

An aerial photograph of a canal system. The water is a clear, bright blue, and a narrow towpath runs alongside it. The surrounding area is lush with green trees and grass. The image is slightly blurred, giving it a sense of motion or a high-angle perspective.

Canal & River Trust

# Towpath Design



Canal &  
River Trust

Guidance for Towpath Design

version 2 - January 2013



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British Waterways canals and rivers were moved into the care of the Canal & River Trust in July 2012.

The first version of the document was produced in 2011/12.

Credits:

Produced in-house by the Canal & River Trust.

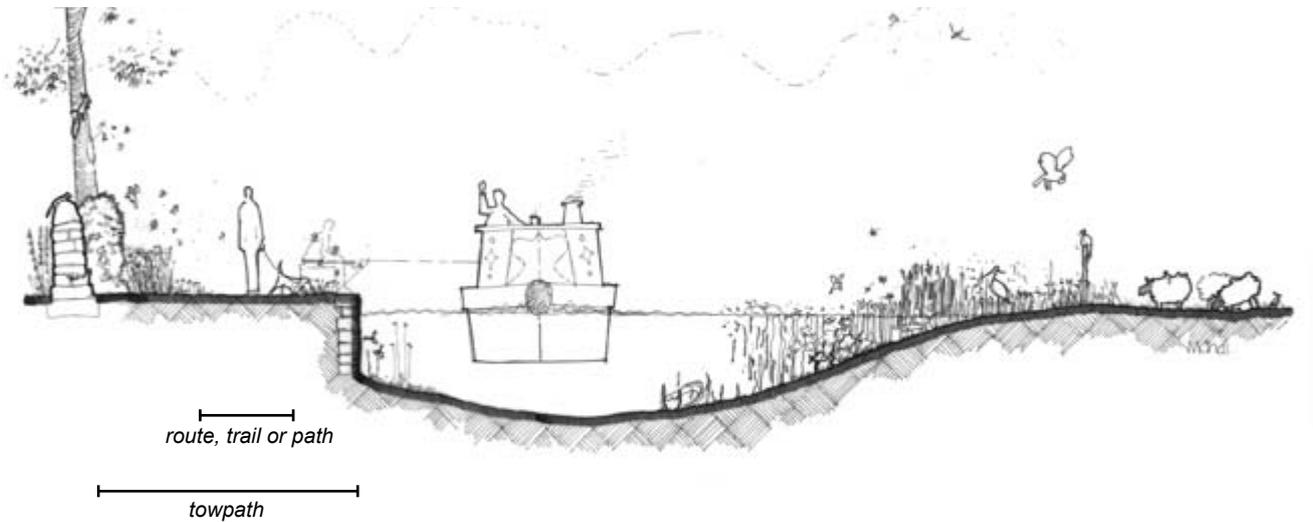
Wherever possible hyperlinks have been included to relevant additional documentation but if any problems are experienced with these links or you are external to the Trust and therefore do not have access to the Gateway site please email [customer.services@canalrivertrust.org.uk](mailto:customer.services@canalrivertrust.org.uk) (including 'Towpath Design Guidance' in the subject title) and the local Enterprise Manager will endeavor to provide the requested information.

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For the purpose of this document, references to **'route, trail or path'** describe the surfaced/ non-surfaced route along the towpath.

**Towpath** means the constructed towing path, including waterway wall, from 'hedge to water's edge' or the trail used for towing from a bank beside a waterway such as a navigable river.

**Towpath Corridor** means the towpath plus a linear corridor above and around it i.e. the visual envelope of the waterway corridor (including water channel and the rectangle profile or area within bridge/tunnel dimensions)





**section one**

# **introduction**

**1.0**



## 1.1 Introduction

Since their construction canals and their associated towpaths have undergone much change. Boats and barge horses, for whom the canals were originally constructed, were an essential part of the canal design and construction. The canal network is an important national asset and over time has evolved from a purely industrial network to one that provides important recreational and utility routes, see Appendix 7. Today the canal network provides an important corridor for wildlife and is part of the UK's waterway heritage and can offer safe, attractive traffic free routes right into the heart of major cities. It connects smaller towns lying close to each other and provides longer quiet routes in the countryside making a significant contribution to the green infrastructure networks around the UK.

Changes to, and maintenance of, the towpath are essential to provide for the expectations and needs of current and future users whilst safely managing the increasing numbers of people using them and to sustain the canal environment for the future. In recent years the Canal & River Trust (the Trust) has been successful in attracting funding from a variety of sources to facilitate such projects. Many towpath projects already delivered have been focused on our urban centres where the provision of a hard wearing surface is often in keeping with the existing surface treatments. However, changing the surface treatment, width, profile or edging to a path can bring about a change in character to the wider towpath corridor. The great variety of waterways, landscapes, topographies and historic sensitivity all need to be considered and the most appropriate solution in each specific location needs to be identified, delivered and maintained. The Trust recognises its responsibility to respect the individuality of each waterway which contributes to the environment that its customers enjoy and cherish. It is therefore important that any proposals for change are carefully considered and appropriately designed and delivered.



# introduction

## 1.2 Users

Over half the UK population lives within five miles of a canal or river and visitors to the waterways predominantly use the towpath whilst enjoying the waterway corridor environment. Research has shown that 4.3 million people visited a waterway every fortnight in 2009, an impressive 48% increase since 2005.

Many different types of user frequent the waterways but the main user groups include walkers, boaters (including horse boaters), cyclists and anglers.

Towpath design should be informed by the needs of these users, (please refer to Section 3.0 where user requirements are discussed in more detail). However, the original reason for the construction of our waterways - for the navigation of boats - should always be given due consideration when changes to towpaths are being proposed.

## 1.3 Purpose of the guidelines

This document is intended as an internal tool for Trust employees in conjunction with partners<sup>1</sup>. Although information already exists that seeks to guide towpath specifications, these guidelines draw together various documents and good practice to provide a comprehensive usable guidance tool for the future. It is envisaged that this document will be a tool to guide the development process of towpath schemes, in order to distil the most appropriate solution for the location thereby ensuring that the most appropriate surface treatment is provided, whilst also assisting in managing partners' aspirations and obligations.

## 1.4 A criteria-based approach

The guidelines set out in this document express a criteria-based process to enable a consistent approach (i.e. following a standard process and set of criteria rather than standardised design options) to be taken when designing towpath schemes, resulting in a solution that is appropriate to the local waterway character. It also deals with surface types, project processes and appropriate consultation with partners and stakeholders and sets out a framework process for the development of towpath projects and ensures that local needs and the character of the canal are respected.

The decision-making issues associated with selecting a towpath specification, such as width or final surface texture, require the decision maker to consider the impacts of the possible alternatives and considers together with policy priorities, customer aspirations, funding partners' expectations etc.

Applying a criteria based approach does not necessarily mean a "go or no-go" decision-making process whereby you simply fill in the blanks, and the answer pops out. What it does mean is that information is gathered and analysed so that a decision can be made based upon good criteria that flow from key considerations.

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<sup>1</sup> Where partners are interested in viewing internal Gateway links they should contact their local Enterprise Manager who will endeavour to provide the requested information.



**section two**

# **development & design process**

# 2.0



# development & design process

## 2.1 The Design Process

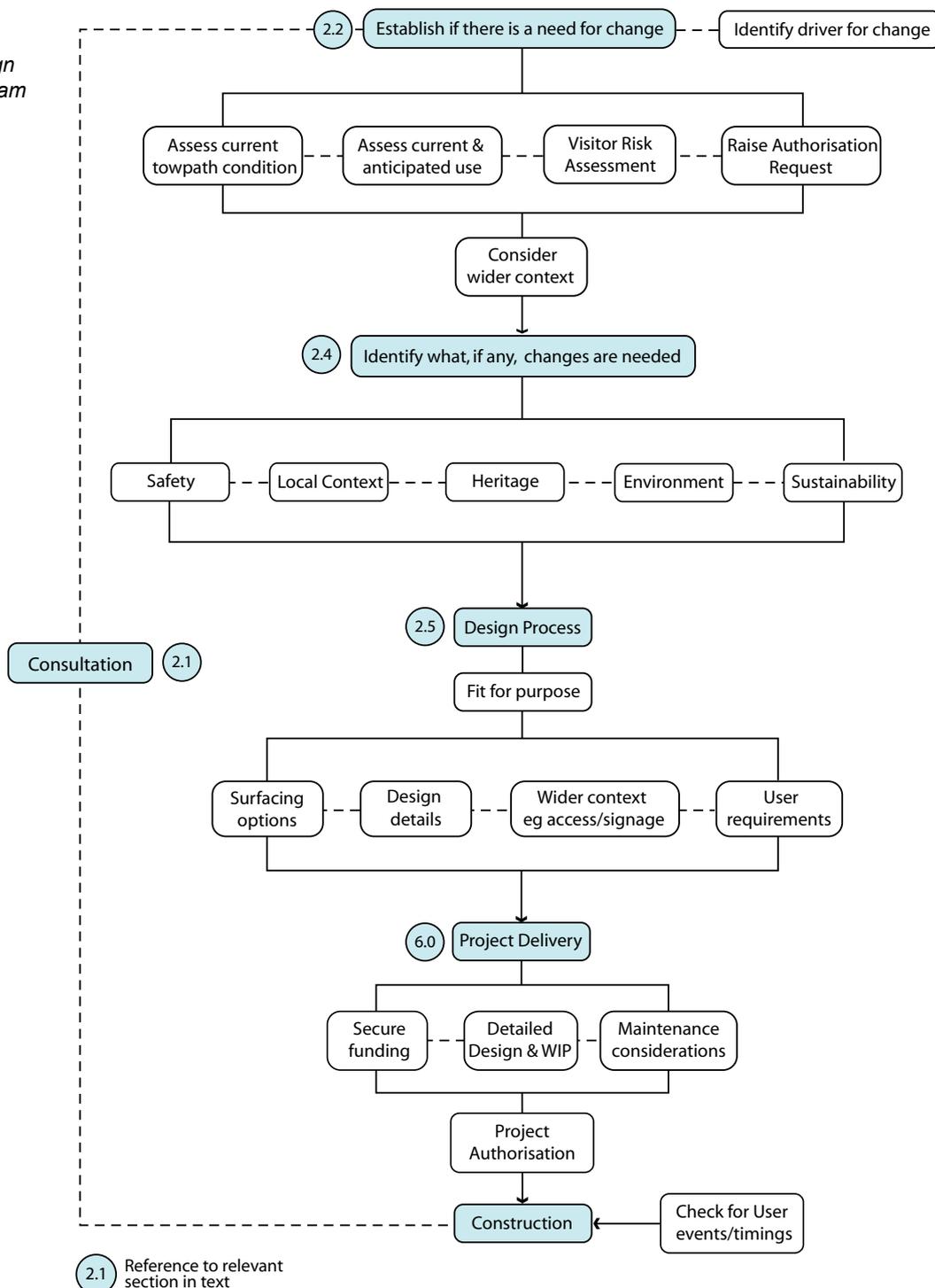
The following 'process diagram' (Figure 1) sets out a consistent approach to be taken for towpath schemes. It sets out stages of the decision-making process to allow the most appropriate solution to be decided on.

The use of the Trust Risk Management process will help to identify any risks to the project, as well as any benefits, that the project may bring about. These include environmental, heritage, safety and financial risks.

The key stages of the process are as follows:

- On-going consultation
- Establish if there is the need for change, using the Trust Risk Management process
- Identify what (if any) changes are needed
- Design of project options
- Project delivery
- Implementation

Figure 1:  
Towpath Design  
Process Diagram



# development & design process

## 2.2 Consultation

Gathering opinions and views both locally and from nationally interested parties (internally and externally) is important to guide the proposed project and ensure that the needs of the existing and potential users are met. Consultation is an on-going process and the opportunity to review and feedback on decisions made should be included within the process. Evidence of the need for the project is also a requirement of most funding bodies to demonstrate a desire for the project to go ahead.

Inviting engagement and consultation at the earliest stage and during on-going phases of towpath schemes can avoid issues of conflict later on. Methods of consultation should be appropriate and practical in relation to the scale and scope of the project and may include a combination of the following:

- Compile evidence for proposed change from letters of support/complaint, user feedback, local plans and surveys.
- Conduct surveys to generate feedback on proposals, use local networks and partners to assist in this activity.
- Consider need for consultation event for potentially contentious projects where significant change is proposed
- Post notification of proposed project on the Trust website<sup>2</sup> to alert interested parties
- Press releases and articles to generate awareness and encourage feedback
- Post local notices along proposed route, local libraries etc.
- Raise project at user group meetings and with national organisations for a wider view – see Appendix 4 for list of organisations with an interest.



## 2.3 Establish if there is the need for change

Before the design of any towpath change is pursued, the need or justification for such work needs to be established. The starting point for any proposed towpath project should be an assessment of the current condition of the towpath, alongside an assessment of the current and proposed future use of the towpath. Consideration should be given to the demand for any proposed changes based on the anticipated levels of activity and types of use. Proposed changes should seek to address any current and potential issues of conflict due to the encouragement of greater use. Each user group may have quite specific requirements to suit their needs, though there may be considerable overlap; however, the balance and consideration of all needs is important. A visitor risk assessment should be undertaken. Consideration should be given to how the proposed section fits into the 'bigger picture' - for example, is it already a well-used route and are the works proposed to meet the current demand or reduce hazards? Alternatively, is it a section that links into a new development, provides a new facility for local people to use, creates a circular route or a route to school/work etc?

Evidence of need for change should be gathered from feedback from local communities, waterway users and local waterway priorities (as identified in the Trust's Enterprise Strategy and the relevant Strategic Waterway Plan).

A concept 'Authorisation Request' (AR) should be raised at this stage for internal approval.

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<sup>2</sup> <http://canalrivertrust.org.uk>

*Before & after photos of a section of the Calder & Hebble towpath, where changes to the path have resulted in increased use of the towpath but also raised concerns from user groups over design details, including choice of surfacing material.*



# development & design process

## 2.4 The wider context

Consideration should be given to how the proposed changes to the towpath infrastructure will provide benefits to other nearby schemes such as links to businesses, schools, new accesses from residential areas, development sites, and links to national sustainable transport networks and routes. The opportunity for integrating the canal and towpath into the surrounding fabric, in particular the urban areas should be considered to better integrate the towpath and canal with its surrounding by, for instance, creating more ways on and off the towpath and removing boundaries.

Through the delivery and promotion of towpaths as 'green routes' there are opportunities to reduce car journeys in the local area, create strategic links and promote healthy living. The creation of water based natural open space is a very valuable attribute of the canal system and towpath schemes should seek to make a contribution to the delivery of wider regeneration, community and health strategies. Projects can also help communities engage more with their local waterway landscape through appreciation of the waterway environment and built and living heritage.

The establishment of the Local Sustainable Transport Fund in early 2011, other local transport funding and associated strategies has commitments to help build a strong local economy and addressing at a local level the urgent challenge of climate change. Aspirations to promote multi-user routes, improve safety, access and mobility for local communities are included within the guidance to

local authorities. The utilisation of the canal towpath as strategic green infrastructure routes can assist in meeting the local core objectives of supporting economic growth, improving accessibility, reducing carbon emissions and demonstrating value for money.

Some defined sections of towpath are designated as Public Rights of Way (PRoW), these are defined as 'highways that allow the public a legal right of passage'. For works to a PRoW an official closure is required and definitive maps are available from the highways authority. Some local authorities included towpaths within their 2007 Rights of Way Improvement Plans (a requirement of the Countryside and rights of Way Act 2000). The local authority Rights of Way officer will be able to provide information for the towpath section being considered. The PRoW designation does not however apply to all sections of towpath as some are 'permissive' routes, maintained by the Trust.

The Trust's Enterprise Managers are the main point of contact with external partners to develop links and influence external strategies and potential investment programmes.

*A waymarker indicating the canal as part of a national cycling route (J Bewley/Sustrans)*



### KEY STAGES:

- Determine appropriate level of consultation
- Establish if there is a need for change
- Undertake a Visitor Risk Assessment
- Raise a concept AR

# development & design process

## 2.5 Identify what (if any) changes are needed

There is no such thing as a standard towpath and there is a huge variation of physical characteristics and use of towpaths across the nation. It is these local characteristics and variations that help to create the sense of place with each waterway and it is important that these characteristics are identified and understood when considering possible changes in towpath design. The following section covers specific considerations on:

- Safety
- Local context
- Heritage and Environmental responsibilities and sensitivities
- Sustainability

### 2.5.1 Safety

Safe use of the towpaths is an essential aspect of any proposal for changes which may well include opportunities for lowering actual and perceived risks to users or designing out potential hazards. Some uses, such as introduction of cycling routes, require special consideration. It should not be assumed that certain uses can always be easily and safely accommodated on all towpaths.

Safety risk assessments should always be undertaken to guide the design process, for example bridge arches should be assessed from a headroom and sight line point of view and the need for appropriate warning signage considered. Good design principles should also seek to minimise 'hidden' areas at such structures.

When considering the installation of infrastructure to improve safety, consider that safety features for one type of user may present a hazard to other users. For example, railings around locks can prevent boaters being able to work locks safely or efficiently. Railings in bridge-holes prevent boaters from being able to get on/off boats in what is a usual place to do so, and are a hazard to cyclists as handlebars may get caught. Where possible, designing splayed access points at the back of the towpath should be considered. If railings are installed along the water's edge at access points they can present snagging hazards to towline use so they should be designed to be totally smooth to allow towlines to glide over them.

For further advice consult:

<http://gateway/people/safety/Pages/VisitorSafety.aspx> or <http://www.vscg.co.uk/>

# development & design process

## 2.5.2 Local context

Each waterway has its own unique character which is a result of a combination of many factors, including towpath surfacing material, design details such as width and profile of the towpath and margins, heritage features and environmental conditions etc. The introduction of new materials for example can change the look, feel and environmental conditions of the canal environment. Ensuring that this is done for the better requires thought and consideration when using the approach contained in this document.



Images illustrating the variation in the character of towpath corridors across the network:

top left: Selby Canal, near West Haddlesey  
top right: Grand Union Canal, near Tring

bottom left: Kennet & Avon Canal (Nick Turner/Sustrans)  
bottom right: Grand Union Canal, Paddington

# development & design process

## 2.5.3 Heritage and Environmental responsibilities and sensitivities

The Trust has a commitment to protect the historic waterways in its care and to optimise the public benefit they can deliver. These guidelines consider the need for respecting both statutorily designated and non-designated areas and features including those associated with heritage, conservation and ecological qualities that may be affected as a result of any proposed changes in towpath design.

Our Environmental Appraisal (EA) is a mandatory requirement and it is a useful tool both at the scoping stage of any towpath project and for use when a project goes on to site. All issues of heritage and environmental compliance and regulation are addressed in this document so it makes an ideal starting point in terms of highlighting issues that will need to be addressed as part of any extensive towpath works. An example of an Environmental Appraisal for towpath works is included in Appendix 2 for reference.



## Heritage

Understanding and appreciating the waterway heritage, both statutorily designated structures and those of local historic interest, is an important consideration when designing towpath works. The Trust's aim is for the heritage of the waterways to be treasured as a valued national asset, therefore the careful protection and management of that heritage is essential.

The built heritage within our estate gives each waterway its own unique character and identity and is an important resource which the Trust seeks to manage sensitively. Understanding local vernacular building techniques and material palettes is important and the use of them in the detailed design of any towpath project allows the intrinsic character of each waterway to be retained and enhanced.

The Trust's mandatory heritage standards and processes should be adhered to, ensuring that the rich heritage of the waterways is not eroded by inappropriate works. These documents advise on appropriate times to consult with the Trust's heritage advisers, who should be involved at an early stage to guide the design process, and the requirement to undertake an appropriate level of Heritage Assessment.

The Trust has a statutory obligation to ensure that heritage designations such as listed structures and conservation areas as well as non-designated assets are identified and protected (NB Scheduled Ancient Monument designation also protects a site below ground, therefore any proposed excavation works would be subject to consultation with regulators and may require a watching brief during construction works, potentially affecting a projects programme and cost). Care should also be taken to ensure that historic mileposts and boundary markers are identified prior to any towpath or maintenance works being carried out so that they are not damaged.

*above left: An example of historic surfacing adjacent to a listed bridge*

*left: An example of a wildflower verge planted alongside the towpath*

# development & design process

## Environment

Consideration of statutory sites such as Sites of Special Scientific Interest (SSSIs) and non-statutory sites such as County Wildlife Sites (CWSs) and Local Nature Reserves (LNRs) should be planned into any towpath project at an early stage. The wide range of legislation such as the newly revised Habitat Regulations and the Wildlife and Countryside Act (1981) will also need to be considered.

There will undoubtedly be opportunities to enhance the Trust's biodiversity objectives in a carefully planned towpath project by sympathetically managing towpath verges, trees and shrubs and ensuring improved linkage to adjoining habitats and ecological features. Much guidance information can be found in our Biodiversity Framework document and the relevant Local Authorities Local Biodiversity Action Plans (LBAPs).

The timing of proposed works is also important to avoid bird nesting season in the case of vegetation management and to avoid negative impacts on the local ecology. Ecologists from the Environmental Operations Team should be consulted at an early stage.

Aspirations for biodiversity of grasslands, trees and adjoining habitats will need to be reconciled with the existing specification and objectives of the Waterway Units (WU) Vegetation Maintenance Contract, as will any increased management of the towpath corridor following enhancement works.

There is often mutually beneficial work for all parties concerned in this regard if consultation occurs early in the planning of the project such as tree safety works. The Contracts Manager in the WU is a good first point of contact for early discussions.

There are often great opportunities for wider environmental enhancement and, more specifically, ecological improvement when large-scale towpath schemes are undertaken. The key to being able to add this benefit is early consultation with the relevant Trust specialist teams and the development of the Environmental Appraisal (EA). More general information relating to the Trust's Environmental Teams including contact details can be found at <http://gateway/asset/environment/Pages/default.aspx>

## 2.5.4 Sustainability

Sustainable development has been defined as to 'meet the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland Commission - 1987). Any proposed changes should consider the future needs and use.

The national towpath network already provides good opportunities to contribute to the sustainability agenda by the reduction of the carbon footprint through the provision of car-free journeys. To encourage local sustainability projects should consider the links between areas of employment and housing for commuting and recreational purposes. The route should be constructed of materials that are fit for purpose with access and egress points at required locations.

In terms of the use of sustainable materials the Trust has set criteria for procurement as well as a [Green Plan](#) for guidance. The sustainability of various surfacing materials has been appraised and further detail can be found [here](#). The choice of materials should be made with consideration for appropriate criteria such as minimising distances required for transportation, use of Forest Stewardship Council (FSC) certified timber<sup>3</sup>, recycled aggregates, impacts on biodiversity, ecology and heritage features as well as any potential maintenance liability associated with changes. Existing historic fabric should be retained wherever possible and the re-use of materials from site should always be considered.

The cost of towpath works, including changes to path surfacing should be considered in terms of a whole life cost. Not only should the initial costs be considered but also the maintenance costs which may arise in terms of cleaning and repair. The life span of the material should also be considered along with the effect that the surfacing might have on the ability to apply a new or alternative surface in the future.

### KEY STAGES:

- consult Heritage Advisor
- consult Environment Team

<sup>3</sup> The Trust will only use suppliers who are FSC Certificate holders or who can provide a Chain of Custody approved by the Trusts procurement managers, as advised by BRE Consultancy Services. See our mandatory Direction: Timber Procurement for further detail - <http://gateway/support/procurement/Site%20library/timberprocurementIssue01.pdf>.

# development & design process

## 2.6 Design

There are many factors, which are discussed below, that need to be considered when designing towpath schemes. Ideally the final solution should use local materials that are in harmony with the historic fabric of the local canal network whilst providing for future anticipated use.

Special consideration should be given to access points, bridge holes and lock sides, where the towpath design may need a unique solution responding to the individual situation. Where appropriate, canal features, such as bridges, could be used to mark the transition from one path design solution to another.

Sketch sections showing different towpath design options have been included at the end of this section to illustrate how variations in width of route, margins and use influence the character of the towpath.

### 2.6.1 Fit for Purpose

The increased use of the towpath, including the introduction of new uses or customers other than those for which they were originally designed, can intensify the potential for conflict. A well designed towpath scheme therefore needs to consider anticipated levels of use and ensure that the route is fit for purpose and that any risk of exacerbating possible user tensions are minimised.

A towpath scheme can nevertheless successfully accommodate a range of activities including walking, cycling, wheelchair use, angling, horse and manually drawn boats as well as moorings for boats. There is therefore a need to ensure towpaths are accessible and usable by a wide range of people, drawing on best practice for access by all members of the community at the same time as restricting other unwelcome activities such as access by cars and motor bikes. These guidelines are informed by the needs of various towpath users, (see section 3.0 for further detail).

Safety concerns can be managed by the correct application of our standards, namely Customer Service Standards, Visitor Safety and “Managing health & safety in construction work”. Also, Design Risk Assessments (DRAs) should be prepared which should consider not only risks during construction, but also the risks associated with the finished project during use.

# development & design process

## 2.6.2 Design Details

### Surfacing material:

There is a wide range of potential towpath surfacing materials to choose from and an equally wide range of reasons to support a particular choice. However, in all instances the material selected should be suitable for the character of the location, to enhance the canal corridor and the wider adjacent neighbourhood as well as being fit for purpose.

Where a change in surfacing material is proposed careful consideration regarding the appropriateness of the new material is vital. Inappropriate choice of material can severely damage the character of the canal corridor. However, a changed surface can also bring new feel and tone to a canal corridor enabling positive new uses.

A palette of materials is included in section 5.0 to illustrate a range of surfacing types available; however this is not to be seen as a complete list or a standardisation of design options as this could potentially lead to an erosion of local character. Instead the criteria based approach should be followed in order to distil the most appropriate solution for the location.

In some instances multiple design solutions within one project may be appropriate, i.e. on a 5km stretch of towpath works there may be several different design options taken forward for different locations along the length of proposed works (see section 4.0 for a detailed example of this approach). In these cases it is preferable to allow scope for a range of appropriate materials to be used, i.e. allowing different materials or designs to be used at heritage or ecologically sensitive locations or to allow transitions between urban/rural areas. However, where different approaches are taken they should be cohesive, for example through the colour or type of material used etc.

Other factors that can influence the choice of material include durability, sustainability, cost, maintenance and the availability of funding for future maintenance and construction issues; see section 6.0 for further information.

*Examples of different surfacing treatments, from top to bottom: grass path on the Selby Canal, crushed stone on the Worcester & Birmingham Canal (J Bewley/Sustrans), tar, spray & chip on the Shropshire Union Canal at Nantwich, brick paving on the Regents Canal at City Road Basin, London.*



# development & design process

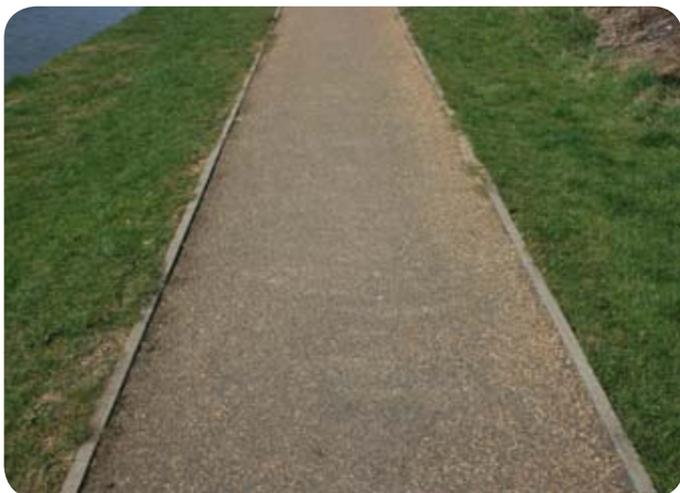
## Edging:

Edging refers to the design detail running alongside the path surface, not the towpath waters edge which might be a soft bank or a hard edge, such as coping stones or piling etc. It is not essential to the construction of a new path surface and therefore should not be automatically included in the design. However, it can provide a good visual contrast and a different feel under foot for visually impaired users.

Edging is usually included so that there is a defined edge to the route (e.g. for maintenance/vegetation cutting) and to act as a containment for loose material e.g. gravel. Flexible paving (i.e. not laid on a mortar base) often needs to be restrained to give stability to the structure. Where a visible edging is not appropriate the base course can sometimes be extended slightly into the verges on either side to provide a stronger construction to the path. This allows adjacent grass verges to re-colonise and soften the edge of the path, reducing the visual impact of the surfaced area. Where edging is structurally necessary, e.g. where ground conditions are potentially unstable, edging boards can be set below ground. Small paving units such as brick or setts usually require a rigid edge to contain the formation but these can be designed into the paving design proposal so that they are not visually dominant.

Edging details can influence the character and feel of a towpath corridor, for example a hard edge such as a kerb type detail in a rural setting would be visually intrusive and inappropriate. Where edging is necessary material options, including timber edge boards or stone setts, should be carefully selected to suit the local situation.

*Edging can create a suburban character in a rural area as shown below.*



## Width:

Above all the available towpath width and safety of all users should determine if the towpath can safely accommodate shared use. If appropriate, and with consultation with the Environment Team, any overgrown and overhanging vegetation could be reduced to improve the available towpath width.

The width of the towpath can influence the extent of the impact of a change in towpath design. When proposing to promote a towpath for shared use it should have room for the safe passing of a cycle and persons with buggies or boat/barge horse. The path width is often determined by the level and type of use experienced at a particular location but should also be influenced by the practically available towpath width and local conditions. It is generally recommended that heavily used multi-user paths are at least 3m wide, however the towpath is somewhat unique in that the available width is restricted by the very nature of the environment. Therefore, where verges are available a 1.8m path may be sufficient and in some instances a 1-1.5m wide path where passing places are regularly located may be suitable.

The creation of a wide route might allow for the relatively easy passage of users but it might also allow, and inadvertently encourage, fast speeds by some cyclists. In some instances it may be preferable to limit the surfaced path width but provide wider verges to enable some users to move aside to allow for passage of other users and give an option of walking on grass which walkers may prefer instead of hard surfaces. Careful planning of the design of the path, e.g. using a slight curve in the line of the route, may also help to reduce user speeds. Consideration should also be given at pinch-points, e.g. bridge holes, by design or signage to encourage cyclists to pause to allow others to pass or dismount.

Clear sight lines are desirable but if adequate sight lines cannot be achieved then appropriate warning signage should be considered. Where there is marginal vegetation and/or trees and shrubs within the towpath corridor these should be maintained in such a way as to ensure good visibility along the corridor thus improving safety and removing a contributory factor for potential conflict. In particular vegetation should be cut to ground level in the vicinity of the approach to bridges and tunnels.

# development & design process

## Profile:

Consideration must be given at the design stage to ensuring that any works address issues of drainage through the design of suitable falls, (minimum 1:40 recommended), or the installation of good drainage as appropriate. Path drainage is generally best directed towards the canal.



above: An example of the consequences of where drainage and profiling are not fully considered

right: An example of how user type, levels of use and local situation have an impact on the condition of the towpath

below: Towpaths are often multi-user paths, with different users having different requirements

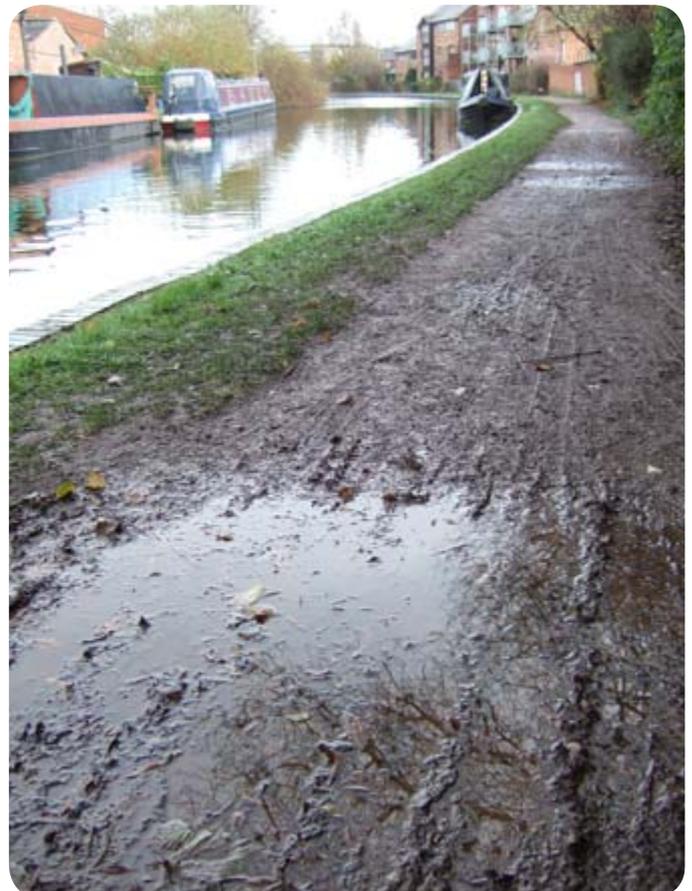


## Use:

Use of the towpath (both proposed and existing) will be a major influence on the choice of material but should not be the sole determining factor when selecting the most appropriate surfacing type. A Visitor Risk Assessment should be undertaken to guide how proposals are taken forward. The assessment of use should be based on both frequency and type of use anticipated:

- frequency of use – how heavily used is the stretch of towpath in question? This may depend on location, e.g. lengths where the towpath connects urban areas or those close to visitor attractions are commonly more heavily used than more rural sections of towpath.
- type of use – as discussed later in section 3.0 different users often have different requirements and the balance of all these need to be considered so that the most appropriate solution for the situation is taken forward.

It should be noted that multi-user paths are not always achievable in all locations along our network, especially where narrow towpath corridors exist and need to be judged on an individual basis depending on local conditions and what the project hopes to achieve.



# development & design process

## Margins:

Margins refer to the areas of land that are located on one or either side of the route. They can be grass verges, paved areas, or a mixture of both. Margins allow for 'refuge' areas to be created, in that they provide a safe place to step off the surfaced route, if necessary, which can mean that in some circumstances the width of the path can be reduced.

Where appropriate it can be beneficial to retain grass verges within the towpath corridor as this has many positive results including:

- ecological – a grass verge, particularly running adjacent to the waterside, helps to provide a continuous green corridor for biodiversity
- visual – inclusion of grass verges helps to maintain a rural character when a surfaced path is introduced
- users - the Trust has a legal requirement under the 1968 Transport Act to provide for fishing. Appropriately sized margins help to accommodate this use as well as providing space for walkers, especially those on long distance journeys, who prefer a walking surface which does not incur the concussion to limbs caused by hard surfacing and mooring provision for boats where pins/stakes can be accommodated.

It is recognised that it is not always feasible to allow for verges and that the width of these verges will be dependent on the total available width of the towpath as well as the desired width of surfaced route for the anticipated use. However, it is desirable that, where possible, a minimum 0.5m verge is provided along the flat surface of the towpath at the water's edge and that consideration is given to the required maintenance regime.

## Barriers:

The unauthorised use of towpaths, especially by people riding motorcycles, creates a number of difficulties and therefore the Trust has a guidance document, with advice from the Fieldfare Trust, which is available [here](#).

The guidance document identifies that a common response to this problem is to erect a barrier or access control of some kind. However, in many cases if motorcycle access is restricted or prevented, so to is access for legitimate users, particularly disabled people, older people or people with pushchairs and horseboaters. The needs of all other users such as walkers, cyclists, anglers or boaters should also be considered.

As a general rule, there should be a presumption that barriers should not be installed unless the problem that they are intended to deal with has been shown to be persistent despite other methods of dealing with it in that location. Greater use of the towpath by legitimate users helps to deter illegal motorcycle use too.

If, as a last resort, barriers are installed then careful consideration should be given to the type selected and their positioning. Where it is necessary to provide barriers they should be carefully positioned in the towpath, within adequate sight lines and so as not to impede a towing line.

*A wide towpath width allows for generous verges on either side of a narrow path*



## development & design process

Other design solutions are available as an alternative to barriers, for example Sustrans are currently advocating designed 'speed humps' instead of barriers where two humps in a row immediately next to each other are located across the full width of the path in problematic areas. This intervention is suitable for bound or sealed surfaces where it will not erode and makes motorcycling at speed uncomfortable whilst not impacting significantly on cycling or walking. However, the gradient of the hump should be carefully considered so as not to adversely impact upon use of the towpath by people with disabilities. Further detail can be found in Appendix 3 - Sustrans Technical Information Note No.2.

Waterside fencing should be avoided unless a significant safety risk has been identified as this has impacts on all types of boating activity.



### Information and Signage:

Consideration should be given to appropriate signage and access information to enable towpath users to make informed choices when planning a journey. In particular, the provision of signage should be considered at access points, both on the canal corridor and in the wider neighbourhood indicating the canals presence, as well as at canal junctions.

As for barriers, any signage, artwork or similar should be carefully located to avoid cluttering the towpath and creating an obstruction to a towing line.

Good practice guidelines are available at: [http://www.britishwaterways.co.uk/media/documents/BWL\\_Waterways\\_Access\\_For\\_All.pdf](http://www.britishwaterways.co.uk/media/documents/BWL_Waterways_Access_For_All.pdf)

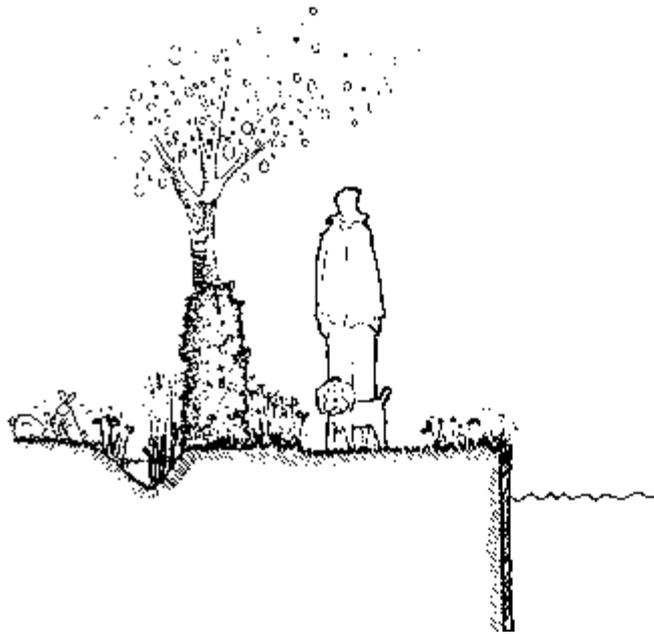
*top left: An example of ineffective siting & design of a barrier which is easily by-passed*

*bottom left: The design of railings can impede use of tow lines*

*bottom right: Artwork is located out of the main route way so as not to obstruct use of the path*



## development & design process

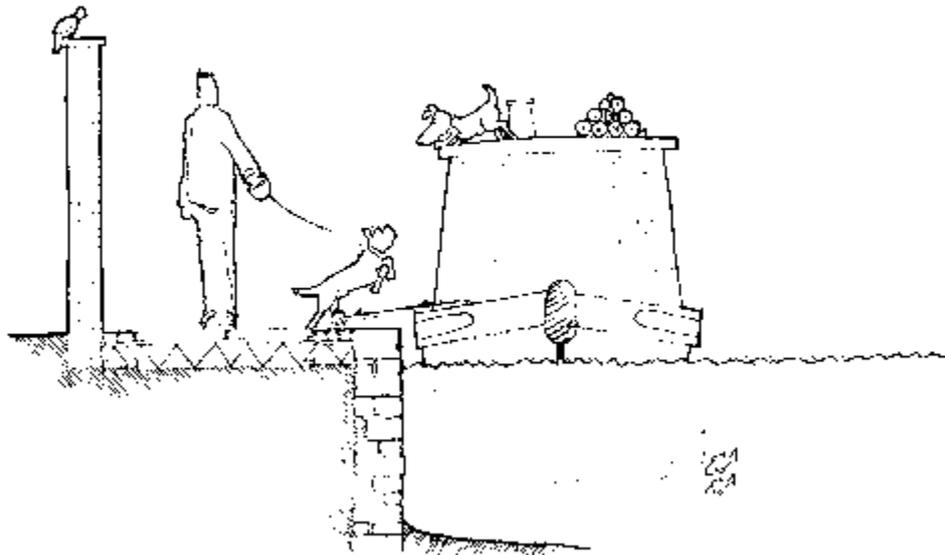


This sketch illustrates a narrow towpath (whole towpath width 2.5m) in a rural setting. A 2.5m wide path in such a case would be inappropriate as it would take up the whole available towpath width.

The path could be left as grass or a narrow surfaced path may be appropriate. However, methods of laying any surfacing material would need to be considered as the narrow towpath width may preclude certain machinery from being used.



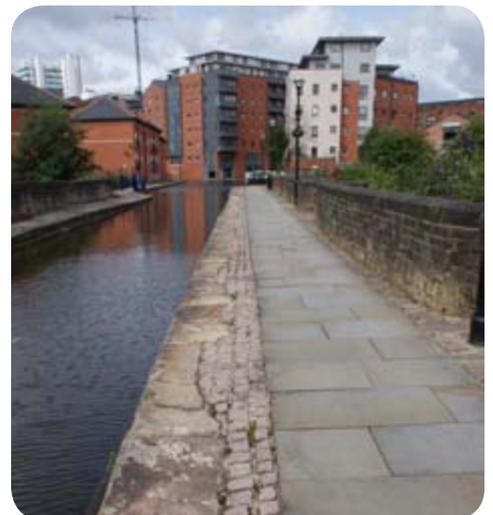
## development & design process



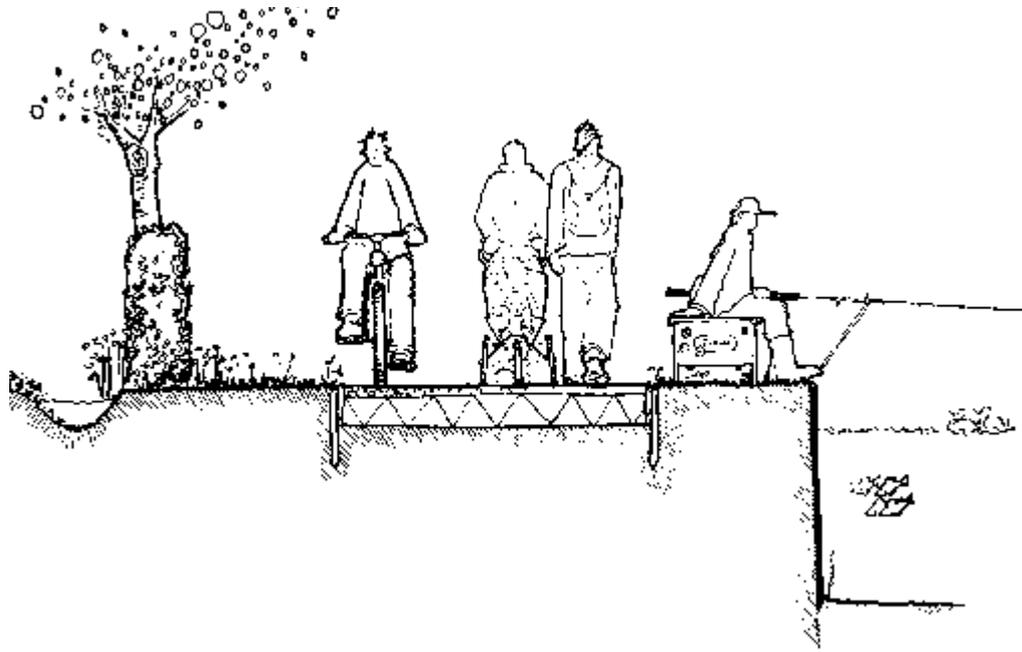
This illustration shows a narrow towpath width in an urban setting (total available width 2.5m).

The use of hard surfacing from waters edge to the back of the towpath, as shown here, may be appropriate if high levels of use are experienced.

The use of different materials can help to define the main route and keep the water's edge as a functional space (for example mooring rings can be located along the waterside clearly demarked through the use of different sizes of paving unit - see photo examples below).



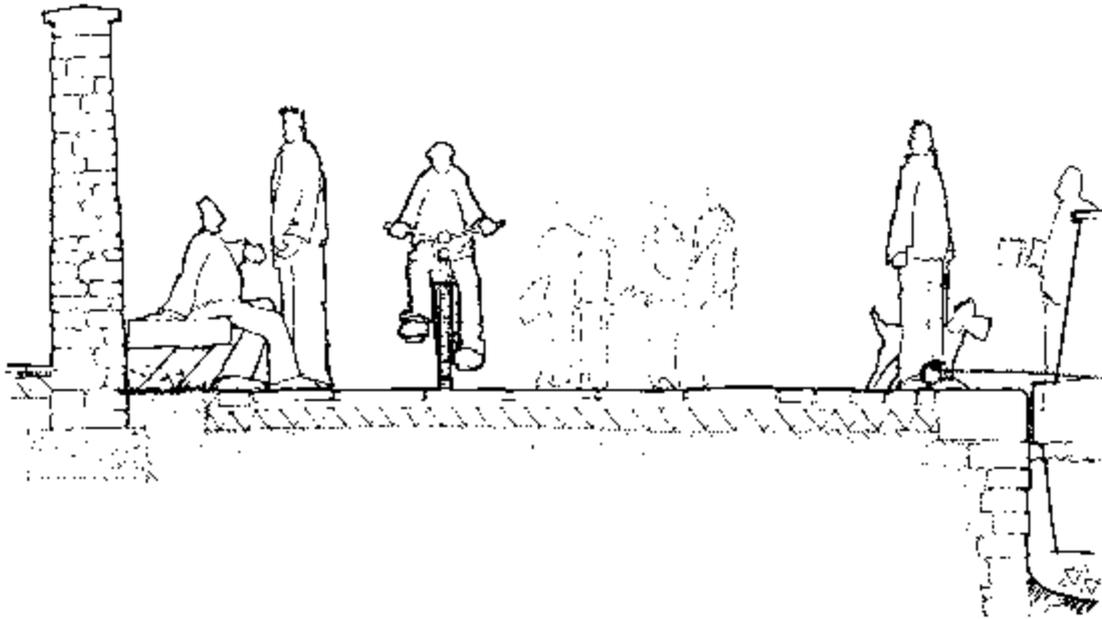
## development & design process



This sketch shows a wide towpath width (approximately 4.5m) in a rural setting and illustrates how a 2m wide path can accommodate multi-users with grass verges retained on either side of the path, creating safe refuges for anglers/boaters and path users that need to step off main route of the path.



## development & design process

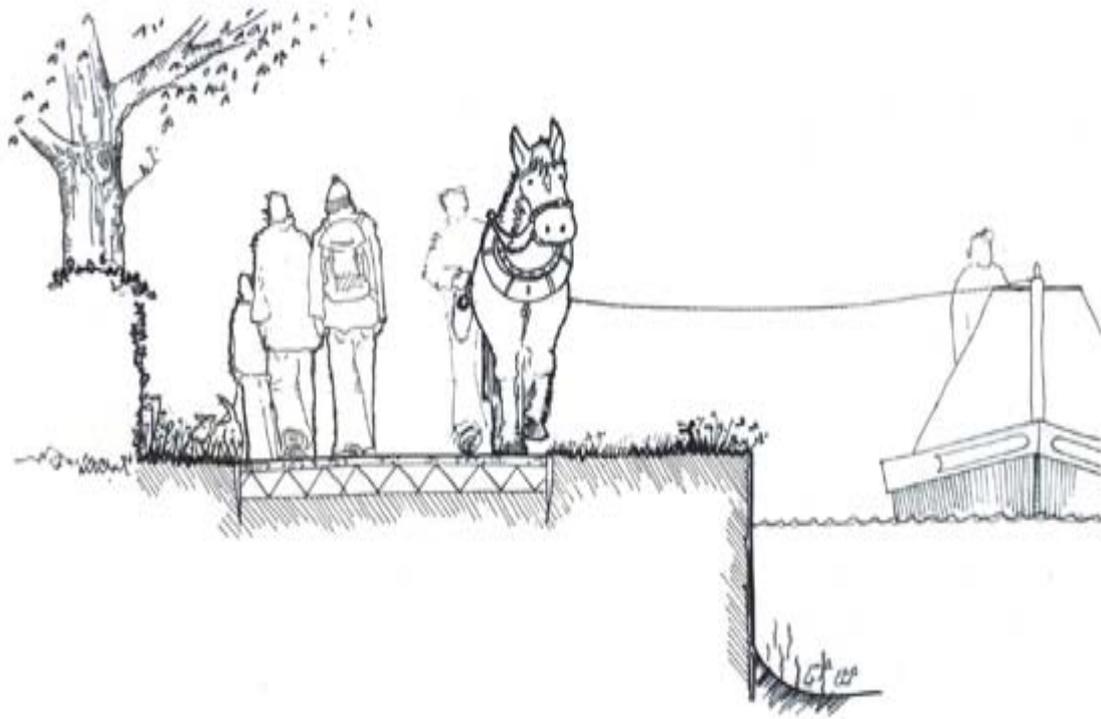


This sketch shows a wide towpath in an urban setting (approximately 5m total width). Here the full width of the towpath is utilised but different functional areas are defined through the use of different materials, For example a functional waters edge can be defined (eg provision of mooring points), through the use of different sizes of paving unit or materials (see photo examples below).

Where appropriate grassed or planted areas could be accommodated to either the waters edge or back of towpath (or both) whilst still retaining a 2m+ wide shared use path - this could help soften the impact of a wide surfaced path route in semi-urban locations.



## development & design process

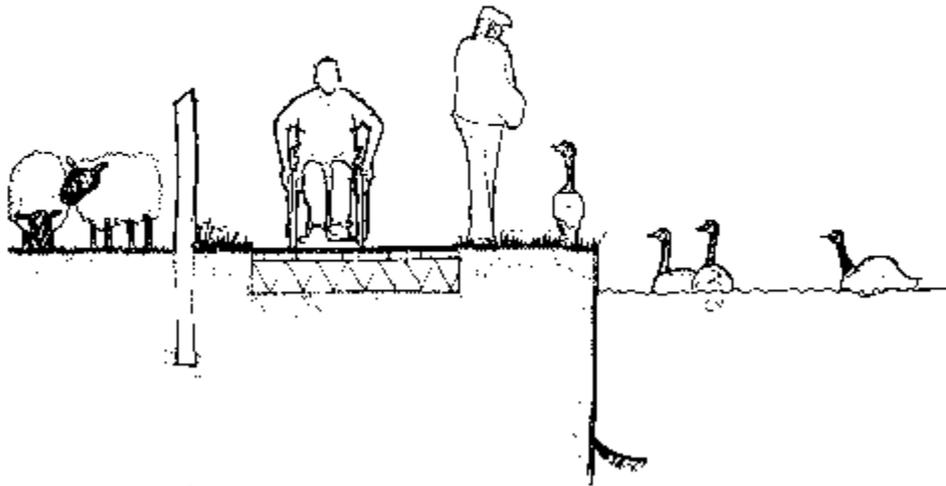


This sketch illustrates how different user groups can be accommodated on a 2.5m wide path, within a wider towpath (total width is approximately 4m wide).

Here a waterside verge is available to provide a safe refuge, eg a passing place or angling area if required.



## development & design process



In some locations a 1.2 to 1.8m wide surfaced path may be desirable.

The inclusion of a 1m wide waterside verge (shown here as grass) has a twofold benefit of providing a continuous strip of land for ecological purposes as well as a safe refuge area for users to step on to if required (for example when different users meet the verge becomes useable as a passing place - for instance when a walker or cyclist meets a wheelchair user).

*(Image courtesy of Sustrans)*





**section three**

# **user requirements**

**3.0**



# user requirements

## 3.1 Understanding user requirements

Different towpath user groups often have different design requirements and recently there has been increasing demand for changes to surfacing material. The integration of these user requirements with the existing historic fabric and character of the canals needs to be carefully balanced.

These guidelines are informed by the consideration of the needs of various towpath users. The increased use of the towpath for new uses, other than those for which they were originally designed, has of course increased the potential for conflict. A well designed towpath should consider anticipated levels of use and ensure that the route is fit for the purpose and minimise the risks associated with shared use. Project managers need to understand the needs of all users in order to propose an appropriate solution.



# user requirements

## 3.2 Access for All

The Trust encourages the use of its network of canals and rivers by people with disabilities. We also recognise our responsibilities under disability and equality legislation to take reasonable steps to improve access to our waterways and associated services.

We acknowledge that it will never be possible to provide perfect access everywhere along the waterway system. We are constrained by statutory and other considerations, such as our responsibilities towards health and safety and the waterways' heritage and environment.

However we will:

- Ensure that the needs of people with disabilities are considered in all our policies and plans.
- Ensure that staff are aware of and supported in meeting the needs of people with disabilities.
- Undertake disability access audits.
- Ensure that the needs of people with disabilities are built into major programmes of restoration, regeneration and refurbishment.
- Identify and implement measures that can be easily and cost-effectively put into place to reduce access restrictions for people with disabilities.
- Actively promote sites and services with good accessibility to people with disabilities
- Ensure that the needs of people with disabilities are taken into account in the delivery of services, promotional material, interpretation, education initiatives and special events.
- Consult with people with disabilities to ensure local needs are taken into account in the management of the waterways.
- Encourage the provision of boats and other facilities catering for people with disabilities and improve access to / from such boats.
- Monitor & evaluate the impact we are having on people with disabilities.

Please refer to the following document for more comprehensive guidance: [http://www.britishwaterways.co.uk/media/documents/BWL\\_Waterways\\_Access\\_For\\_All.pdf](http://www.britishwaterways.co.uk/media/documents/BWL_Waterways_Access_For_All.pdf)



above: Examples of accessible locations along the canal network and tactile canal interpretation, installed in association with Galloways Society for the Blind

# user requirements

## 3.3 Walkers/Ramblers

Walkers account for a high percentage of towpath users, in both urban and rural areas. It is therefore important that any proposals for towpath schemes are carefully considered and appropriately designed and delivered with them as a primary user. The width of the path in particular should be considered to ensure safe use of the towpath for all users as potential conflict caused by competing towpath uses is a safety concern.

The route surfacing should take the needs of walkers into account with a mix of surfacing being required. Pedestrians in more urban locations usually prefer hard, clean surfacing which can be used in all weathers, whilst long distance walkers normally prefer softer surfaces outside of urban areas to minimise concussion and to provide variety along the trail which reflects the changing surrounds.

Interconnectivity to other routes is also important to allow the towpath network to be used in circular or shorter walks.



## 3.4 Boaters

The enjoyment of the towpath corridor forms an important part of the quality of experience when boating. This includes experiencing the individual combinations of heritage and environmental features of the canal corridors, which ideally should be pleasant, safe places to be. Retaining this variety should always be considered in any towpath scheme. From a boating perspective the character of the towpath identifies transitions from rural into urban areas through changes in surfacing, width and/or vegetation treatment.

The towpath allows boaters to make safe contact with the land, for example when working locks, visiting the local area, at moorings or in an emergency. Each of these aspects require consideration when proposing changes to a towpath.

The requirements of moorings on towpaths should be considered, particularly at lock landings. This includes heavily used moorings, for example at service points, visitor honeypot sites, or long term or winter moorings, where well drained surfacing is essential to allow safe, mud-free access to boats. Although hard surfacing is not always necessary at moorings, where it is needed, the use of loose, gritty material should be avoided, as it causes abrasion to ropes, hands and paintwork. The provision of mooring bollards for temporary use and rings for longer stays should be incorporated where appropriate, especially where the opportunity to use mooring pins is restricted.

The towpath should be suitable for “lock-wheeling”, (the low intensity use of cycles between locks to enable boat crew to set the lock ready for their approaching boat). Historically this has been done on a wide variety of surfaces, the majority being grass, and often no more than 1.5m wide.



# user requirements

## 3.5 Cyclists

Many towpaths form part of the National Cycle Network. It is generally envisaged that this national network will provide a route of 2-3 metre wide paths designed for use by both cyclists and walkers. However, it is widely acknowledged that this aspiration is not always going to be achievable or appropriate on canal towpaths.

The proposed route and surface needs to be attractive to cyclists if the intention is to encourage cyclists to use it. The surface should provide for the anticipated use and a regular commuter route will need a better quality and wider surface than a rural route used for occasional leisure use.

The general requirements for surface materials to support cycling are a smooth riding surface, good drainage properties, long-term durability, low maintenance, use of sustainable and/or recycled materials where possible and suitability to sensitive locations. Well-constructed sealed surfaces offer an all year round surface that requires little maintenance for many years. Where day-to-day use is envisaged or significant numbers of cyclists are expected a sealed surface should be considered as the starting point for surface options. It should be noted that not every path material will suit every location, for example steep gradients, waterlogged sites and environmentally sensitive locations each require careful consideration and often bespoke designs.



# user requirements

## 3.6 Anglers

Due to the irregular frequency of access points onto the canal network anglers often have to carry or wheel their equipment for significant lengths, sometimes up to 1km. In this situation a hard wearing, non-slip surface would be desirable.

Towpath width is also an issue that can cause tension between different user groups, therefore, where practicable, on popular angling stretches of canal it is preferable to retain a 1m grass strip adjacent to the water's edge as an anglers' usable area.



# user requirements

## 3.7 Horse boating

It is important that the history surrounding the development of the navigable river and canal network is not lost to present and future generations. Whilst the number of horse drawn boats is now small, such use provides an important link to the heritage of the inland waterway network.

At present, horse-drawn boat journeys are made on many parts of the national network but these may be very occasional. It is important to differentiate between towpath use made by a commercial passenger trip boat or towpath use on the various journeys associated with heritage and educational work. Passenger trip boats usually operate on a daily basis in summer months on agreed plying limits, perhaps making daily usage of a length of towpath. By contrast the horse-drawn boat on a special journey will make only occasional use of any towpath. Horse-drawn boat use should be taken into account in all towpath schemes to ensure towpaths can continue to be used for what they were designed and built for.

Future use is unknown and the opportunity for future generations to use this historic and environmentally friendly method of transport should not be jeopardised by lack of consideration for this type of use, even if it is currently rare. The passage of the occasional horse-drawn boat does not usually require any additional infrastructure.

An exception would be that all towpath bridges would need to take the weight of a horse. Other than that, all that is usually needed is care taken in towpath design work to avoid impeding horse or towline use rather than any special infrastructure solely for horse-drawn boat use.

Towpath schemes therefore need to pay due regard to this relationship with use by boathorses. This will need to include consideration of the use of a horse and also of a towing line, so that unnecessary hazards and obstructions are not impeding towline use. Vegetation cutting at the water's edge is needed, railing at the water's edge should be minimised and, where this is not possible, totally smooth topped with sloped approaches to allow the towline to glide over it. Where there are heritage features associated with horse boating, they should be respected and safeguarded, thereby retaining historic fabric.

Regarding path surfacing, the requirements are the same as for long distance walkers, but with the added precaution against the use of smooth tarmac or hard granite setts, especially on slopes, which can cause a horse with metalled shoes to slip.

The Horseboating Society has developed a guidance document which is available on Gateway or [www.horseboating.org.uk](http://www.horseboating.org.uk)

*Image courtesy of the Horse Boating Society*



**section four**

**case study**

**4.0**



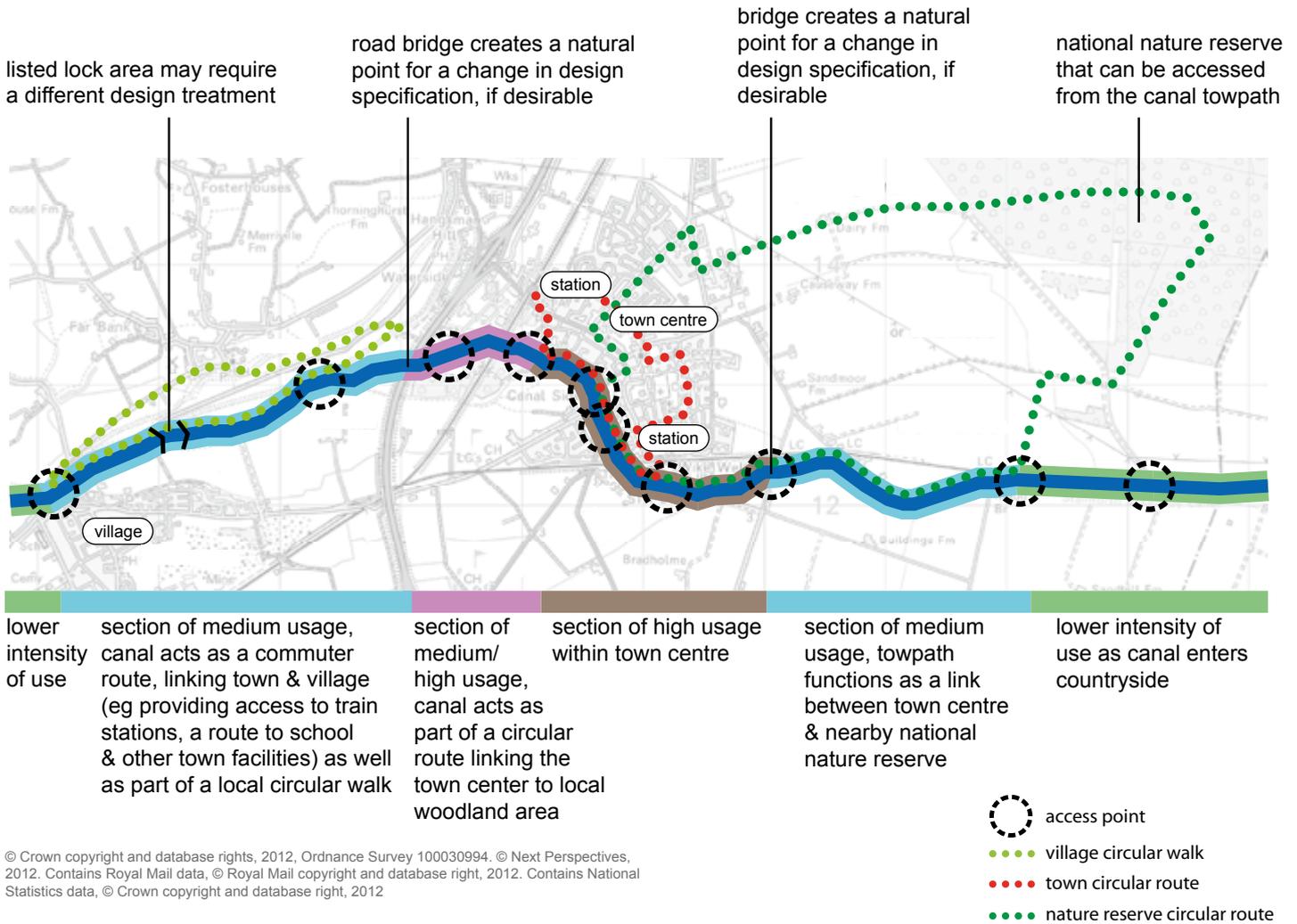
## 4.1 Theoretical Case Study

Disclaimer: Although illustrated on a map base this case study is purely theoretical and the features shown on this plan are not real life situations. They have been shown to raise and explore as many of the issues discussed in this guidance document as possible.

The case study is an illustrative example of how a multiple, but co-ordinated design approach may be appropriate, for example the palette of materials may be cohesive and consistent in terms of appearance but the path width or surfacing material may vary depending on site specific location and usage issues.

To set the scene the case study is centred on a canal town with a train station that provides good linkages to neighbouring towns. The canal connects the town with neighbouring villages as well as local visitor attractions. It is used as a commuter route for people that live in nearby villages and work in the town as well as people that use the towpath as a route to the train station to commute to other places of work. The canal also forms sections of a circular pedestrian route within the town centre as well as being part of a longer distance trail. There are several listed bridges and locks along this section of canal.

# case study



One suggested approach, as illustrated by the photos above, would be to have a wider, surfaced path in the centre of the town where intensity of use is highest (3). The path width could then be reduced when out of the town centre but where the towpath acts as a commuter route a surface that would be appropriate for such a day to day use should be provided (2). Where the canal corridor is purely a leisure route a loose surfacing material could be utilised (4 & 5). Once the path becomes less intensely used, for example after passing through the village a grass path could be retained (1). To maintain a cohesive feel to the towpath corridor careful consideration should be given to the choice of materials, wherever possible they should be locally sourced and should always be appropriate for the local context.

**section five**

# illustrative design options

**5.0**



## 5.1 Surfacing Options

There are numerous possible surfacing options for routes along the towpath, all with their own benefits and issues depending upon the local context.

The following section provides examples of some of the different surfaces used around the waterway network. This is not an exhaustive list of all available options and for any new towpath project the methodology set out in this guidance document should be followed to ensure that the most appropriate surfacing option and design is selected for that particular location.

Figure 2 below illustrates the varying costs and durability of commonly used surfacing materials. This can be read in conjunction with the Towpath Design Criteria Assessment (Figure 3) which provides decision makers with an indicative scoring range to guide the selection of the most suitable surfacing material.

These matrices have been included to provide guidance in the selection of appropriate path surfacing materials based on the criteria reflected in this document. If the Towpath Design Criteria Assessment (Figure 3) is used in conjunction with Figure 2 it will result in a material group being highlighted as appropriate, although design details will be subject to local circumstances. This should only be used for guidance and may provide a justification for a shorter length of surfacing to be considered within the available budget or indicate that more funding should be sought where necessary. It may also raise the consideration of funding for maintenance to be sought if other criteria drive the choice of material.

Any proposed surfacing material should be fit for purpose; the use of loose materials such as crushed stone may not be suitable for inclined stretches of path where rainwater may cause erosion or where high cyclist use is anticipated.

Wherever possible locally sourced materials should be specified, as this helps the surfacing to be in context with the surroundings and in harmony with historic structures, as well as being the sustainable option.

Where a surfacing material is to be laid the provision of a good sub-base is crucial in the longevity of any path construction and where appropriate it is suggested that a minimum 75mm MOT Type 1 or recycled alternative sub-base with a geotextile layer is specified.

All path surfacing should be laid by a competent person and in the right conditions, for example resin bound gravels can be temperature sensitive and if not laid correctly an adequate bond may not be achieved.

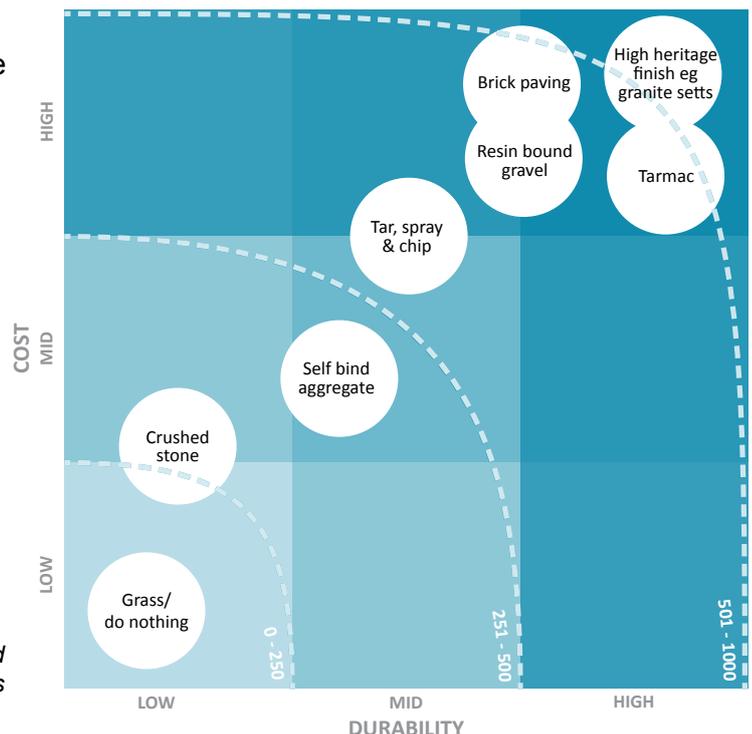


Figure 2: Matrix illustrating the varying costs and durability of commonly used surfacing materials

# illustrative design options

Figure 3: Towpath Design Criteria Assessment

Criterion	Which means	Apply a score from 0-10 where		score (S) (0-10)	weighting (W)	outcome (SxW)
		zero is:	ten is:			
Frequency of use	Assessment of current/ likely user groups and any potential user tensions that may arise	Light pedestrian use only	Intensive use e.g. towpath forms part of a National Cycle Network route within a busy urban section of canal		15	
Type of use	Assessment of current/ likely user groups and any potential user tensions that may arise	Rural walking trail	Intensively used section of towpath by a variety of user groups e.g. service moorings and angling areas along a section of the National Cycle Network		15	
Level of capital fund and/or availability of revenue for future maintenance	Depending on the capital fund available, consider whether to install shorter length of surfacing or longer length at lower specification. Also, consider likely frequency of intervention for maintenance and associated costs this may incur	Limited capital fund	Adequate capital fund for desired surfacing treatment and revenue available for annual maintenance		20	
Local context	Assessment of the sensitivity of local character and its capacity for change	Highly sensitive, limited capacity to change	Low sensitivity/ minimal significance, with capacity for change		20	
Heritage significance	Assessment of any historic character, vicinity of designated heritage asset etc	Highly significant, e.g. designated heritage asset, key historic structure or within conservation area	Low sensitivity/ minimal significance		10	
Environmental significance	Presence of designated wildlife site, highly significant sward, need to maintain connectivity etc	Highly significant e.g. impacts upon a designated wildlife site	Low sensitivity/ minimal significance		10	
Other factors	Special circumstances that may influence design e.g. visitor attraction or honeypot site, designated mooring or service point therefore loose material may not be appropriate, available towpath width, liable to flood, used by maintenance plant, other use	No special circumstances	Liable to flood or used by maintenance plant i.e. a hard wearing sealed surface may be required		10	
<b>total*</b>					<b>100</b>	

\* resulting score is indicative only and should be used to guide the selection of the most suitable surfacing material with design details being subject to local circumstances. For longer stretches of proposed works multiple design options related to any identified special circumstance may be appropriate.

# illustrative design options

**MATERIAL:** Paving Units

**COST INDEX:** MID to HIGH (251-1000)

## PRODUCT DESCRIPTION:

- There is a wide choice of colour, size and laying pattern available.
- Natural stone is preferable but where costs may prohibit this reconstituted stone, brick pavers or high quality concrete paving units may be appropriate.
- The paving units should be set in the local pattern, which varies across the network.

## WHERE SUITABLE:

- Where paved units are characteristic of the local area.
- This material is traditionally located in urban areas, where there is high usage of the towpath and users are more likely to be commuters.
- NB paving flags can become slippery when wet or coated in algae and appropriate maintenance regimes may need to be put in place.

## EXAMPLES:



**LOCATION:** Stoke

A combination of different sized paving units & gravel have been used to create distinct areas within the towpath. Large paving units signify the line of the main route within the towpath. Bands of setts create a straight edge for larger paving units to be neatly laid up to and provide an area for mooring rings to be located. They also act as a visual and tactile aid marking the waterside edge of the main route.



**LOCATION:** Brindley Place, Birmingham

High levels of towpath use and local context are reflected in the use of brick paving units.

# illustrative design options

**MATERIAL:** Heritage Paving

**COST INDEX:** HIGH (501-1000)

## PRODUCT DESCRIPTION:

- This paving material will vary depending on the waterway but can include brick pavers, stone flags, large stone setts or cobbles.
- Wherever possible reclaimed materials should be used, where new materials are proposed these should be specified following discussion with local Heritage Adviser/LPA conservation officer.
- Costs often prohibit wider use.
- Consideration should be given to the fact that the use of this type of material can create stretches of towpath that aren't as user friendly for some users e.g. cobbles create a bumpy ride for wheelchair users/cyclists/buggies.

## WHERE SUITABLE:

- Heritage sensitive locations e.g. at listed bridges.
- Where replacing existing materials.

## EXAMPLES:



**LOCATION:** Skipton

Stone flags and cobbles laid up to historic copings provides a clear route and margin, characteristic of this historic urban area.



**LOCATION:** Wigan

Reclaimed cobble setts have been laid up to a continuous strip of smooth granite. In some areas, joints between the cobbles are larger than traditionally found. An unintended consequence of this design is that the waterside strip of granite is used as a smooth route for cyclists which causes some safety concerns.

# illustrative design options

**MATERIAL:** Grass

**COST INDEX:** LOW (0-250)

## PRODUCT DESCRIPTION:

- A towpath where no hard surfacing material has been applied. Desire lines (where a naturally used route is visible despite a lack of surfacing) are often seen within the towpath corridor, defining the route of the path.
- Mowing regimes can be used to create a defined 'route' within a wider corridor.
- Drainage can be an issue, with the route becoming muddy and rutted after periods of rain, especially in areas of higher use.
- Often with drainage improvements and good mowing regimes traditional grass paths can, where appropriate, be retained.

## WHERE SUITABLE:

- These are often located in rural areas or where there is a low intensity of use.
- Where a natural character is desirable.

## EXAMPLES:



LOCATION: Montgomery Canal



West Haddlesey, Selby Canal

## illustrative design options

**MATERIAL:** Crushed stone

**COST INDEX:**

LOW to MID (0-500)

### PRODUCT DESCRIPTION:

- Local crushed stone or loose gravel can be used to surface dress a route within the towpath.
- A variety of colours are available, depending on locally available stone.
- Crushed stone has a softer appearance that may be appropriate for more rural locations.
- However, the material is easily lost or dispersed and ruts can appear after use by cyclists, wheelchairs or buggies.
- Drainage needs to be adequate as water flows can also erode the surface.

### EXAMPLES:



LOCATION:

Audlem, Shropshire Union Canal

## illustrative design options

**MATERIAL:** Resin Bound Gravel

**COST INDEX:** HIGH (501-1000)

### PRODUCT DESCRIPTION:

- Resin bound gravel surfacing provides a level, hard wearing and low maintenance finish that is a more attractive alternative to traditional bitmac surface dressing;
- It has a porous/semi porous surface.
- It uses a stone aggregate (usually gravel 0-6mm) that is set into a resin bonding layer which prevents loose material from dispersing.
- The finished surface is flexible and resistant to cracking and can be applied to most stable substrates.
- NB Tree roots can create breaks in the surfacing therefore root protection measures should be considered.
- It provides a good slip resistance with no loose surface material, therefore often useful for inclined stretches of path e.g. a lockside approach.
- A suitable edging may be required to ensure a neat edge but this could be below ground.
- Movement joints may be required on long runs to avoid movement cracks.

### EXAMPLES:



**LOCATION:** Marple lock flight

A drainage channel, formed by setts, has been designed in to this scheme.

## illustrative design options

**MATERIAL:** Tar, Spray & Chip

**COST INDEX:**

MID to HIGH (251-1000)

### PRODUCT DESCRIPTION:

- Stone chips laid on a bitmac base course.
- The use of locally sourced and appropriate stone helps to reduce visual impact.
- The rougher texture of the finish gives a more organic and sensitive feel when compared with the smooth stark finish of the tarmac.
- Careful selection of the aggregate is necessary, for example flatter chips adhere better to the tar surface thereby reducing rolling elements and sharp aggregate which could form crystalline shards should be avoided.
- Low maintenance.
- Wherever possible the use of edging strips should be avoided or placed below ground.

### EXAMPLES:



LOCATION:



Rochdale Canal

# illustrative design options

**MATERIAL:** Self binding gravels or aggregate

**COST INDEX:** MID (251-500)

## PRODUCT DESCRIPTION:

- Usually manufactured from 100% recycled and sustainable materials selected from waste products including recycled road planings
- Colours may vary dependent on the materials available locally.
- It has good compaction properties and provides a durable footpath surfacing, A minimum asphalt content is used to enhance binding and assist in the laying and compaction process.
- It should be laid on a well-drained, well compacted and stable sub-base such as recycled type 1 granular sub-base.
- Aesthetically suitable for use in rural situations.
- Self Binding Gravels include fines (graded approximately 10mm to dust) that, once watered and rolled, knit particles together resulting in a semi-bound finish, with an element of loose surface material.
- They are low maintenance and can sometimes be recycled in situ by digging up the surface layer and recompacting the material.
- They are available in a range of natural colours, that is dependent on locally available materials.

## EXAMPLES:



## LOCATION:

Leigh Branch, Leeds & Liverpool Canal

# illustrative design options

**MATERIAL:** Bitmac/Tarmac

**COST INDEX:** MID to HIGH (251-1000)

## PRODUCT DESCRIPTION:

- A bitmac wearing course, usually 60mm thick, is laid on top of 150mm of MOT type 1 stone base
- It is a durable, hard wearing material and is low maintenance
- Edge boards can be 'hidden' with topsoil and grassed shoulders
- It has a consistency of colour/finish
- The surface dressing can be coloured (buff, light buff, grey & other colours are available)
- It can be visually intrusive in a non-urban setting
- Its suitability for heritage or ecologically sensitive areas needs to be considered
- The plant required for laying can not always be accommodated on towpaths due to access and width restrictions therefore hand laying may be required
- Costs for small sections of path may be relatively high due to the cost of plant required

## EXAMPLES:



## LOCATION:

Salterhebble, Calder & Hebble Navigation

## 5.2 Costs

### Towpath Budget Estimator

The towpath budget estimator, see Appendix 5, has been developed to assist with the early cost estimate on potential towpath surfacing schemes. The tool has been developed utilising historical and current actual cost data of new towpath construction works.

The towpath budget estimator is not a pricing tool and will only provide indicative costs of towpath works, exclusive of risk and designers fees. Ancillary or incidental works, such as bank protection, access improvements etc, need to be separately assessed and combined with the towpath budget estimator output to provide an overall project estimate. The towpath budget estimator provides a cost range for a project pending the ease of access and whether the works require waterborne construction or not. It also takes into account any geographical cost increase with delivering works in London and Scotland.

Its design and application is focused at the front end of any project initiation/concept and will provide sufficient early indication of likely project costs for early discussion with stakeholders or funders.

If a project requires a detailed cost estimate and surface type, method of construction and access have been determined then this can be provided by the project delivery team utilising the services of BWs framework contractors.

A theoretical model based on the criteria referred to in notes 1, 2 and 3 has been produced to give likely indication of cost uplift based on surface dressing selection and ease of construction. The percentile increases are applicable to the baseline cost of a non-bound surface dressing with easy or non-waterborne construction.

Figure 4: Theoretical model of indicative cost uplift

Surfacing material	Easy access or non waterborne construction	Difficult access or waterborne construction
Non-bound granular surfacing (limestone, granite, brick dust)	-	+39%
Bound surfacing (Finepath/SBM, DBM)	+18%	+65%
Tar, spray & chip (type 1 base)	+3%	+42%
Tar, spray & chip (DBM base)	+46%	+104%
Brick sheeting	+330%	+360%

notes:

- 1) Model based on 1000m of 2m wide full towpath construction, terram, 75mm MOT type 1 base, timber edgings and surface dressing, all arising's reused on site
- 2) Model assumes 50mm surface depth
- 3) Model includes delivery overheads such as project management & site supervision but not design

**section six**

**project delivery**

**6.0**



## 6.1 Sources of Funding

The Trust has a statutory duty to maintain canal towpaths to an agreed standard, in accordance with the Transport Act (1968).

Any changes proposed to the towpath, including a change in surfacing, will normally require a funding contribution from a third party source. Usual funding sources include local authorities, landfill tax credits, Sustrans and European funds. Each funding source will have its own application and decision-making process and adequate time should be allowed in planning the process to fit with the required timescales.

## 6.2 Detailed Design

Refining the options and choosing an appropriate solution should be undertaken in conjunction with expertise from our term contractors where works are proposed to be delivered by this route. A suite of standard details are available, a selection of which are included in Appendix Six for information.

It may also be necessary to consult with partners where project delivery is to be procured via a social enterprise, for example working with volunteers.

Consideration should be given to the availability of access for compounds, material storage, suitability of plant and equipment, etc. and the need to undertake works from the water in cases where the towpath is not suitable for heavy machinery. These factors will have an impact on cost and design.

Other significant issues include the presence of underground services, such as electricity cables, gas and oil pipelines and fibre optic cables. In some instances it is necessary for us to design the towpath improvement in conjunction with the owners of underground services, so that safety is maintained and the services are not damaged either by the construction plant or by the materials used to improve the towpath.

Other factors which need to be considered at the design stage include:

- Resources required, including funding, expertise and future maintenance costs.
- Anticipated usage and wear.
- Access for All.
- Sustainability – both materials choice and durability.
- End user safety and the safety of those improving the towpath.
- Ecological impact, for example the impact on protected species and their habitats, such as water voles.
- Historical features within the towpath (which are sometimes unexpectedly uncovered by the works).
- Drainage.
- Future access to assets such as sluices, valve and culverts.
- Ease of future towpath maintenance and repair and future access for maintenance plant.
- Planning permissions or consents are obtained as towpath works may not be covered by our General Permitted Development Rights, (consult with the relevant Delivery Planner for further information and local Rights of Way Officer).

## 6.3 Maintenance Considerations

The on-going costs of maintaining towpath projects needs careful consideration and any changes to the existing specification and objectives of the Waterway Units (WU) Vegetation Maintenance Contract will need to be reconciled, as will any increased management of the towpath corridor following works. The local Contracts Manager should be consulted at an early stage.

## 6.4 Authorisation

Once funding has been secured a project booklet can be completed and an implementation AR can be circulated for internal approval. Details of this process are available on [Gateway](#).

## 6.5 Implementation

The Trust has a defined Mandatory Standard for project management to ensure effective and efficient delivery. A Project Manager will be appointed who, at project inception, should search for and assess lessons learned and ideas from previous projects and initiatives.

The Project Manager will also:

- Apply an appropriate risk management system proportionate to the risk with appropriate risk register where necessary.
- Identify KPIs and milestones for each project with regular reviews of risks and delivery against the targets.
- Undertake financial management of project (with the SAP system).
- Produce a Works Information Package (WIP) for costing the proposed works.
- Undertake the approval and Appropriation Request processes and ensuring critical documentation is in place, particularly in recording partner and funding commitments.
- Ensure that any funding commitments which are integral to the successful project delivery are in a binding format.

Our term contractor will normally undertake towpath works involving construction but, as noted above, other options may be available.

The project will be managed by the relevant Trust project manager.

Minor works can be undertaken by volunteers following discussion with the local volunteer coordinator.

**section seven**

**summary**

**7.0**



# conclusions

## 7.1 Summary and checklist

It is hoped that these Towpath Design Guidelines will provide a useful basis for the development of future towpath projects, highlighting key considerations to ensure that the most practicable design solution is achieved.

The process outlined in this guidance document will ensure that a consistent and justifiable design approach is taken to all Canal & River Trust towpath schemes.

The guidance should be followed in conjunction with the undertaking of our standard procedures for project management.

The following key stages are highlighted for action at certain times within the project process:

### KEY STAGES:

- Determine appropriate level of consultation
- Establish if there is a need for change
- Undertake a Visitor Risk Assessment
- Raise an AR
- Consult Heritage Advisor
- Consult Environment Team
- Identify what, if any, changes are needed
- Design Process
- Project Delivery
- Construction



# appendices



## APPENDIX ONE

### Background to developing the guidance

In June 2010 a working group comprising representatives from a wide range of interested parties and organisations met to develop the concept of a design guideline document. Discussions from the initial workshop shaped the development of this guidance by identifying key considerations and shaping the outline of the proposed guidelines. Additional meetings were held during 2010 and 2011 where the general principles of towpath improvement were further discussed and agreed by the consultative group, prior to these guidelines being published and their use promoted within the Trust.

This document has been prepared with the valuable input and advice from our internal teams and representation from the following organisations:

- Angling Trust
- Birmingham Canal Navigation Society
- Cycling Touring Club
- Disabled Access
- Inland Waterways Association (IWA)
- National Association of Boat Owners (NABO)
- Horse Boating Society
- Ramblers
- Residential Boat Owners Association
- Sustrans
- Towpath Action Group
- Waterway User Special Interest Group (WUSIG)

The Canal & River Trust took over the activities of British Waterways in England and Wales on the 2nd July 2012.

## APPENDIX TWO

### An Example Environmental Appraisal for towpath works

Question		Action Required
<b>PLANNING</b>		
1	Can the proposed project/ activity be carried out under our Permitted Development Rights?	Refer to Planner
<b>BUILT HERITAGE</b>		
2	Will the proposed project/ activity be carried out within, or adjacent to, a Scheduled Ancient Monument?	Ensure authorisation is obtained from statutory authorities. Refer to Approved Standard: Heritage Management and Heritage Advisor.
3	Will the proposed project/ activity involve work to a Listed Building or work in proximity to a Listed Building?	Ensure authorisation is obtained from statutory authorities. Refer to Approved Standard: Heritage Management and Heritage Advisor.
4	Will the proposed project/ activity involve repairing, altering or carrying work out to, or in proximity to any historic structure or historic surfacing (such as stone setts, flag stones, etc)?	If work involves historic surfaces (e.g. stone setts, flag stones, cobbles, etc), agree specification for work with Heritage Advisor.
5	Will the proposed project/ activity be carried out within a Conservation Area?	Ensure authorisation is obtained from statutory authorities. Refer to Approved Standard: Heritage Management and Heritage Advisor.
6	Will the proposed project/ activity be carried out within a World Heritage Site, Registered Park or Garden, Designed Landscape or Historic Battlefield?	Ensure authorisation is obtained from statutory authorities. Refer to Approved Standard: Heritage Management and Heritage Advisor.
7	Will the proposed project/ activity affect a site or features of archaeological importance?	Refer to Approved Standard: Heritage Management and Heritage Advisor.
<b>BIODIVERSITY</b>		
8	Will the proposed project/ activity be carried out within, or within 1km of, the boundaries of a statutory wildlife site (e.g. Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) or a Special Area of Conservation (SAC)?	Consult with Ecologist as soon as possible to identify measures to mitigate adverse effects upon site. Mitigation may involve changes to design, additional works, or conduct of works at a specific time of year. Consent for works within a SSSI/SAC/SPA may take up to 4 months to obtain. Ecologist will apply for consent if required.

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9	Will the project/activity affect Second Tier sites (e.g. a County Wildlife Site) or Local Nature Reserve?	Discuss with Ecologist as soon as possible during the planning of works to identify measures to mitigate adverse effects upon site. Mitigation may involve changes to design, additional works, or works at a specific time of year. Ecologist will liaise with Local Authority Ecologist or Wildlife Trust.
10	Will the project/activity affect habitats of conservation significance e.g. reed beds, soft banks, rough or wet grasslands, woodland and scrub, or ponds?	Consult with Ecologist as soon as possible during the planning of works to identify measures to mitigate adverse effects. Mitigation may involve changes to design, additional works, or works at a specific time of year.
11	Will the proposed project/activity be carried out where there is the potential for impact to protected species (including but not limited to water voles, otters, bats, badgers, great-crested newts, white-clawed crayfish, nesting birds, slow-worms, grass snakes, and floating water-plantain)?	Refer to Ecologist to arrange surveys and appropriate mitigation. Mitigation may involve changes to design, additional works, or works at a specific time of year. Conduct of the works may also require a licence from Natural England.
12	Are there any invasive plants or animals present on the site of the project/activity (e.g. japanese knotweed, giant hogweed, himalayan balsam, ragwort, floating pennywort, swamp stone crop, zander, american crayfish, etc)?	Refer to Ecologist to determine appropriate mitigation. This may include some alteration to design or working methods for the works.
13	Will works involve clearance/removal of, or works adjacent to, vegetation (including trees, hedges, shrubs etc.)?	Ensure works are planned for outside the bird nesting season (bird nesting season is generally 01 March to 01 September).
14	Will the proposed project/activity involve any works to trees or works in close proximity to trees (e.g. felling or cutting branches; excavation or trenching)?	It is recommended that works affecting trees should only be carried out between 01 September and 01 March (this is outside the bird nesting season). Ensure the tree, including the roots, is protected from the works. Refer Ecologist for information on tree felling licence.
15	Will the proposed project/activity involve any works to trees protected by a tree preservation order (TPO) or a tree within a conservation area?	Consent from the Local Authority may be required for works on a TPO or trees within a Conservation Area. Refer to Ecologist for advice.
16	Will the proposed project/activity involve the removal of any hedgerow or section of hedgerow?	Consent may be required from the Local Authority. Consult with Ecologist.

## appendices

17	Will the proposed project/ activity cause any ground disturbance or compaction (i.e. loss of grass towpath or deep rutting of the ground)?	Use low ground-bearing plant and equipment and/ or track mats to prevent deep rutting of ground surfaces. Reinststate any vegetated surfaces which are disturbed by the works. Consult Ecologist for advice on seeding specification.
WATER		
18	Will the work be carried out within, adjacent to or in the flood plain of a watercourse or river navigation?	Refer to member of Environment Team; consultation with the Environment Agency and possibly consent may be required.
19	Will the proposed project/ activity involve the maintenance, repair, improvement, erection or alteration of any structure on a river or other watercourse or bank protection on a canal?	Refer to member of Environment Team, as consideration of Water Framework Directive, consultation with Environment Agency and formal consent may be required
20	Will the proposed project/ activity require a section of the canal, reservoir or other water body to be dewatered or drawn down?	Ensure rate of over-pumping/discharge of water will not cause flooding. Screen pump inlet to prevent fish being drawn through pump. Ensure sediment not transferred with water. For draw-down periods <1 week, maintain depth of water in centre of canal at minimum of 600mm - otherwise carry out fish rescue. For prolonged draw-downs carry out fish rescue.
21	Does the proposed project/ activity have the potential to cause materials to enter waterbodies (e.g. suspended solids, cut vegetation or soil to flow downstream)?	Solid, liquid or waste matter must be prevented from entering surface waters.
WASTE		
22	Will waste or unwanted material be produced as a result of the work?	Minimise waste by reducing, re-using or recycling materials. Excavated material produced on-site during the works (including soils and stone) can be used on-site for filling potholes and voids etc. if it is suitable for use in its original form. In this case this is not considered to be a waste material. However, any surplus material that cannot be put to beneficial use is a waste and must not be left on site. Any waste material being removed from site for disposal must be adequately described. Analysis may be required. Refer to Environmental Scientist for advice.
23	Will the proposed project/ activity involve the production or disposal of hazardous waste?	Consult Environmental Scientist. Ensure all hazardous waste is disposed to a facility licenced to accept it for reuse/recycling/disposal. Obtain a consignment note and hold on file for three years. Ensure that site where hazardous waste is produced is registered with the Environment Agency prior to disposal of waste.

24	Will the project/activity require waste to be stored temporarily on site?	Store waste in designated areas which are isolated from surface drains and watercourses. Do not overfill skips/containers and cover them to prevent dust, litter or waste being blown out. If in doubt please check with Environmental Scientist.
25	Will Trust personnel be used to transport waste produced by the project/activity?	Carry copy of Waste Carrier Registration Certificate in Trust vehicle. Ensure that the site where waste is to be disposed is licenced (permitted) to accept the waste or is exempt from licensing. Ensure that a waste transfer note or consignment note has been completed and signed by the Trust. Retain copy of waste transfer note (or consignment note if hazardous waste) and pass copy to Environmental Scientist.
26	Will a waste contractor be used to transport and/or dispose of the waste produced by the proposed project/activity?	Ensure that contractor is registered with the Environment Agency as a licenced waste carrier. Ensure that the site where waste is to be disposed is licenced (permitted) to accept the waste or is exempt from licensing. Ensure that a waste transfer note or consignment note has been completed and signed. Retain copy of waste transfer note (or consignment note if hazardous waste) and pass copy to Environmental Scientist.
27	Will the proposed project/activity involve burning vegetation on site?	Refer to generic environmental appraisal on open burning.
28	Will the proposed project/activity require a Site Waste Management Plan?	Refer to Environmental Scientist.
29	Will the proposed project/activity create over 1km of paved towpath (bound surfacing)?	Ensure that increased cleansing requirements in Code of Practice on Litter and Refuse can be met. Ensure that costs for cleansing are included in any maintenance agreement with third parties. Refer to Environmental Scientist for further advice.
<b>HAZARDOUS MATERIALS, USE &amp; STORAGE</b>		
30	Will the proposed project/activity involve storing, handling or using hazardous substances (COSHH) on site (e.g. paint, oil, fuel, herbicide etc.)?	Review MSDS sheets for range of products available and select substance that is least harmful to human health and environment. Store and use hazardous substances in accordance with the instructions on the product label and COSHH assessments. Store hazardous substances safely and securely. Provide suitable spill kits and absorbent materials on site for emergency use.
31	Will the proposed project/activity involve using herbicides or other pesticides?	Use only glyphosate-based herbicides. Store and use herbicides & other pesticides in accordance with the instructions on the product label; COSHH assessments and our Standards and Guidance. Ensure operatives / contractors applying herbicides have correct NPTC certification. Check that Environment Agency acknowledgement of notification or agreement has been received for applications of herbicide on or near water.

32	Will the proposed project/activity involve storing, handling or using fuel on site?	Oils and petrol for the re-fuelling of plant and equipment must not be stored on site. Only small quantities of oil and petrol are to be brought to site as required. If it is necessary to store more than 200litres of oil on site you must contact the Environmental Scientist for advice to ensure compliance with The Control of Pollution (Oil Storage) (England) Regulations 2001. Clearly label fuel containers. Store fuel securely within a bund or container of 110% capacity. Refuel vehicles, plant & equipment in a designated area with an impermeable surface (e.g. drip tray) away from drains & watercourses. Place diesel pumps in drip trays. Check hoses & valves regularly for signs of wear. Provide suitable spill kits and absorbent materials on site for emergency use. In the event of a significant spillage, contain the spilled substance & inform the Environmental Scientist who will liaise with the Environment Agency.
33	Will the proposed project/activity require the use of equipment containing oil?	Use environmentally acceptable lubricant (biodegradable oil/lubricant) in all chain saws and hydraulics.
CONTAMINATION		
34	Will the proposed project/activity involve work on, or adjacent to, a brownfield site or land with a previous industrial use?	Refer to Environmental Scientist. There is potential to encounter contaminated material in towpaths. If any potentially contaminated material is discovered during the conduct of the works, contact the Environmental Scientist for further advice.
RESOURCE USE & PROCUREMENT		
35	Are any products/materials required to complete the proposed project/activity?	Specify and use products made from recycled or sustainable materials wherever practicable. Use any stockpiled materials first before procuring new. All timber to be FSC certified
36	Will timber or timber products be required to complete the proposed project/activity?	All timber and timber products procured directly by BW or via contractors must be 100% FSC certified.
37	Will aggregates be required to complete the proposed project/activity?	Minimise use of aggregates. Use secondary or recycled aggregates wherever possible. Ensure all materials imported to site are free from contamination (including Japanese Knotweed). Ask the supplier to provide evidence to prove that this is the case. If in doubt, contact Environment Team for further advice.
38	Will the proposed project/activity involve travel or haulage?	Reduce road transport used for materials and waste etc. by sourcing and disposing locally or using alternative means of transport (i.e. water-borne).
39	Will the proposed project/activity involve the installation of lighting?	Identify measures to reduce energy consumption throughout all stages of project or activity. Specify energy-efficient equipment. Consider use of renewable energy supplies.

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NUISANCE		
40	Will the proposed project/activity generate odours, smoke, or dust?	Ensure waste/materials are managed to minimise the generation of dust. Ensure dust levels are controlled by sweeping or dowsing surfaces if necessary. Vehicles and equipment should be switched off when not in use.
41	Will the proposed project/activity generate noise?	Identify and implement measures to reduce noise. Consider design and layout of construction sites. Consider use of screens, silencers and 'quiet plant'. Undertake works during normal working hours. Consult with Local Authority when working in a Noise Abatement Zone.
42	Will the proposed project/activity involve the installation/use of permanent or temporary lighting?	Consider the potential for, and mitigate, light pollution (potential for breaching Section 79(1) of the Environmental Protection Act 1990 'Artificial light emitted from premises so as to be prejudicial to health or a nuisance'). Additional lighting can also impact upon protected species such as bats/otters. Consult Environment Team for guidance.
LANDSCAPE		
43	Will the proposed project/activity change the landscape character of the site?	Refer to Landscape Design Manual or Urban Designer for guidance on selection and specification of towpath surfacing materials.
CUSTOMERS & ACCESS		
44	Will the proposed project require any restrictions on areas of "access land" (registered common land or open country)?	Refer to member of the Environment Team
45	Will the proposed project/activity require temporary closure or diversion of a Public Right of Way?	Apply to Local Authority for consent for a diversion or closure
46	Will the proposed project/activity require a temporary road closure or traffic management?	Apply to relevant Highway Authority for consent
47	Will the proposed project/activity require temporary diversion or closure or temporary restrictions or stoppages to navigation?	Ensure towpath restriction notice/information notice is issued to relevant user groups. Notify any neighbours who may be affected by towpath restrictions/closures. Ensure navigation restriction notice/stoppage notice is issued to relevant user groups.
48	Will the proposed project/activity affect canal or towpath users, anglers, neighbours, etc.?	Ensure relevant groups affected by project/activity are notified/consulted
49	Have the requirements of the Disability Equality Scheme been considered within the scope of the project / activity?	Detail here what measures are being put in place

# APPENDIX THREE

## Sustrans Technical Information Note No.2



### Technical Information Note No. 2

#### Speed humps for motorcycles

Issue date: June 2008 Issue level: 01  
Owned by: Technical Director Contact: Christian.Ensslin@sustrans.org.uk

#### Background

Motorcycles using cycle routes are not only a problem in the UK but also in other countries. Engineers in the Netherlands have come up with a speed hump design that makes motorcycling (and also car driving) at speed very uncomfortable while not impacting significantly on the riding comfort of cyclists.

#### How it works

The motorcycle humps are basically a pair of two humps in a row immediately next to each other. For slower moving cyclists they feel like surfing over two waves. For faster moving motorcyclists the first hump will lift the rider slightly out of their seat while at the second hump the rider will experience a hard landing as the vehicle motion goes against the body movement. The only way to prevent this uncomfortable experience is by slowing down to cycling speed, making it very unexciting to ride a motorbike. Cars can only negotiate the humps at walking speed, otherwise the vehicle base is likely to touch the path surface.

#### Where it can be used

The humps are useful for sections of traffic free cycle route where fast motorcyclists are a nuisance. They only work where there is a significant difference in speeds between cyclists and motorcyclists, i.e. not on downhill sections. The humps present a serious (but not impossible) obstruction to cars, and therefore emergency access routes should be considered.

There is no point installing humps where motorcyclists can simply deviate onto adjacent grass verges and bypass the humps. An ideal situation therefore would be in railway cuttings, on top of railway embankments or next to bridges where travelling on the surfaced path is the only option. Additional fencing or landscaping might be necessary to ensure that motorcyclists are channelled onto the humps with no alternative option.

#### Technical details

The humps should span the whole width of the path. The hump profile is sinusoidal – see attached drawing for details. The path surface must be a bound surface – the humps will erode if they are built from limestone dust or other unbound materials. Signs and marking are not necessarily required, but painting white triangles onto the upward slopes is suggested.

It is important to ensure that the path surfaces at either side and in between of the humps drain to the path edges, and that water can drain away easily from the path edges. Care must be taken not to create an area of standing water in between or at either side of the humps.

The humps can be designed for various cycling speeds:

Maximum comfortable cycling speed	X = length of one of two humps
13mph or 20 km/h	3.4m
16mph or 25 km/h (recommended)	4m
20mph or 30 km/h	4.8m

The original Dutch design uses two hollows (shaped inversely to humps) rather than upward humps, but for drainage purposes humps are recommended.

See attached drawing for details.

#### Applications

The motorcycle speed humps should not be used as access control to a traffic free cycle path – they are intended to work as a deterrent to motorcyclists being a nuisance and stop motorcyclists using paths for races or to impress their friends by going fast. Think of it as a chicane that does not inconvenience cyclists.

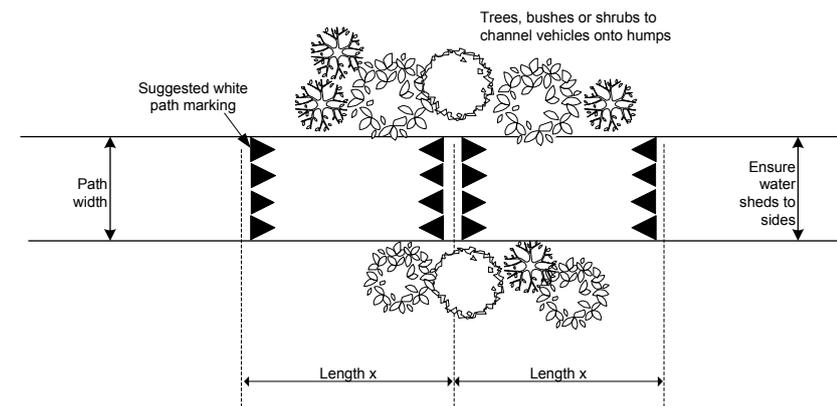
The design of the speed humps is not in accordance with highway design rules, and should therefore only be used on traffic – free paths.

The speed humps present no obstacle to pedestrians, equestrians or cyclists, however where cycle speeds are fast the ride might become uncomfortable!

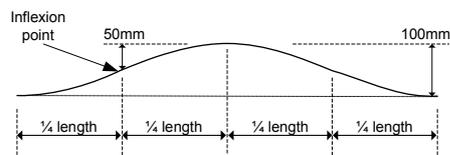
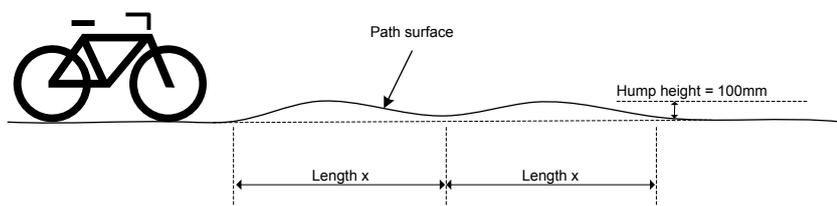
#### Implications for Sustrans

This design has not been tried in the UK before but it appears to be working in the Netherlands. Whether it will work as intended will depend highly on locating the humps where it impacts most on motorcyclists. If there is an alternative motorcycling route bypassing the humps then they will not be effective.

This sheet will be updated once more experience has been gained with this design.



**Plan of humps**



**Detail of sinusoidal hump profile**



**Examples of barriers and speed humps on our network:**

top left: barriers used to control speed

top right: Union Canal, Scotland, illustrating the need for the hump to extend the full width of the route

bottom left & right: speed humps on the River Lee towpath, near Hoddesdon where the humps extend the full width of the towpath

## Appendix Four

### Suggested interested parties for external consultation

#### **National:**

Barge Association

British Marine Federation

Environmental Interest groups (such as RSPB, Environment Agency, The Wildlife Trust etc).

Horseboating Society

Inland Waterways Association (IWA)

National Association of Boat Owners (NABO)

Ramblers

Residential Boat Owners Association

Sustrans

Relevant National Advisory Groups

#### **Local:**

Canal Society

Civic Society

Cycling campaign groups, including CTC

History Society

Heritage Society

Local Authority Elected Members & Departments (including planning/transport/regeneration/leisure)

Local businesses etc.

Local/neighbouring landowners

Local residents/Residents Associations

Waterway Partnership

Parish Council

# Appendix Five

## Towpath Budget Estimator

To access the interactive spreadsheet please click [here](#).

Towpath Budget Estimator - DRAFT - Revision 1								
<b>Project Name</b> <input type="text"/>								
overall length of towpath (m)	<input type="text"/>	input				0.00		
width of towpath (m)	<input type="text"/>	input				0.00		
area of any brick sheeting (m2)	<input type="text"/>	input				0.00		
Terram and 75mm type 1 base construction	<input type="text"/>	Yes	Note ** until estimator is developed further default answer Yes					
Granular surfacing (limestone, granite,brick dust etc)	<input type="text"/>	No						
SBM, DBM or Breedon gravel surfacing	<input type="text"/>	No						
Bitumen emulsion spray & chip finish	<input type="text"/>	No	specification and estimating rate to be confirmed currently <b>provisional</b> ; assumed contract specification					
timber edgings to path	<input type="text"/>	Yes						
Excavated material disposed off site	<input type="text"/>	No						
Is general site clearance required	<input type="text"/>	Yes						
Are the works being delivered in <b>Scotland</b>	<input type="text"/>	No	For all associated works (access improvements, bank protection, piling etc) either include a PC sum below or include specific measures in bill build up found click <a href="#">Measured Works'A1</a>					
Are the works being delivered in <b>London &amp; SE</b>	<input type="text"/>	No						
Description	Waterborne and/or difficult access				Non-waterborne/easy towpath access circa 500m			
	Quantity	Unit	Rate	£ p	Quantity	Unit	Rate	£ p
<b>PERMANENT WORKS</b>								
Insert significant items as appropriate - PC SUM				0				0
<b>Additions to costs calculated above for works carried out due to difficult/waterborne access</b>								
to value of Class E earthworks included above	0.00	%	145.00%	0	0.00	%	100.00%	0
to value of Class O timber included above	0.00	%	145.00%	0	0.00	%	100.00%	0
to value of Class R,P and Q towpath & piling	0.00	%	145.00%	0	0.00	%	100.00%	0
to value of Class U brickwork, blockwork and masonry included above	0.00	%	110.00%	0	0.00	%	100.00%	0
to value of Class X miscellaneous work included above	0.00	%	110.00%	0	0.00	%	100.00%	0
				£ 0				£ 0
<b>Addition to cover minor items not specifically identified above</b>								
Add to value of Permanent Works as calculated, including additions for working from water	0.00	%	0.15	0.00	0.00	%	0.15	0.00
				£				£
			b/f	£ 0			b/f	£ 0
<b>GENERAL ITEMS</b>								
General Items applicable to all projects								
Contractor Set-up, Site Management, Supervision, etc including general plant, instruments, personnel transport, <b>out of hours security</b> , general labour, site compound and hard standing, general testing etc	60.00%	%	Of Total Permanent Works	0	60.00%	%	Of Total Permanent Works	0
Site Specific General Items (ie access tracks, specific temp works etc)								
Insert items as appropriate				£ 0				£ 0
<b>PRICE ADJUSTMENTS</b>								
Add Regional Adjustment	0	%		0		%		0
	0	%		£ 0				£ 0
				£ 0				£ 0
Add Inflation adjustment		%				%		
				£				£
<b>RISK</b>								
Add Risk monies for Construction Phase								
Insert items, sums and probability of their occurrence as appropriate	Full cost		Probability %age		Full cost		Probability %age	
		sum				sum		0
		sum				sum		
		sum				sum		
<b>Total of Estimate (inclusive of Contractors staff)</b>				£ 0				
<b>Project and contract management from British Waterways 11.5% **</b>				0				
<b>Grand Total - BUDGET ESTIMATE*</b>				0				

\* excludes contingency or other project related costs such as legal etc, these to be added by Regeneration project manager as appropriate

\*\* excludes external design, assumed schemes developed on BW standard details, Contractor preparing BoQ etc

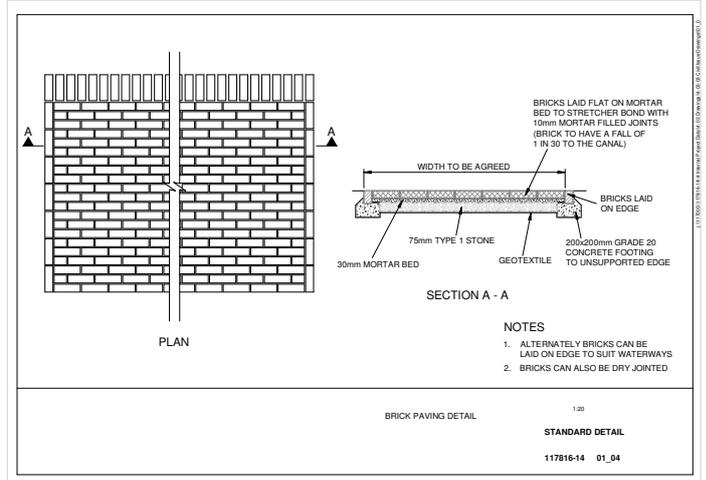
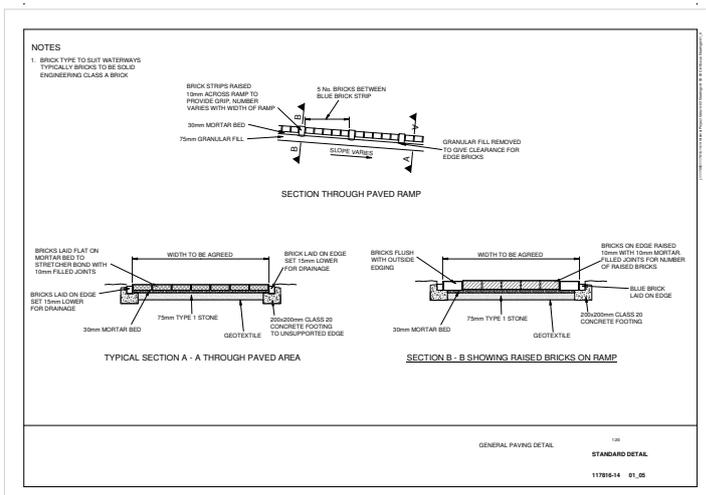
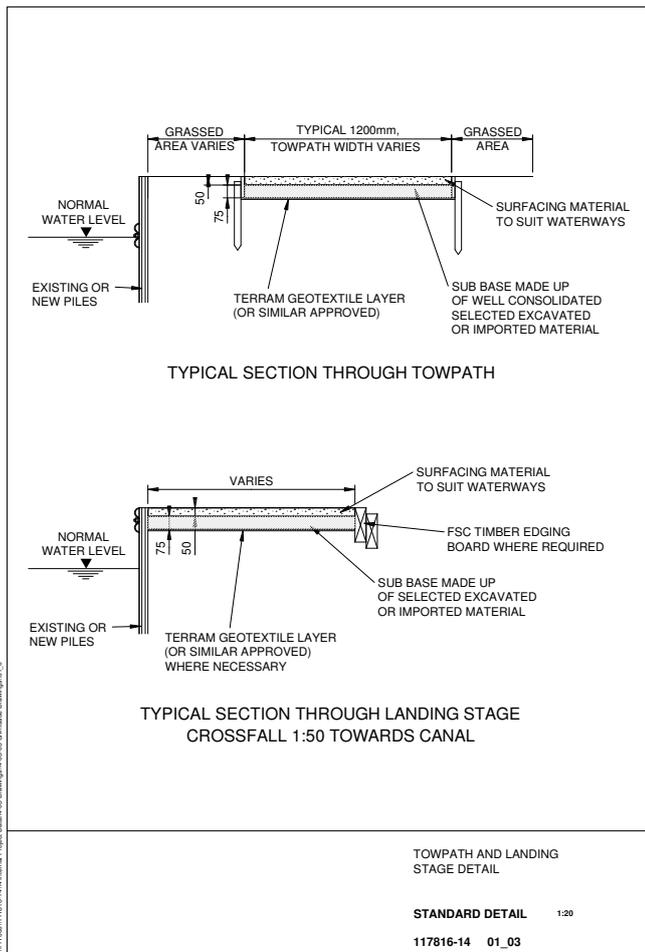
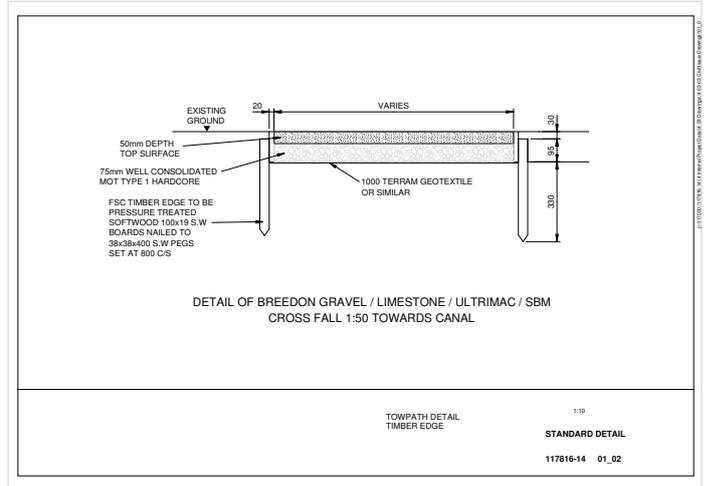
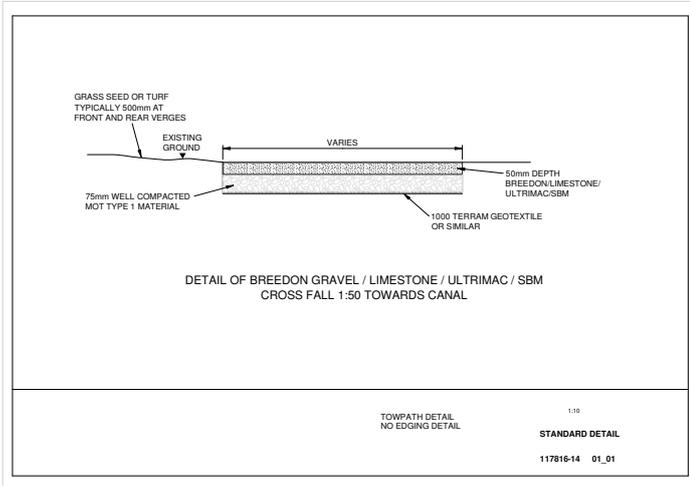
For case projects to build estimates/methodology etc click

[Completed projects'A1](#)

# Appendix Six

## Selection of typical towpath details

(see [here](#) for further examples)



## Appendix Seven

### Background – the origin of the towpath

(from the Horseboating Society)

Some navigable rivers had no towing paths running along their banks so gangs of men hauled boats, usually upstream, by scrambling along the edges of the riverbanks. When towing paths were provided on the bank tops, mixed groups of men and horses were sometimes used! In due course, horsepower took over on many rivers, like the Thames, Stour, and Weaver. At a later date, when most canals were being built, towing paths for boat and barge horses were an essential part of the canal design and construction. Horses and their handlers might walk 20-30miles each working day so the towing paths were designed as long distance walking trails. These towpaths were a place of work, usually wide enough to allow two harnessed horses to pass, and other users were unwelcome with signs warning that trespassers could be prosecuted. The use of canal horses went into gradual decline as motorboat use increased from circa 1900. Over the decades from 1900-1950, the supremacy of the horse faded and more types of user joined the declining numbers of horses on the towpaths.

