

# **The Benefits of Inland Waterways**

**Phase 2 – Testing the Framework**

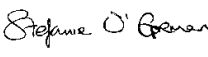
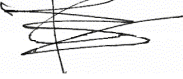

**Summary Report**

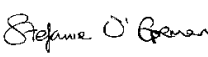
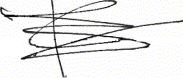

**Project Reference Number: WY0101  
March 2010**

**Document control sheet** **BPP 04 F8**

Client: Defra and the Inland Waterways Advisory Council  
 Project: The Benefits of Inland Waterways Phase 2  
 Document Title: Phase 2 Summary Report

Job No: B1148700

	Originator	Checked by	Reviewed by	Approved by
<b>ORIGINAL</b>	NAME <b>Stefanie O’Gorman</b>	NAME <b>Camille Bann</b>	NAME <b>Camille Bann</b>	NAME <b>Nigel Widgery</b>
DATE <b>February 2010</b>	SIGNATURE 	SIGNATURE 	SIGNATURE 	SIGNATURE <b>Approved by email</b>
<b>Document Status</b>				

	Originator	Checked by	Reviewed by	Approved by
<b>FINAL</b>	NAME <b>Stefanie O’Gorman</b>	NAME <b>Camille Bann</b>	NAME <b>Camille Bann</b>	NAME <b>Nigel Widgery</b>
DATE <b>March 2010</b>	SIGNATURE 	SIGNATURE 	SIGNATURE 	SIGNATURE <b>Approved by email</b>
<b>Document Status</b>				

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# 1 Introduction

## 1.1 Background

The role that the UK's waterways can play in generating societal benefits is increasingly being recognised at all levels of decision making. These benefits include leisure and recreation opportunities which contribute to improving physical and mental health, urban and rural regeneration, and benefits to the environment.

To date the explicit incorporation of the full range of benefits occurring at a given site has been restricted by the lack of a cohesive and widely accepted framework of the benefits of inland waterways<sup>1</sup>.

The first project under Defra and the Inland Waterways Advisory Council's (IWAC) joint Research and Development (R&D) Programme<sup>2</sup> on the benefits of the inland waterways of England and Wales sought to address this shortcoming.

**Phase 1** of the project completed in 2009 produced a **benefits transfer framework** along with **guidance** on its use, targeted at non-economists<sup>3</sup>.

The framework can be used to:

- Compare the benefits of an inland waterway activity to the costs, using the same indicator of value (money);
- Get an indication of the relative importance of benefits to inform decisions on management options or evaluating priorities; and
- Give decision makers a better understanding of who benefits, in order to help identify fair and equitable funding and financing options for the waterways.

Application of the framework to estimate the benefits provided by inland waters can therefore be used to underpin and inform investment and policy decisions across Government Departments and by Local Authorities.

The primary aim of **Phase 2** was to **test the framework and guidance** produced under Phase 1.

## 1.2 Objectives and scope of Phase 2

In order to develop and refine the outputs of Phase 1, Phase 2 has used real case studies to **test the framework and guidance**. The objectives of the testing are to:

- identify potential issues relating to the application of the framework and the guidance;
- recommend amendments to the guidance or framework to address any issues identified;
- provide additional information where possible to inform future decisions at each site; and

<sup>1</sup> AINA (2003) 'Demonstrating the Value of Waterways' provides a good practice guide to the appraisal of restoration and regeneration projects, but does *not* facilitate the inclusion of *all* the benefits of inland waterways in decision making.

<sup>2</sup> The objectives of the R&D Programme are to: provide confidence in investment achieving value of money, improve investment decision making, inform policy, provide evidence on potential benefits, and identify beneficiaries. See 'the Benefits of Inland Waterways' report for more detail on this.

<sup>3</sup> The Benefits of Inland Waterways, Jacobs 2009. A report to Defra and IWAC. Project reference number: WY0101. Downloadable from <http://www.iwac.org.uk/reports/>

- recommend priorities for the R&D programme, as appropriate.

The case studies were selected to facilitate an extensive testing of the functionality of the framework and guidance. To ensure this was possible, different overall objectives were set for each case study. The case studies and their objectives are as follows:

1. Droitwich Canal Restoration – can the framework and guidance successfully value the marginal benefits provided by a large restoration project?
2. The River Medway – can the framework and guidance successfully value the benefits currently provided by a river?
3. Limehouse Cut – can the framework and guidance value the marginal benefits provided by small improvements to towpaths and mooring facilities?

Phase 2 provides worked examples of the use of the framework and its guidance as an aid to future users and to decision makers. It also further clarifies the issues users may encounter and identifies where care is required in the use and interpretation of the transfer values.

For the site managers of the case study sites, it is hoped that the analysis provides them with a greater understanding of the current and potential benefits offered by the sites, and a prioritisation of the benefits such that it is clear where efforts should be focussed in order to maximise benefits.

In addition, within Phase 2 a review was undertaken of how inland waterway drainage benefits could be assessed. An outline methodology was produced and is presented in full within the Phase 2 Case Study report.

A comparison of welfare assessments, as completed using the framework, and Economic Impact Assessments was also undertaken. The aim was to provide some clarity to decision makers about what these two types of appraisal approaches provide.

The list of benefits provided in the framework was also mapped onto the National Indicators of Sustainable Development, and the Quality of Life Indicators used by British Waterways for monitoring at Droitwich. The aim of this exercise was to demonstrate especially to Local Authorities, who routinely use these indicators, how the use of the framework and guidance could inform reporting against these indicators for an inland waterway.

## **2 Recommendations**

### **2.1 Introduction**

A series of recommendations have been made following the completion of the three case studies.

The majority of these relate to changes to the guidance produced during the Phase 1 project. A recommendation is also made on future research needs to fill gaps in the valuation data.

The recommendations are presented in the Phase 2 Case Study Report under the section in which they were identified. For instance, the recommendation relating to property premiums was highlighted within the Medway Navigation case study, and is presented as part of the write up of property premiums in Section 3 of the report.

Here we present all the recommendations together, grouped as follows:

- General process; relating to the overall valuation approach and steps outlined in the Phase 1 guidance report;
- Benefit specific; relating to a specific issue such as value selection or guidance on the availability of physical data for a specific benefit category; and
- Future research recommendations.

### **2.2 General process recommendations**

#### **2.2.1 The step wise valuation process**

A number of gaps were identified within the guidance relating to the general valuation process outlined within the Phase 1 report. These are additional to the steps already outlined within the 4-step benefits transfer process. The 4-step benefits transfer process is presented here to clearly illustrate the recommended changes required to the guidance.

The results of the first three steps are presented in the framework. So while the user should be aware of how the benefits transfer process is undertaken, they only need to undertake step 4.

- Step 1 - Evaluation of the quality of the original study, based on a set of criteria.
- Step 2 - Preliminary assessment of 'Benefit Consistency'.
- Step 3 - Detailed assessment of study for benefits transfer purposes, and selection of appropriate studies for inclusion in the framework.
- Step 4 - Guidance on the adjustments required.

Not currently included in Section 5 of the guidance is a process to address the question "how do you estimate the value of benefits of your waterway?". This is however outlined in the brochure produced as part of Phase 1 as follows:

- Step 1 - Identify the benefits relevant to your waterway.
- Step 2 - Determine which benefits you would like to estimate a monetary value for. These are likely to be the benefits you think are the most significant.

- Step 3 - Select the appropriate monetary estimate (£/unit) from the valuation framework for the benefits of interest. The monetary values presented in the valuation tool are based on the best existing valuation studies suitable for transfer to inland waterway sites.
- Step 4 - Estimate the extent to which the benefits are provided. This is measured in terms of the unit adopted for the monetary value and varies across benefits. These unit values relate to the physical information that needs to be collated.
- Step 5 - Multiply the unit monetary value by the physical data you have collated. Accurate quantification of the physical units is important as it typically has a big influence on the final value derived.

It is recommended that the guidance is updated to include this process. It will also be made clear that, while there is an overlap with these processes (at Step 4 of the benefits transfer process), they serve different purposes; the benefits transfer process helps to identify studies and values to transfer; the valuation process helps to apply these values to the case at hand.

The benefits transfer process is part of the Phase 1 methodology and outlines the steps needed to complete a benefits transfer task. However, as noted above only Step 4 in this process is relevant to the user of this guidance, as the other steps in the benefits transfer process have been completed and are embodied in the framework.

The user is best guided by the 5-step “how do you estimate the value of benefits of your waterway?” process outlined above. The requirement to make adjustments to the unit values presented in the framework (Step 4 in the benefits transfer process) will be integrated into this 5-step process.

In doing this, the need for the user to undertake a literature review to identify the relevant benefits for the site in question will be noted. This will include reference for the need to use local site specific reports or data sources where available, and liaise with local site managers from the Environment Agency or the navigation authorities, to generate physical data estimates.

### **2.2.2 The identification of an appraisal period**

The guidance does not discuss the need to consider benefits over time. This was highlighted in the Droitwich case study where it was clear that the benefits from the restoration scheme would take some time to be realised, and would grow over time.

Guidance should be included to allow the user to appropriately identify the correct appraisal period and to discount the benefits over this period to provide present value estimates of the benefits in question.

### **2.2.3 Update the GDP deflator**

Since the completion of the Phase 1 report, the GDP deflator used to inflate values to current prices has been updated. It is recommended that this is updated in the guidance.

## 2.3 Benefit specific recommendations

A number of benefit specific recommendations have been made following the completion of the three case studies. These are summarised in Table 1, and discussed in more detail in the Phase 2 Case Study Report.

**Table 1 Benefit specific recommendations**

	Benefit	Recommendations	
Provisioning	Property price premiums	<ul style="list-style-type: none"> <li>Clarify that property premiums represent one-off benefits, not annual values.</li> <li>Highlight that the user needs to consider when these benefits will be realised.</li> <li>Update the guidance to note that evidence can be gathered from estate agents on local property prices and premiums. This can be used instead of average price by area estimates provided by the Land Registry, as outlined in the guidance.</li> <li>Highlight that locally estimated premiums (e.g. from estate agents) are likely to be more accurate and up-to-date than those presented in the guidance, but that the guidance values provide a conservative estimate where no local estimates are available.</li> </ul>	
	Renewable energy generation	No recommendations identified	
	Transport: - Freight - Green transport	Green transport <ul style="list-style-type: none"> <li><i>Update</i> the guidance to emphasise the need to gather data on the level of congestion of the roads from which traffic is expected to be displaced from - using local knowledge, average congestion levels on particular types of roads and available mapping data.</li> <li>The uncertainty created by the lack of information on traffic displaced in the final valuation estimates should be made clearer in the guidance.</li> </ul>	
	Water provision	No recommendations identified	
	Volunteering	<ul style="list-style-type: none"> <li>Provide further details on VIVA methodology in the guidance and append the short VIVA report for easy reference.</li> </ul>	
	Creation of business opportunities	No recommendations identified	
	Regulating	Climate regulation	No recommendations identified
		Drainage, water conveyance, flood protection and alleviation	<ul style="list-style-type: none"> <li>Update the guidance to provide the estimated annual average costs for flood related property damages which can be used to estimate the flood protection related benefits provided by a waterway, where physical data is already known.</li> </ul>
		Water regulation and pollution dilution	No recommendations identified
		Water Quality	<ul style="list-style-type: none"> <li>Amend the titles of this benefit category to 'water quality and pollution dilution' so that users are clear that pollution may need to be considered under both water quality and water regulation benefit categories.</li> </ul>
Habitat provision		No recommendations identified	
Cultural	Recreation	<ul style="list-style-type: none"> <li>Update the guidance to address issues associated with having two very different unit values presented for valuing angling benefits.</li> <li>Add expenditure values from ECOTEC, 2005, "Appraisal of Economic Impacts of Droitwich Restoration" to cover additional boating activities.</li> </ul>	
	Bird watching	No recommendations identified	
	Heritage values		
	Visual amenity		
	Education		
	Volunteering		
	Community benefits		
Non-use values	<ul style="list-style-type: none"> <li>Include a further caution in the guidance regarding the careful selection of distance bands for use in aggregating non-use values.</li> <li>Highlight the need to put non-use value estimates into context with use values as this can provide some indication of whether they are realistic.</li> </ul>		

## 2.4 Suggestions for future research

The Phase 1 report provided a set of recommendations for future research needs. These were as follows:

1. Testing the benefits transfer framework; to test and develop the benefits transfer framework as a tool for assessing the benefits of inland waterways.
2. Primary valuation work; to provide up-to-date welfare values for a selection of benefits provided by inland waterway and applicable across the UK.
3. Assessment of drainage benefits; to derive up-to-date values for the drainage benefits provided by inland waterways.
4. Centralised collation of physical data; to provide a centralised information point for the physical data required to undertake the monetary valuation of benefits.
5. Green transport; to provide evidence on the benefits of green transport routes as provided by tow paths.

The first of these recommendations has now been completed through this Phase 2 project.

Following the review of drainage benefits as part of the Droitwich case study, it has been agreed that further large scale research on drainage benefits is not a priority for the Research and Development Programme at the moment.

As a result of the success of Phase 2, and the overall Research and Development Programme objective to ultimately produce a national value for inland waterways, it is suggested that further case study work is completed.

To inform case study selection, the first task is to produce a **characterisation of inland waterway** sites to help to: understand the variability between sites; and, determine the types of sites likely to provide similar benefits. Based on this characterisation exercise a representative sample of valuation case studies will be selected and their benefits aggregated where possible to a national scale. It might be possible to use one of these case studies to undertake a detailed assessment of drainage benefits at a given site.

There are a large number of theoretical difficulties and issues involved in attempting to complete such a task, many of which have been outlined in a previous Defra funded project on the value of ecosystem services (O’Gorman and Bann, 2008). Due to these difficulties, it is likely that only a sub-set of the benefits will be aggregated to the national scale.

The bottom-up site specific case study approach may benefit from a parallel top-down national valuation exercise. Some benefit categories are more suited to a top-down approach than others, for instance - recreation benefits. Regulating benefits on the other hand can only be reasonably estimated at the site specific scale looking at marginal changes. It is not proposed therefore that the national study covers all benefits. Where benefits can be estimated at both scales, the results can be used to derive confidence intervals around the national estimate. It may also be necessary to limit the assessment to canals (thereby excluding navigable rivers) where a logical counter-factual (or ‘without’ scenario) can be developed. This approach is likely to provide an indicative national value of inland waterways.

## **3 Approach**

### **3.1.1 Overall approach**

The approach taken to test this framework and the associated guidance was consistent across all case study sites, irrespective of the specific objective posed for that case study (as noted above).

A series of questions were posed and tested within each case study, which were as follows:

1. Is the list of benefits in the framework comprehensive and accurate?
2. Are the monetary values provided in the framework in a form that is usable / compatible with available physical data?
3. What level of confidence can be attached to the monetary values derived given the different types of contexts the transfer values could be applied in?
4. Is the guidance clear and does it cover the process required in practice?
5. Does the guidance provide enough advice to the user on the physical data requirements and its availability?

Each case study write up follows the same format covering a summary of the case study purpose and key findings, a description of the site, details of the proposed changes to the site (where appropriate) and the objectives of the case study. The case studies then go on to identify the likely key benefits provided at the site and to present a valuation of these benefits.

Presented in Section 4 is an overview of the findings of the assessment, with regard the questions posed above. For the valuation results, please see the Phase 2 Case Study Report.

#### 4.1 Droitwich Canal Restoration

The Droitwich restoration project involves the restoration of 12km of waterway. The restoration will re-link the Junction Canal and the Barge Canal, where navigation was officially abandoned in 1939, by canalising a 550 m stretch of the River Salwarpe through the centre of Droitwich. The project will result in the restoration of navigational links between the Worcester and Birmingham Canal and Droitwich, the restoration of a number of locks and bridges and the provision of 5km of new or upgraded towpaths. Ultimately the project will result in the creation of a 21 mile cruising ring primarily in a rural environment which is unique in the UK in that it can be navigated in one weekend.

The key objective of this case study is to assess the functionality and completeness of the benefits transfer framework and associated guidance in its application to the estimation of the **marginal benefits** which are forecast to be realised through the restoration works at the Droitwich Canals.

As noted in Section 1.2, there were also three sub-objectives of this assessment: the production of an outline drainage benefits methodology; a comparison of welfare assessments and Economic Impact Assessments and the mapping of the framework benefits onto the National Indicators of Sustainable Development and the Quality of Life Indicators used by British Waterways.

##### Key Findings

- The list of framework benefits is considered to be comprehensive.
- The guidance is clear and the unit values presented correspond well to the available physical data for the site.
- Physical data was readily available in this case, due to the number of previous assessments undertaken to support restoration funding applications. This might not always be the case.
- Where site specific unit values are provided, these are likely to be more accurate than the default values presented in the guidance. However, confidence can be placed in the guidance default values as they were found on the whole to be similar to the site specific estimates.
- It is recommended that the guidance is amended to include the following:
  - a site specific literature or data review - this is important to assist the identification of relevant benefits, the physical quantity of those benefits (for instance the number of visitors) and any available site specific monetary data.
  - Reference to the use of an appraisal period over which benefits should be considered and the use of discounting to estimate present value estimates.
- The analysis of drainage related benefits is currently reliant on anecdotal evidence and a detailed assessment would be required to complete a robust analysis of the drainage related benefits provided as a result of the restoration project at Droitwich.
- Welfare assessments and Economic Impact Assessment have very different objectives. So while many of the same benefits are considered in these analyses, the valuation process, and presentation of the results, is different. The scope of Economic Impact Assessments appears to have widened in recent years, however welfare assessments include a wider range of benefit categories.
- The list of benefits presented in the framework maps well onto both the National Sustainable Development Indicators and the Quality of Life Indicators used by British Waterways. This demonstrates that the outputs of welfare assessments using the framework and guidance can assist Local Authorities and others in reporting against these indicators.

#### 4.1.1 Key findings: Data

It was found that a lot of information was available about this restoration project which could be used to complete the valuation task. The key information sources were found to be the Economic Impact Assessment which was completed in 2005<sup>4</sup> and a number of project funding applications which contained information on the expected costs and benefits of the restoration.

The Economic Impact Assessment completed in 2005 contains both site specific physical data estimates for the expected growth in visitors and also unit value data. This site specific data was used in the valuation exercise and allowed a comparison to the results derived through use of the default values provided in the framework. In many cases, this comparison showed that the default unit values provided in the guidance were very similar to those presented within the Economic Impact Assessment.

#### 4.1.2 Key findings: Framework

No gaps have been identified in the general list of benefits as presented within the framework. As noted however within the case study report (Section 2.5) some confusion was encountered regarding the disaggregation of regulating services into benefit categories. This results from the inter-linkages that exist between these services and the difficulty in assigning benefits to just one service, when in some cases they are realised through a combination of services.

It is considered that the guidance does the best it can in disaggregating these appropriately for application within the context of inland waterways. However it is recommended that additional clarification is provided in the guidance to assist the user should they face similar issues.

It was also found that the monetary values provided in the framework were in a form that is usable and compatible with the available physical data for this site.

When considering the level of confidence that can be attached to the monetary values derived using the framework, given the different types of contexts the transfer values could be applied in, it was found that generally speaking the original context of the valuation study cited in the framework matched well with the Droitwich context.

The context of the source study used for the **non-use value** estimate is the Manchester Ship Canal. This is a heavily used waterway with some significant water quality issues. In applying the non-use value to the Droitwich, the lowest distance band was selected to ensure a conservative assessment was undertaken, given the different nature of the two sites.

This transfer issue is likely to be common as there are few waterways that match the Manchester Ship Canal. However, as no other non-use studies are currently available, a conservative approach should be adopted (e.g. through the use of small distance bands, and therefore populations used in the aggregation). As a guide, on average non-use values are unlikely to exceed 50% of use values unless the environment is particularly important / rare (e.g. designated for protection). Given the uncertainty around these estimates, it is also recommended that valuation results are presented with and without the non-use value. In the case of Droitwich,

<sup>4</sup> ECOTEC (2005) Restoration of the Droitwich Canals – Appraisal of Economic Impacts

while the non-use estimate is high (between 50% and 60% of the total value), the use benefits alone are shown to significantly outweigh the scheme costs.

#### **4.1.3 Key findings: Guidance**

The guidance was found to be clear for the vast majority of benefits. Some issues did however arise as a result of multiple unit values being presented in the guidance requiring the user to select the most appropriate one, specifically with regard property price premiums and angling related expenditures. Clarifications to the guidance have been recommended in these cases.

The guidance was found to provide information on a large number of potential data providers under each benefit category. In practice, these provide sufficient guidance to the user on sources of physical data. However, in addition to the standard sources, reference should be made in the guidance to the use of local site specific reports or data sources, such as local site managers from the Environment Agency or the navigation authorities. More should also be made of gathering site specific data from local estate agents when estimating the value of property premiums along waterways.

The case study highlighted a need for some amendments to be made to the overall benefit assessment process. These relate to a range of issues, from the need to undertake a data review to identify the benefits of relevance to a given situation, to the need to discount benefits if estimated over an appraisal period. All recommendations are summarised in Section 2.

#### **4.1.4 Key findings: Other**

##### **(a) Drainage benefits**

There are significant uncertainties associated with the extent to which inland waterways provide a drainage function and the benefits associated with this function. The only valuation work on drainage benefits dates back a number of decades and is based on the replacement cost approach. It is therefore not considered appropriate to provide an indication of the significance of these benefits today.

This review investigates how we might go about firstly identifying cases where a drainage function is provided (screening) and secondly how we would then identify the benefits of this function and value them. This methodology applies to the benefits provided currently by waterways (baseline or existing value), and to the benefits provided by restoration schemes (marginal change).

The review presented in the Phase 2 Case Study Report outlines a step-wise process which can be applied to identify and define the value of any drainage function provided by a waterway.

The step-wise process is as follows, with Steps 1 and 2 making up the screening stage:

- Step 1 - Does the waterway provide a drainage function?
- Step 2 - Is that function significant?
- Step 3 - What benefits are provided?
- Step 4 - What is the value of the benefits realised?

The Phase 2 Case Study report discusses each of these steps in turn, with reference to the Droitwich restoration scheme as a case study example.

The assessment concluded that the drainage function provided by a canal can be determined by assessing simple information such as the number of formal discharge consents or the discharge mechanism (whether drainage is a designed or consequential function) and can give an indication of the type and scale of this function. However as you move through the step-wise process, the data requirements increase and the identification of the extent of the benefits becomes difficult.

Anecdotal evidence was used in this case to test the methodology on the Droitwich Canal Restoration example. Although this provides a reasonable evidence base for discussion or as a representation of the step-wise processes performance, it would be heavily scrutinized if used for funding purposes. It was also dependent on the availability of a study which estimated the number of properties which will be provided with flood protection as a result of the restoration. It cannot be assumed that this kind of information will be readily available in other cases.

If the primary objective of the study is to use the drainage benefits for a comparative assessment, to provide context for a decision making process or as a primary driver for funding then a more detailed assessment will be required.

An assessment to inform decision making would involve a desk study using Ordnance Survey mapping, groundwater information, geology mapping, Flood Estimation Handbook hydrological analysis, historical land use maps and archive flood records. A walk over survey would also be helpful to identify hydraulic interaction with other local watercourses. These activities would allow key features relating to the canal and surrounding landscape to be identified and the existing nature of the ground and rainfall runoff rates to be assessed.

Historical mapping and records will provide a timeline of how the use of the land and flooding probability has changed over time; ideally to before the canal was constructed so the change could be fully understood. This could provide a simple before and after analysis.

If the assessment is required to secure funding the method may need to be more detailed and will require some innovative hydraulic modelling techniques. This could be a costly option and data would not necessarily be readily available for use.

#### **(b) Welfare Assessment and Economic Impact Assessment**

A **welfare assessment** aims to identify the benefits to society from, for instance, the natural environment or as a result of a canal restoration scheme, based on the wellbeing of individuals, expressed directly or indirectly through their preferences. The objective of a welfare assessment is therefore to determine changes in wellbeing. Welfare values are underpinned by individuals' preferences or willingness to pay (WTP) for a good or service.

An **Economic Impact Assessment** is a different type of analysis tailored to answer a different type of question – it traces spending through an economy and measures the cumulative effects of the spending. The objective of an Economic Impact Assessment is to determine the impacts of a given intervention or programme on the economy. It typically assesses the impact of an activity on local or regional economies (e.g. in terms of increased sales, jobs created or household income).

While welfare assessments present net benefit estimates, Economic Impact Assessments present adjusted net values under each of the impact categories they consider, based on what is truly additional to the economy. The outputs of an Economic Impact Assessment can not be summed to provide an estimate of the impact of a project in terms of net value added. Welfare values, estimated for example using the framework, can be added together and used in cost benefit analysis.

Despite their different focus Economic Impact Assessments can consider many of the same benefits as a welfare assessment. Furthermore, the scope of Economic Impact Assessments has widened over recent years, and many now include some qualitative or quantitative assessment of the benefits provided in the framework. The welfare assessment however covers additional categories of benefits, particularly relating to the provision of water and transport opportunities and the benefits provided to society by regulating services.

### **(c) Sustainability Indicators**

This assessment looks at how the framework benefits relate to the sustainable development indicators used to measure performance by British Waterways, Local Authorities and other Government Bodies. The objective is to illustrate how a welfare analysis can be used to inform these typically used indicators.

There is a suite of sustainability type indicators used at a national level by a range of organisations and Government bodies. In contrast to welfare benefit estimates, these indicators, in most cases, report on non-monetary measures.

One such set is the **National Indicators for Sustainable Development** which is used by Local Authorities. British Waterways reviewed the National Indicators list and identified the indicators to which waterway activities can contribute. It is this short list of indicators that is considered here.

Within the Droitwich Canal Restoration Monitoring Plan, British Waterways uses **Quality of Life Indicators**. These are quite high level indicators and have been developed to correspond to the various project funding requirements.

The review of the relevant National Indicators and the Quality of Life Indicators mapped onto the framework welfare benefits illustrates how these categorisations overlap. It also demonstrates that the framework benefits can inform many of the indicators used by Local Authorities, British Waterways and a range of funding organisations. The overlap is strongest in terms of physical data, which are required both to report on the indicators and to undertake the valuation exercise.

The analysis shows that a welfare assessment can contribute to, and in some instances provide additional information on, a number of indicators that organisations may report on.

## **4.2 River Medway Navigation**

The River Medway flows from Ashdown Forest in Sussex into the Thames Estuary at Sheerness through 70 miles of chalk downs, alluvial plains and sandstone uplands. The catchment area of the River Medway is one of the largest in England, extending over 930 square miles, with an extensive network of tributaries and streams feeding into the main river.

The stretch assessed here is the 19 mile (approx 31km) non-tidal section from Tonbridge to Allington lock below Maidstone, known as the ‘Medway Navigation’.

The River Medway was opened to navigation over 250 years ago and was mainly used to transport goods and people. Today a range of commercial and recreational activities take place along the river. The river is popular for canoeing, angling and boating as well as for cycling, walking and dog walking. It offers beautiful views of the countryside, and the opportunity to visit historical buildings and locks.

This case study assesses the ability of the valuation framework and associated guidance to provide an estimate of the **current (baseline) benefits** provided at the site.

### **Key Findings**

- No gaps have been identified in the general list of benefits presented in the framework
- The guidance was found to be clear in the vast majority of cases. As is the case with Droitwich, some issues arose where the user is required to select from multiple unit values. Clarifications to the guidance have been recommended in these cases.
- Difficulty was encountered in estimating the current benefits provided by regulating services. It is generally a difficult task to establish the extent of regulating service benefits under the baseline (or currently provided) due to the complexity of the relationships at play and the lack of any logical alternative to base the estimation of these benefits against. The inter-linkages between, for instance, water regulation and water flow and the subsequent removal or redistribution of pollutants, makes apportionment of any resulting benefits to a specific service and function difficult. At the margin, the changes in services and functions as a result of a project or activity are more easily identified, facilitating the identification of the benefits.

#### **4.2.1 Key findings: Data**

In contrast to the Droitwich case study, the Medway Navigation has little readily available information which could be used to support the valuation task. In addition to data gathered from the internet, data was provided by the Environment Agency from the visitor survey which they undertake at a number of places along the Medway Navigation. Environment Agency staff were also able to provide additional site specific information which was used to support the case study assessment.

#### **4.2.2 Key findings: Framework**

When undertaking the Medway case study no gaps were identified in the general list of benefits presented in the framework. The only areas of note relate to recreation where rowing and camping were identified as activities undertaken at the site, but were not listed within the framework. The significance of this is low, as a value is available within the framework which can be used as a proxy for the benefits provided by rowing. In addition, camping could be considered an ‘accommodation’ type rather than a ‘recreation’ type. Camping related benefits are therefore considered likely to be captured under other recreation categories.

It is clearly not possible for the framework to list all possible recreational activities that might be undertaken on or alongside waterways. The list presented in the framework was driven by the availability of valuation data and is considered to cover most if not all activities commonly undertaken by visitors to waterways.

As was the case in the Droitwich, the monetary values provided in the framework were found to be compatible with the available physical data for this site provided by the Environment Agency. It was also found that the original context of the valuation studies used in the framework matched well with the Medway Navigation context. The benefit category most likely to suffer from a context mis-match is non-use. This is due mainly to the specific context within which these studies are undertaken and the fact that only a small number of values are presented in the guidance. However the context of the original study used to estimate non-use values for the Medway navigation is considered to fit well, increasing confidence in this estimate.

#### **4.2.3 Key findings: Guidance**

Again, as was the case for the Droitwich case study, the guidance was found to be clear for the vast majority of benefit categories. Some issues arose where the user is required to select from multiple unit values for certain benefits. Clarifications to the guidance have been recommended in these cases.

Recommended amendments to the guidance are outlined in Section 2.

### **4.3 Limehouse Cut**

Limehouse Cut is a 2km canal stretching from the River Lee Navigation at Bow Locks to Limehouse Basin in East London. The canal runs through the London Borough of Tower Hamlets and is situated to the north of Canary Wharf and to the south west of the emerging Olympic Park in Stratford. This canal is the gateway from the River Thames to over 225km of canals.

The Limehouse Cut Regeneration Programme, led by British Waterways, spent £1.4m between 2001 and 2004 on a range of physical improvements to the canal and towpath. These included the creation of new moorings, enhanced towpath, access improvements from the road, 'designing out crime' initiatives and a range of community initiatives. At the moment the towpath is not as intensively used as other canal towpaths in the area; however user numbers have risen as a result of the Limehouse Cut Regeneration Programme.

The objective of this case study is to use the guidance to value the benefits of the improvements carried out between 2001 and 2004 under the Limehouse Cut Regeneration Programme.

#### **Key Findings**

- The guidance can be used to provide a valuation of the marginal changes resulting from small improvements to a waterway when physical data on those marginal improvements is available. It is likely that in many cases, such data will not be available.
- The exercise has shown that even these small improvements can provide significant benefits over time for certain benefit categories.
- The annual value of the recreation benefits generated by the improvements made at this site is  $\frac{1}{6}$ <sup>th</sup> of the costs of undertaking the improvements. This means that after around 7 years, the benefits of the scheme will outweigh the costs of implementing it.

#### **4.3.1 Key findings: Data**

The case study has been conducted based solely on information provided by British Waterways. No further desktop or physical survey has been undertaken to determine the nature or use of the site, or the likelihood or magnitude of other marginal benefits that may have resulted from the physical improvements which have taken place.

Informal visitor survey data was provided from the visitor counters used on site. If these had not been present, accurate estimates of the change in visitor use of the site post the regeneration programme would not have been available.

Boating data had to be estimated based on anecdotal evidence gathered from British Waterways staff on site. It is thought that this would be required in many instances as formal recording of waterways users is not typically undertaken. This reduces the confidence that can be placed in the estimates provided.

#### **4.3.2 Key findings: Framework and Guidance**

No additional findings to those identified under the previous case studies were reported following the completion of this case study.