFE

Length of SSSI in favourable condition
 Mapped area of *Luronium natans*
 Transect occurrence of seven nationally rare aquatic water plants
 % banksides with marginal vegetation
 Areas in Countryside Stewardship and Tir Gofal within canal corridor
 Increase/decrease in area of semi-natural habitats
 Water quality: criteria to be defined

BUILT HERITAGE

Listed buildings or structures restored
 Listed buildings or structures brought back into use
 Non-listed heritage structures on BW heritage register restored
 Non-listed heritage structures on BW heritage register brought back into use
 Heritage training days for
 i. British Waterways staff
 ii. External contract staff
 iii. Volunteers

VISITOR USE

Towpath users (also health): existing pedestrian counters
 Boat numbers: existing boat counters
 Canoeists (also health): method to be defined, (club questionnaire?)
 Angling: method to be defined, (club questionnaire, census during BW length inspections?)
 Cyclists (also health): method to be defined
 Length of towpath where cycling is permitted

EDUCATION

BW-organised visits – numbers of beneficiaries
Visitor numbers to Powysland Museum
Visitor numbers to Llanymynech Heritage Area: method to be defined
Visitor numbers to Burgedin
Visitor numbers to reserves: additional pedestrian counters?
Number of other known visiting/user groups
Number of talks or visits to groups
Numbers of information and interpretation boards

SOCIAL INCLUSION/COMMUNITY INVOLVEMENT

Numbers of community or voluntary groups active on canal
MC News circulation
Number of volunteer days input to the canal restoration and management
Length of towpath with all ability access
Number of stiles either replaced by kissing gates or removed

By local survey:

% believing canal belongs to the local community
% believing they know what is going on along the waterway
Method of travel to canal:
 By foot
 By bicycle
 By bus/coach
 By car
 By train/other

ECONOMIC DEVELOPMENT

Jobs/employment: method to be defined
Proportion of project expenditure going to local firms
Proportion of suppliers with environmental management system (UK Indicator 28):
BW suppliers
Subcontractors to BW suppliers
Other partners' suppliers
Number of social and community enterprises (UK Indicator 29)

COMMUNITY IDENTIFIED TARGETS

These targets will need to be measured by regular survey of the community by a standard methodology. Method and frequency to be defined.

 Path mowing
 Path surface
 Dog mess
 Perception of birds
 Length open to navigation
 Landscape values – trees & hedges
 Attractiveness/cleanliness
 Peace and tranquillity

10.3 CONSERVATION OBJECTIVE SETTING AND MONITORING FOR THE SSSI AND SAC

A very thorough and detailed monitoring programme, to meet the requirements of national legislation, and to ensure the safeguarding of the SAC and SSSI interest is described in the section below.

10.3.1 Introduction

The Montgomery Canal is designated as an SSSI for all of its length in Wales and part of the English section. It is also designated as a SAC in Wales. The SAC designation is because of the abundance of *Luronium natans* in the Wales length, whereas the SSSI citation also refers to *Potamogeton compressus*, the whole assemblage of aquatic plants and also the Odonata (dragonflies) that the canal supports.

The citation for the English section of the canal refers to submerged and emergent species of plant.

This section will give details of the monitoring that will need to be undertaken to assess the condition of the special interests of the site. At present it covers plants and physical attributes; there are plans to define standards for invertebrates in the future.

10.3.2 SSSI Monitoring methodologies

An comprehensive monitoring programme shall be undertaken, with an annual review and assessment. Monitoring results will be reported to the Montgomery Canal Partnership each autumn, in sufficient time to enable careful assessment and decisions concerning management, including navigation limits, for the following year.

The detailed standards are part of a separate and formally adopted document: Montgomery Canal Conservation Objectives and Standards (April 2005). These were prepared by the Countryside Council for Wales and English Nature, with close co-operation with British Waterways and run to twenty four pages. The standards have been prepared for:

- Boated channel (based on canal type C)
- In-channel reserves (based on canal type B)
- Channel not open to navigation (based on canal type A)

All four standards will apply to different sections of the canal in Wales. In England, the off-line reserves standard will apply to the new single major reserve. Once the reserve has sustainably achieved this standard there will be no specific in channel standards to be measured against. However, the channel in England will continue to be managed to maintain a high biodiversity interest, notably with a rich and diverse marginal and emergent vegetation zone. The standards are simplified and summarised in Table 10.3. The detailed standards take precedence over this summary.

As knowledge and monitoring experience of the canal increases the conservation objectives and performance indicators will be kept under review. It is intended to conduct some monitoring trials during the summer of 2005 to further test field methodologies. This exercise will also attempt to re-assess the distribution of locally distinctive species, so that all partners can feel that the standards defined within the conservation objectives are appropriate.

The test for any individual element or phase of management or restoration works needs to review the conservation objectives of the whole canal. It is not necessary for the whole canal to be in favourable condition, but it is a requirement that the whole canal is moving positively towards achieving the conservation objectives.

Table 10.3 Summary Conservation Objectives and Standards for the Montgomery Canal SSSIs

Habitat Feature	EXTENT	Site Specific Target Range And Measures	Comments
Floating-leaved, submerged and aquatic vegetation	<p>Combined area or aquatic and emergent vegetation: England: Currently 4.5 hectares, of which 0.2 hectares is off-line reserves. The restored canal will require a single reserve with an aquatic area of 4.5 hectares. Wales: Currently 37.9 hectares, of which 1.6 hectares is off-line reserves. As part of the restoration the in-channel area will increase by 0.5 hectares (Maerdy diversion) during Phase 1B. The off-line reserve areas will increase by 1.0 hectares.</p>	<p>For Wales set separate standards for</p> <ul style="list-style-type: none"> – boated channel – in-channel reserves – off-line reserves – non-navigable channel. 	<p>Site description refers to the Montgomery Canal having extensive areas of submerged and floating-leaved aquatic vegetation and extensive areas of fringing emergent vegetation. Water quality would ideally be mesotrophic but outside influences and species composition indicate some eutrophic influence.</p>
Emergent vegetation	<p>Present throughout site.</p>	<p>1m average margin within the boated channel on both banks minus banks where in-channel reserves, lock approaches, bridge holes and moorings occur.</p>	<p>Strategy proposes 1m margin along 75% of banks.</p>
WATER QUALITY OBJECTIVES			
<p>These standards are required for the whole ecosystem in Wales. In England they are a requirement for the off-line reserve, and will also be required for the channel, where that objective will also determine the water quality in the reserve.</p>			
Water availability	<p>No drop of more than 12 cms throughout the canal.</p>		
Water Transparency	<p>No standard for boated channel.</p>		
Algal cover	<p>For reserves and non-navigable channel Secchi disk should be visible at depth of 1m in 90% of observations</p> <p>Filamentous algae and combined cover of <i>Spirodella/Lemna/Azolla</i>, each less than 10% cover on average</p> <p>Failure is unlikely on this attribute alone, but it will be monitored.</p>		
Biological and chemical water quality	<p>The current target is to seek to attain biological water quality GOA A or B, and chemical water quality GOA A or B. However, it is recognised that these standards may be replaced by better standards as and when they become available. The standard will only be failed if failure is sustained and is for criteria wider than biochemical oxygen demand and dissolved oxygen. There should be no deterioration from existing levels. As an interim guide the total phosphorus target for the whole canal is <math>40\mu\text{g L}^{-1}</math> TP</p>		
<p>These targets should be replaced by experience of the existing data available from the Environment Agency or emerging Water Framework Directive targets over the coming years.</p>			

CHANNEL SHADING

Within Wales, on average no more than 5% of the channel surface be shaded by overhanging vegetation in each section length. *Luronium natans* appears to be able to survive in shaded conditions where there is, perhaps, reduced competition from more vigorous species and therefore specific lengths of canal will be identified where this standard will not apply. In such agreed lengths other vegetation attributes may only be met to a lower standard. Consideration to reducing shading of some sections will be required, through hedge-laying, crown raising or tree felling.

AQUATIC VEGETATION – QUANTITY AND DISTRIBUTION

Boated channel

(Wales) Submerged and floating-leaved (SFL) vegetation to be present and rooted in every 1km section. 1m average Emergent fringe (1m wide) within the boated channel on both banks to be present along 75% of available banks (excluding in-channel reserves, lock approaches, bridge holes and moorings).

In-channel reserves

(Wales) Submerged and floating-leaved vegetation to provide 3-6% of overall channel area and 30% cover or greater within the reserves AND cover of emergents to be less than 10%.

Off-line reserves

(England and Wales) Minimum 1m fringe of emergents along banks of reserves, but overall cover <70%, and S/F-L vegetation throughout open water of site at cover >30%. (Standard A).

Non-navigable channel

(Wales) S/F-L vegetation 30% cover or greater; Emergent vegetation between 30% and 70% cover (Standard A). Where sections are in water.

AQUATIC VEGETATION – SPECIES RICHNESS

Boated channel

(Wales) In every 1km sampling site: Presence of a minimum 2 native aquatic and 4 native emergent species, AND an average of 4 aquatic and 7 emergent species over full channel length.

In-channel reserves

(Wales) Presence of at least 6 aquatic at DAFOR level Occasional within any given kilometre of channel, AND an average of 7 of aquatics, over full channel length, within the reserve within any given kilometre of channel (provided that the reserve at least 150m in length). No target for emergents.

Off-line reserves

(England and Wales) In every Offline reserve (per 0.15 hectares of reserve) Presence of at least 8 species of aquatics and 7 emergents at DAFOR level Occasional, AND an average of 10 aquatics and 10 emergents, over full channel length.

Non-navigable channel

(Wales) Presence of at least 6 species of aquatics and 6 emergents from Appendix 1 at DAFOR level Occasional in every 1km of channel, AND an average of 7 aquatic and 7 emergent species per 150 metre sample length.

AQUATIC VEGETATION – INTRODUCED SPECIES

The four most invasive species (*Azolla* spp., *Crassula helmsii*, *Hydrocotyle ranunculoides*, *Myriophyllum aquaticum*): these should be absent from the canal or at the most occupy less than 50 m of the whole designated site AND None of these invasive species should be present at DAFOR cover more than Rare in any 150m survey site.

AQUATIC VEGETATION – LOCAL DISTINCTIVENESS

Excluding *Luronium natans* and *Potamogeton compressus*.

The management of the canal will maintain the following species to close to their 2001 range. Restoration to higher levels will be targeted, and as and when such higher levels are both attained and shown to be sustainable, the standard required for favourable condition will be raised.

Number of km lengths in which species appears.

	Wales 2001	Wales OBJECTIVE	New reserve England
<i>Alisma lanceolatum</i>	2	2	Yes
<i>Butomus umbellatus</i>	1	10	Yes
<i>Callitriche hamulata</i>	7	16	No
<i>Callitriche hermaphroditica</i>	1	11	Yes
<i>Carex acutiformis</i>	2	2	Yes
<i>Hottonia palustris</i>	0	0	Yes
<i>Hydrocharis morsus-ranae</i>	0	0	Yes
<i>Myriophyllum alterniflorum</i>	10	11	No
<i>Potamogeton alpinus</i>	0	0	Yes
<i>Potamogeton crispus</i>	6	14	Yes
<i>Potamogeton friesii</i>	1	3	Yes
<i>Potamogeton obtusifolius</i>	23	23	Yes
<i>Potamogeton perfoliatus</i>	4	6	No
<i>Potamogeton praelongus</i>	2	4	No
<i>Spirodela polyrhiza</i>	2	2	Yes

FLOATING WATER PLANTAIN – *Luronium natans*

Currently only occurs in Wales, and these standards are therefore for the Wales length. Base-line area, subject to up to 25% natural fluctuations, is 1.5134 hectares, measured from 2001. Requires evidence of spreading by runners, and spreading around site by fragments.

Boated channel Present in 21 km lengths; one positive recorded presence per km is sufficient.

In-channel reserves Present in in-channel reserves in at least 21 km lengths; present in 30% of samples.

Off-line reserves Present in all offline reserves in Wales; present in 40% of samples.

Non-navigable channel Present in all non-navigable channel kms where it was found in 2001; present in 75% of samples and 75% of the mapped area in 2001 in Yrmywy aqueduct.

GRASSWRACK PONDWEED – *Potamogeton compressus*

These standards apply to Wales. Absence of flowering to be taken as an indicator but not a failure of FC/FCS. Population size, but not distribution, may fluctuate by up to 25% from agreed baselines. The plant has been recorded in England at Aston Nature Reserve, and trails will be undertaken to either spread or re-introduce it to this location.

- Boated channel** Present in minimum 5 km (25%) lengths in Wales.
- In-channel reserves** Present within reserves in minimum of 70% of navigable lengths (approximate return to best available historic data)
AND present in at least 20% of monitoring events per km.
- Off-line reserves** Present within all the offline reserves in Wales
AND at least two separate populations (each >10 stems, or patch size > 1m_ with a separation of >5m) per 0.5ha of reserve or per reserve
AND any agreed sustained restoration to be maintained within natural fluctuations.
- Non-navigable channel** Present in similar range to the late 1980s, which is approximately 70% of non-navigable km-lengths
AND present in 50% of monitoring events per km. For Vyrnwy aqueduct length at least 75% of the 2001 mapped area maintained.

10.3.3 Other Biological Monitoring

i. Aquatic invertebrates

There has been no comprehensive survey of invertebrates since the ecological survey undertaken between 1985 and 1988, although as part of the 1997 survey selected groups were surveyed (Molluscs and Odonata). The Environment Agency undertake biological monitoring using the canal PSYM method, at four sites along the canal and have been doing so since 2000. This should be continued and the data generated can be used to assess changes in the aquatic invertebrate assemblage. Data from the 2003 and 2004 invertebrates surveys will be used to inform future monitoring of aquatic invertebrates. Data is sufficient to record presence or absence of species, but is insufficient to define population size criteria.

ii. Hydrologically connected habitats

This refers to aquatic habitats away from the existing canal channel and includes all existing nature reserves and those that may be created in the future. In order to assess the success of the reserves a baseline of data needs to be established with detailed recording and mapping of the habitats and species within the reserves for the establishment period. The methodologies used will be dependent on the morphology of the reserves (larger sites may need to be surveyed from boats), will follow the same principles as the canal channel with components relating to:

- Populations of *L. natans* within the newly created areas;
- Aquatic plant assemblage;
- Marginal vegetation;

Aquatic macrophytes should be mapped by area, to enable base-line comparisons with the 2001 data, during their establishment phase. Sampling methods, based on transects, should be developed to monitor annual trends during this period.

10.3.4 Water Quality, Hydrology and Hydromorphology

i. Water Quality

Water quality criteria remain to be fully defined, although there is a very detailed database of recorded information. Indicators will be informed by current work being undertaken to define both good chemical status and good ecological potential for artificial water bodies as required by the Water Framework Directive.

- The Environment Agency undertakes routine water quality monitoring of the canal. The following parameters are monitored:

- | | |
|--------------------------------|--------------------------|
| – pH | – Nitrate |
| – EC (electrical conductivity) | – Nitrite |
| – Cadmium (Cd) | – Alkalinity |
| – Total ammonia | – Dissolved phosphate |
| – Total nitrogen | – Total orthophosphate |
| – Ammonia non-ionised | – Copper (Cu) (filtered) |
| – Suspended solids | – Zinc (Zn) (total) |
| – Total hardness | – Dissolved oxygen |
| – Magnesium (Mg) | – Calcium (Ca) |
| – Biochemical Oxygen Demand | |

Additionally temperature and turbidity will be measured in the field.

The following sites on the canal are monitored by the Agency:

- Rednal feeder
- Queen's Head
- Parson's Bridge
- Wern
- Welshpool
- Aberbechan

Additionally feed waters are monitored at the Llangollen Canal, River Tanat River Morda and the River Severn.

ii. Hydrology

Flow is also important to maintain water quality and ecological value, and requires further review and possible management change. Flow data are also important to allow calculation of loadings of nutrients entering the canal via the feeders. British Waterways monitor water flows through its SCADA system at the following points (Figure 9.1):

INFLOWS:

- Frankton Lock (lock counter and by-pass weir)
- Maesbury Mill
- Tanat Feeder
- Byles Lock (measures flows from Penarth feeder)

THROUGHFLOWS:

- Carreghofa Locks
- Burgedin
- Belan (flows plus lockages)
- Byles Lock
- New sites planned at Aston (flow through nature reserve) and Pool Quay (flow and lockages)

OUTFLOWS:

- Maesbury Marsh
- Guilsfield Weir
- Wern Outflow
- Trwstllewelyn Weir

LEVELS

- Queen's Head
- Welshpool
- Belan School
- Byles Lock

iii. Hydromorphology

Monitoring must include physical changes and management information which affects water quality, and the ecology. Aspects should include:

- Boat movements, measured through counters currently located at
 - Maesbury
 - Arddleen
 - Buttington
 - South Welshpool
 - Berriew Lock
- Boat movements, interpreted from SCADA lockage data
- Sections of canal re-watered or re-opened to navigation
- Dredging undertaken
- Bank protection works
- Canal depth and cross sections

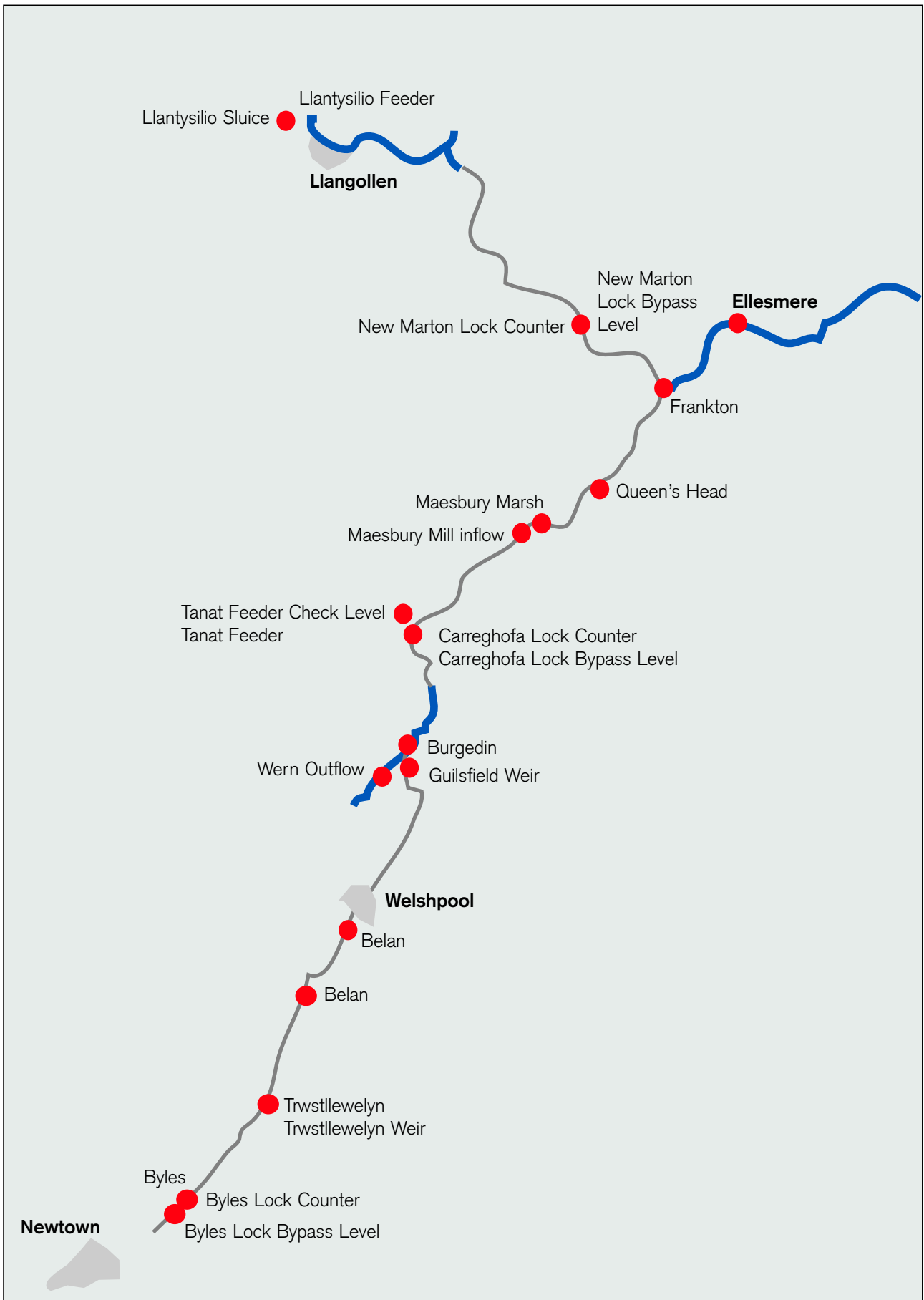


Figure 10.1. **British Waterways' SCADA (Water flow) Monitoring Sites.**

10.3.5 Assessment

The monitoring results, together with historical data, will form the basis for assessing the general health of the canal. Biological information can be compared with agreed base-line data; water and other environmental parameters will be the basis of interpretation. Records of recent management will be crucial to this process. Assessment will review annual monitoring data against the defined standards for both the canal and the off-line reserves. This information will also be reviewed against any changes in management practice, and against predicted affects of management change.

Any change in monitoring results, away from those expected or predicted, will be reviewed to assess cause and effect. Results of this review will feed into the principle of Management Informs Action. A precautionary approach will be employed, with incremental changes in use, action being taken in response to trends rather than proof, and care taken to ensure that no irreversible change can take place. Action may require change in any of the following areas:

- Direct management of the habitat
- Management of indirect influences e.g. nutrient inputs
- Management changes to navigation, including agreed annual boat movements
- The phasing of the restoration programme.

Action and change may be for positive reasons as well as in response to adverse results.

The overall assessment of condition for the habitat feature on the Montgomery Canal will be made separately for the two SSSI (England and Wales). CCW will assess each of the three categories of information separately, and will also use the results to provide an assessment of Conservation Status.

Within the existing boundary of the SSSI

1. Three out of four kilometre lengths must be to full standard (3 in England, 30 in Wales), except that species richness must be achieved on all kilometre lengths and in in-channel reserves.
 2. No more than two connected kilometre lengths can be below standard.
- AND
3. Full standard will require meeting targets for the separate parts of the canal channel and the offline criteria.

The *Potamogeton compressus* and *Luronium natans* features must achieve the species-specific standards on populations and evidence of regeneration required. It will also be necessary for the canal to meet the standards specified for the canal habitat for these species to be reported at Favourable Conservation Status (FCS).

When interpreting the monitoring data, account will need to be made for exceptions to achieving the above due to periodic disturbance as part of management e.g. dredging or dewatering to repair the Vyrnwy Aqueduct. However, such management work should ideally be scheduled to spread the disturbance to the features across the site to minimise impact and possible threat to the maintenance of the site features. Measures of the aquatic plant community, e.g. vegetation quantity, should not be assessed within a length of canal if dredging or clearing out of overgrown vegetation has occurred within the last 12 months.

Physical and environmental factors will be used to provide early indications of change and will be closely monitored. When the features are in unfavourable condition, they will be used to help determine corrective management action.

References for further information

Association of Inland Navigation Authorities, British Waterways (2003) Best practice guidance to the appraisal of Waterway Regeneration and Restoration Schemes

BW, Economic Development Unit (2002) Sustainability Appraisal of Waterway Regeneration and Restoration Projects, Working Draft Guidance

CCW (2000) Habitat Monitoring for Conservation Management and Reporting: 3 Technical Guide

Department Environment, Transport and the Regions (1999) Quality of Life Counts (Annex A)

English Nature (2004) Draft Guidelines for Monitoring Canal SSSIs

Maeer (2002) A proposed methodology for the sustainability appraisal of waterway regeneration and restoration projects.

11. THE WAY FORWARD: WHAT HAPPENS NEXT?

The Montgomery Canal Partnership represents a very wide cross section of interest, and will continue to work together to guide the future management and restoration of the canal. In order to meet the wide objectives and proposals in this strategy, and deliver change for the benefit of all, the partnership will consult and involve on a wide and regular basis.

This strategy will be used, together with the economic study from Rural Solutions, and accurately researched costs, for preparing and submitting a series of funding applications in the coming months and years. We believe that the key to successful funding will be a process that touches and delivers on all the themes of:

Conservation of the natural heritage

Conservation of the built heritage

Rural regeneration

A community facility and access for all

Involvement and participation of all stakeholders.

The future restoration will follow a twin track approach of delivering improved local facilities and increasing links to the communities, and also seeking the major resources required to restore the canal to navigation.

Restoration will require major external funding and grants, but future running costs will need to be met from income generated from a re-opened canal, and commitment from organisations within the Partnership.

The restoration started over thirty years ago, and has continued, despite setbacks, due the efforts of many local groups and individuals. We believe that this strategy maps out a clear vision for the future, and a framework that will guide all future management. We must now move on together, and seek to turn words and policies into a phase of action and delivery.

Partnership organisations have made a commitment to action for some immediate key works, which are listed in Table 11.1.

Table 11.1 **Commitments to Action.**

Following agreement of the strategy, members of the Partnership will work to take forward and deliver the ideas within the document. It will take a number of months to gather information and submit detailed funding applications, the success of which will determine the pace of progress. Initial commitments from Partners are outlined below:

Partnership as a whole:

- Contribute to project delivery team.
- Develop and support funding bids for Priority Works in England and Wales.
- Agree future maintenance arrangements.

British Waterways

- Work with CCW to seek to guide these proposals through European Habitats Regulations process
- Engineering studies for the dry section to Llanymynech.
- Installation of in-channel conservation measures.
- Further design and location of potential sites for new nature reserves.
- Align BW major works programme for principal assets at risk
e.g. Vyrnwy Aqueduct, to restoration programme as match funding.
- Ongoing development of community relationships, and local enhancement schemes.

Local Authorities

- Continued commitment to existing maintenance agreements.
- Use of Strategy to prepare appropriate supplementary planning documents in order to secure the wider corridor approach from third parties.
- Development of planning briefs for associated corridor developments e.g. Queen's Head.

Other Government Agencies

- Wider involvement in water quality issues, including regulatory role of Environment Agency, and use of Tir Gofal and Wildlife Enhancement grant schemes.
- Partnership from Countryside Council for Wales and English Nature in future establishment and management of nature reserves.
- Strong developing systems to work together on monitoring, management and sustainability.

Canal Societies and Voluntary Groups

- Continue to support and develop community links (MWRT).
- Restoration of Newhouse Lock (SUCS).
- Restoration works at Llanymynech Wharf (SUCS).
- Promotion of restoration proposals to membership.
- Development of wider canal uses.
- Staffing of Llanymynech Information Point and trip boat operation (FoMC, Duchess Countess Trust).

