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VALUE FOR MONEY AND APPRAISAL OF SMALL SCALE PUBLIC TRANSPORT SCHEMES

Final Report to the Passenger Transport Executive Group (*pteg*)

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EXECUTIVE SUMMARY

The evidence base on the relative value for money of different types of transport investment has grown considerably since the Eddington report in 2006. Small scale public transport schemes remain an important exception, however, and this is understood to have been a key reason for the substantial decline in Integrated Transport Block (ITB) funding in 2010.

The work reported in this report has intended to fill this gap by compiling a database of close to 150 schemes obtained from PTEs and other local authority bodies, over a quarter of which had been the object of some sort of quantitative economic appraisal and/or ex-post evaluation. In some cases, enough information had been gathered to enable us to produce an ex-post estimate of value for money, using a bespoke Simplified Appraisal Framework (SAF) developed as part of this project.

The study covered the following types of scheme:

- Bus Quality Corridors;
- Bus Priority;
- Bus Stations / interchanges;
- Bus Real Time Information (RTI);
- Bus Park & Ride;
- Bus vehicle quality improvements;
- Rail station improvements, and;
- Rail Park & Ride.

With a median benefit of £3.5 for every £1 spent, the results suggest that small scale public transport schemes delivered by PTEs and local authorities can be at least as cost effective, if not more, as larger capital projects. According to Department for Transport guidance, BCRs between 1 and 2 represent medium value for money, between 2 and 4 represent high value for money, and above 4 represent very high value for money. Overall, every scheme in our sample exceeded a benefit:cost ratio of 1.5. On the other hand, several schemes reached BCRs above 3.0, notably some forms of bus priority, quality bus corridors and relatively low cost interventions such as information provision.

These results dispel the notion that schemes that fall outside the major business case framework are poor value for money. In reality, all PTEs have decision making frameworks in place to help identify local investment priorities. Despite this, only a minority of sampled schemes had gone through a conventional economic appraisal. One important reason appears to be the degree of complexity and effort required by the DfT's standard modelling and appraisal guidance, which is typically deemed to be disproportionate to the cost of small schemes. While some PTEs have developed streamlined in-house appraisal methods this is the exception rather than the rule.

As part of this project, we have therefore developed a Simplified Appraisal Framework (SAF), which we hope could help support and strengthen local decision making processes where local methods do not currently exist. Application of the SAF to a sample of case studies has shown that it leads to broadly similar results as the sponsor's original appraisals. This is encouraging and suggests that it may be possible to make use of simplifying assumptions without much loss of accuracy.

Although this project has already produced a considerable evidence base, some gaps were also identified, in particular with respect to the comparison of monitoring studies with ex-ante appraisal results. A second area for development is the conversion of the results of ex-post customer satisfaction surveys, which appear to be increasingly common, into more conventional measures of value for money. The current evidence base should therefore be seen as work in progress to be updated and developed by PTEs and other key stakeholders in the future.

CONTENTS

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David Jones and Norman Rees at Merseytravel;

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Chris Payne, Steve Heckley, Tom Gifford, Louise Porter and Philip Joyce at WYPTE

Madina Fassassi and Arnold Cohen at Transport for London

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Mark Garlick, Andy Gibbons & Chris Carter at Nottingham City Council,

Tony Clark at York City Council

Roger Gill & Rohail Ahmed at Newcastle City Council, and

Mervyn Hallworth at Leeds City Council.

Thanks are also offered to Charlotte Kelly, Senior Research Fellow at the Institute for Transport Studies at the University of Leeds.

1 INTRODUCTION

1.1 Background

In January 2011, the Passenger Transport Executive Group (***pteg***) commissioned Jacobs Consultancy to undertake a study to investigate the evidence for the value for money (VfM) of small public transport schemes. The study was required to

- Derive a representative evidence base from across the Passenger Transport Executives (PTEs), associated local authorities and Transport for London;
- Assess current practice in the appraisal of small scale public transport schemes;
- Report on the outcomes of value-for-money appraisals of such schemes drawing upon the best available evidence, and;
- Use the evidence to inform the development of a simplified appraisal framework (SAF) for future small public transport scheme appraisal.

The context for this investigation is increasing pressure on the available funding streams which have generally enabled delivery of small scale public transport schemes, with concern that a lack of clear understanding of their value-for-money may compromise decision-making about future investment programmes as funding becomes more constrained.

Through the recent Comprehensive Spending Review, core transport funding has been adversely affected by a need to reduce public spending as part of the wider budgetary plans put in place by the Coalition government. The Local Transport Plan block fund for Integrated Transport improvements has been severely reduced for virtually all local transport authorities, including the Passenger Transport Executives (PTEs). In previous years, this would have been the main source of funding for many small scale public transport improvements (i.e. schemes less than £5m), especially improvements to bus systems.

The Passenger Transport Executive Group (PTEG) is aware that there has been some scepticism amongst ministers and officials at the Department for Transport (DfT) and the Treasury around the Value for Money (VfM) case or lack of, for small scale public transport improvements. A lack of suitable evidence to inform this position may adversely affect consideration of future funding provision for local public transport improvements, particularly small scale improvements to local bus networks.

PTEG is aware that PTEs, local authorities and other stakeholders hold evidence on the impact of small scale public transport schemes as well as monitoring and evaluation studies which can be used to better inform the appraisal of small public transport schemes and identify their VfM. Jacobs were commissioned to use these sources of evidence to build a framework which is suited to appraising smaller schemes as a means to demonstrate and build a case for small scale scheme VfM and therefore a case for continued financial investment in local public transport.

This report documents our findings on the evidence base which has been identified by the six English PTEs, associated organisations in the PTEG group and other local authorities. The report details methods of analysis used within the appraisal of small scale schemes which often also identifies schemes which have demonstrated VfM. The complete evidence base developed during this study is available within our iSET evidence database which accompanies this report.

A simplified appraisal framework (SAF) was developed as part of the study, building on existing best practice, to provide a tool for assessing the VfM of small public transport schemes and also accompanies this report.

1.2 Study Scope

Through detailed guidance published by the Department for Transport (specifically WebTAG), there are well defined guidelines for appraising VfM for major schemes – those costing more than £5million. These are classified as 'Major Schemes' and are therefore required to be appraised using the Transport Business Case[1] approach (formerly the New Approach to Appraisal (NATA) (DfT, 2010[2]), which requires promoters to follow the DfT's WebTAG guidance. Whilst the terminology for Transport Business Case appraisal was altered in April 2011, the appraisal principles remain largely the same as in the past.

One of the key parameters used to assess transport schemes is VfM, a key element of the economic case, which is largely, though not solely, informed by calculation of the Benefit to Cost Ratio (BCR). This represents the monetised benefits which the scheme would provide as a ratio of the estimated public sector costs of the scheme. Government regards a BCR as an index of value-for-money, using the following thresholds;

- Very High Value for Money = BCR greater than 4:1
- High Value for Money = BCR greater than 2:1 but less than 4:1
- Medium Value for Money = BCR greater than 1.5:1 but less than 2:1
- Low Value for Money = BCR less than 1.5:1.

The BCR is a key metric used by both local and central government for assessing whether to fund schemes.

Previous studies have shown that when it comes to smaller transport schemes, there is currently little set or well developed appraisal guidance (Atkins 2008[3] and Page et al 2007[4]). Furthermore, there is a concern that competing modes and transport initiatives – cycling and smarter choices, for example, are better substantiated in terms of guidance on assessment of VfM than many small scale public transport schemes.

In light of recent changes to local funding allocations for public transport, and the announcement of the new Sustainable Transport Fund there is now, more than ever, a requirement to demonstrate the VfM case for small public transport schemes.

[1] Department for Transport (2011) The Transport Business Case.

[2] Department for Transport (2010) Transport Analysis Guidance-webTAG http://www.dft.gov.uk/webtag

[3] Atkins (2008) Advice on the prioritisation of smaller transport schemes, Final Report to the Department for Transport, Atkins, London cited in Kelly, C and Nellthorp, J (2010) Appraising Small Schemes at a Local Level; A BCR Approach, Institute of Transport Studies, University of Leeds

[4] Page, M and Kelly, C and May, T and Jones, P and Forrester, J (2009) Enhancing appraisal methods to support sustainable transport and land use, European Journal of Transport Infrastructure Research 9(3)

1.3 Project Objectives

In accordance with the Project Brief, the objectives of the study were:

- To elicit, summarise and disseminate available empirical evidence and best practice on the value for money of small public transport schemes.
- To develop a common, streamlined / light-touch appraisal framework for smaller public transport schemes by identifying key inputs and providing simplifying assumptions, where required, based on the best available empirical evidence.
- To enable transport authorities to more quickly assess the potential value for money that different types of scheme are likely to deliver.
- To demonstrate the cost effectiveness of smaller public transport schemes, in particular bus priority, bus stations and interchanges, real-time information, park & ride schemes and Quality Bus Corridors or the specific elements of such composite schemes.

1.4 Report Structure

This report is structured as follows;

Section 2 provides an overview of the work of PTEG and its members, with reference to their role in delivering public transport improvements.

Section 3 defines small scale public transport schemes in further detail and provides information into the source of funding that support small scale schemes.

Section 4 sets out the methodology used for the study.

Section 5 provides the rationale for why there is a need to appraise small scale schemes.

Sections 6 and 7 focus on the outcomes of the evidence review of small scale schemes and how they have developed appraisal methods and demonstrated VfM.

Section 8 illustrates the development and application of the SAF.

Section 9 offers conclusions and findings from the review plus recommendations for further work.

2 PTEG AND THE PTEs

2.1 Introduction

This chapter provides an overview of PTEG and the English PTEs, focussing on their roles in delivering public transport improvements.

2.2 PTEG

The Passenger Transport Executives Group - PTEG (www.pteg.net) seeks to both promote efficiencies and the exchange of knowledge and good practice within the PTE network. The group also raises awareness nationally about the key transport challenges which face the city regions, and the public transport solutions which PTEs are implementing.

PTEG brings together the following PTEs in England:

- Centro – the PTE for the West Midlands (former) metropolitan area covering Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton.
- Transport for Greater Manchester (TfGM) – covering the former metropolitan area including the districts of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan.
- Merseytravel – the PTE for the Merseyside (former) metropolitan area covering the districts of Knowsley, St.Helens, Sefton, Wirral and Liverpool.
- WYPTE – the PTE for West Yorkshire (former) metropolitan area covering the districts of Leeds, Bradford, Wakefield, Kirklees and Calderdale.
- Nexus – the PTE for Tyne and Wear (former) metropolitan area covering Newcastle City Council, the City of Sunderland, Gateshead, North Tyneside and South Tyneside authorities.
- SYPTE – the PTE for South Yorkshire (former) metropolitan area covering Sheffield, Doncaster, Barnsley and Rotherham.

Leicester City Council, Nottingham City Council, Strathclyde Partnership for Transport and Transport for London are also associate members.The locations of the PTEs and associated members are shown in Figure 1.

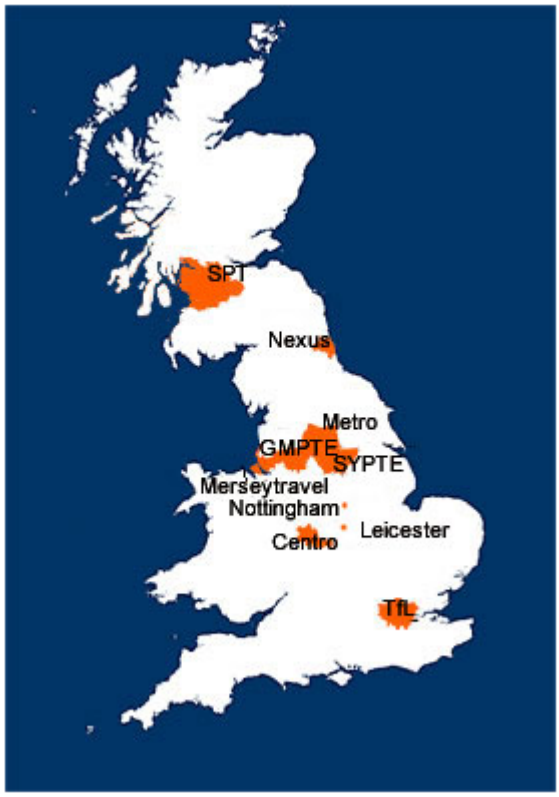
2.3 The Role of PTEs

PTEs are the driving force behind the development of public transport systems in the English city regions, aiming to deliver single, integrated public transport networks accessible to all. The six PTEs provide, plan, procure and promote public transport in six of England's larger conurbations, serving over 11 million people in total.

Amongst PTE responsibilities are the promotion of public transport, in partnership with local authorities and transport operators, including:

- Producing city region Local Transport Plans.
- Production of strategies for the development of local public transport networks.
- Management and planning of local rail services (in partnership with the DfT).
- Planning and funding of non-commercially viable but socially necessary bus routes.
- Working in partnership with private operators to improve bus services - for example through bus priority schemes.

Figure 1 Geography of the English PTEs and PTEG Associate Members



- The funding of concessionary travel schemes - including those for older, disabled and young people.
- Investing in local public transport networks - including new rail and bus stations.
- Developing and promotion of new public transport schemes - like light rail and guided bus networks.
- Providing impartial and comprehensive public transport information services - including by phone and internet.
- Management and maintenance of bus interchanges, bus stops and shelters.

In the context of this study, the critical roles of the PTEs are their planning and coordination of investment programmes in local public transport network, including their roles in seeking funding for public transport and prioritising investment opportunities as part of the Local Transport Plan process.

3 SMALL SCALE PUBLIC TRANSPORT SCHEMES

3.1 Introduction

This study specifically focuses on small scale public transport schemes which are generally considered to be those schemes costing less than £5m. Such schemes are ineligible for DfT Major Scheme funding allocations and as a consequence are not typically required to complete the rigorous major scheme business case appraisal.

A key source of government investment in small scale public transport schemes has traditionally been the Integrated Transport Block (ITB) allocation to local transport authorities, including PTEs. As part of the 2010 Spending Review, the DfT made substantial cuts to the ITB, which will total £1.3bn over the next 4 years, with £300m allocated for 2011/12 nationally. This funding is provided to support authorities in achieving key local goals, deliver integrated transport schemes which help reduce accidents, improve accessibility and reduce carbon and congestion (DfT, 2011[5]).

The remainder of this chapter summarises the definitions of a small-scale scheme, the modes identified within the scope of this study and the associated evidence base, and opportunities for continued funding of high value-for-money small-scale schemes.

3.2 The Case for Small Scale Public Transport Schemes

Local investment in public transport networks deploys a wide range of funding mechanisms covering both capital and revenue funding streams. Whilst substantial improvements will readily breach the £5million threshold for DfT major scheme funding approvals, there are several reasons why small scale schemes are critical to the success of local public transport networks;

- Many more small scale schemes can be delivered effectively over a programme period due to their relative ease of delivery, affordability and practicality;
- Small scale schemes are well suited to managing the geographically, technically and politically diverse needs of large urban areas;
- Small schemes are capable of targeting localised and identifiable constraints on mature public transport networks, complementing existing technologies, operational regimes and the level of resources available for network improvements;
- Small schemes offer greater flexibility in programme funding, resource and risk management relative to the complexities and timescales for major scheme delivery, and;
- Local authorities may be able to fund small schemes with greater flexibility and reduced bidding costs relative to those associated with major schemes.

[5] Department for Transport (2011) Creating Growth, Cutting Carbon Making Sustainable Local Transport Happen-White Paper

3.3 Definition of Small Schemes

The nature of small schemes varies across the different PTE areas, reflecting their specific local context and their existing transport networks and infrastructure. For the purpose of the study, small public transport schemes are considered to be those with a capital cost not in excess of £5m to the public purse. To some extent this value is arbitrary since the scope and scale of larger schemes must be considered in their local context, for which cost is only a weak proxy. For instance, if a Quality Bus Corridor (QBC) with 2 routes costs £10m and serves a major town or city this could have equivalent impact to 2 smaller schemes each of £5m located in a smaller town.

The PTEs are likely to be disproportionately reliant on major scheme funding to achieve improvements in local bus networks in a context where the threshold for major schemes applies equally to all local transport authorities. Accordingly, some schemes costing more than £5million in total have been considered where these can be shown to attract external, non-core funding and where they can reasonably be disaggregated into discrete, smaller yet coherent elements.

We have considered a number of Major Schemes, where it is possible to disaggregate these into smaller projects that have potential to cost less than £5million individually. The study has received and reviewed information for both completed and proposed projects. In reviewing schemes we make no observations on their specific merits. We only sought to utilise evidence from the major schemes bid information as supplementary evidence to assess the impacts and value-for-money of smaller schemes.

3.4 Types of Schemes Covered

This study considered the purpose and scope of small scale schemes in collaboration with representatives of each of the PTEs. The aim was to focus work on those types of scheme that were of greatest interest to PTEs and for which support in developing appraisal evidence would be most useful. The modes considered within the evidence review are shown in Table 1.

Softer measures were specifically excluded from the schemes considered including travel planning (including Workwise), walking / cycling and public realm projects. These schemes fall into areas where the DfT has indicated good evidence is already available although it is recognised that softer measures may maximise the value for money of more conventional interventions.

Table 1 Example Modes and Scheme Types Considered

Bus	Rail	Light Rail
Bus Priority	Real Time Information	Real Time Information
Stations / Interchanges	Station Improvements	Station Improvements
Real Time Information	Park and Ride	Park and Ride
Park and Ride		
Quality Bus Corridors		

This set of small scale schemes is considered to be fundamental to the ongoing improvement of local public transport networks. Typically they form a key part of forward investment programmes across the PTE's, though with different levels of emphasis on each type to reflect local circumstances and priorities. Whilst these types of schemes are not delivered exclusively as small schemes, there is significant

emphasis on the role of small schemes in the improvement of local public transport networks.

3.5 Key Sources of Funding for Small Scale PT Schemes

3.5.1 Integrated Transport Block Funding

The main source of funding for PTEs and Local Authorities' public transport capital schemes is the Department for Transport's Integrated Transport Block. Throughout the UK, the Integrated Transport Block will fund £1.3 billion of small scale transport improvements over the next 4 years (2011/12 to 2014/15). The allocation is calculated on a needs-based formula and, for each of the six PTEs, the allocations for the next two years are shown below in Table 2, alongside the 2010/11 allocation pre Comprehensive Spending Review.

Table 2 Local Transport Plan Integrated Transport Block Spending Allocations to PTE areas ***

PTE Area	2010 - 2011*	2011 – 2012*	2012 - 2013
WYPTE	£32.7m	£18.1m	£19.3m
Centro	£53.4m	£24.9m	£26.6m
Nexus	£20.5m	£11.6m	£12.4m
SYTPE	£23.2m	£11.3m	£12.0m
TfGM	£50.3m	£21.5m	£22.9m
Merseyside	£32.7m	£11.5m	£12.3m

Source: Department for Transport, UK at
http://www.dft.gov.uk/pgr/regional/localauthorities/funding/fundingstreams

Notes:

* - Spending allocations in 2010-11 are awarded to Joint LTP Plan areas which are generally consistent with PTE areas
** - Spending allocations from 2011-12 onwards are to the Integrated Transport Authorities in each of the defined areas
*** - Local funding arrangements may be in place to receive funds which support delivery by district authorities rather than PTE's through these allocations. No adjustments have been made to take account of such arrangements in the preceding table.
TfGM – Transport for Greater Manchester

3.5.2 Local Sustainable Transport Fund

The DfT has established a £560 million Local Sustainable Transport Fund which will provide funding for local authorities and PTEs for transport interventions which will support economic growth and reduce carbon emissions as well as providing cleaner environments, improved air quality, enhanced safety and reduced congestion. The fund will include a mix of £350m revenue and £120m capital funding over the next 4 years.

This fund replaces several previous grants for sustainable travel modes and combines funding for both public transport and walking and cycling into one funding stream. The fund is a potential source of investment for small scale public transport schemes, although it will also be available for walking and cycling schemes. Evidence from this study is expected to assist PTEs in making the case for small scale public transport schemes in future LSTF bids.

4 STUDY METHODOLOGY

4.1 Introduction

The study methodology was developed to fully reflect the requirements of the Project Brief. The method directed a strong focus towards communication with PTEs and local authorities to obtain relevant source material. It also ensured that the Client, PTEG, was kept fully informed of project progress and key decisions.

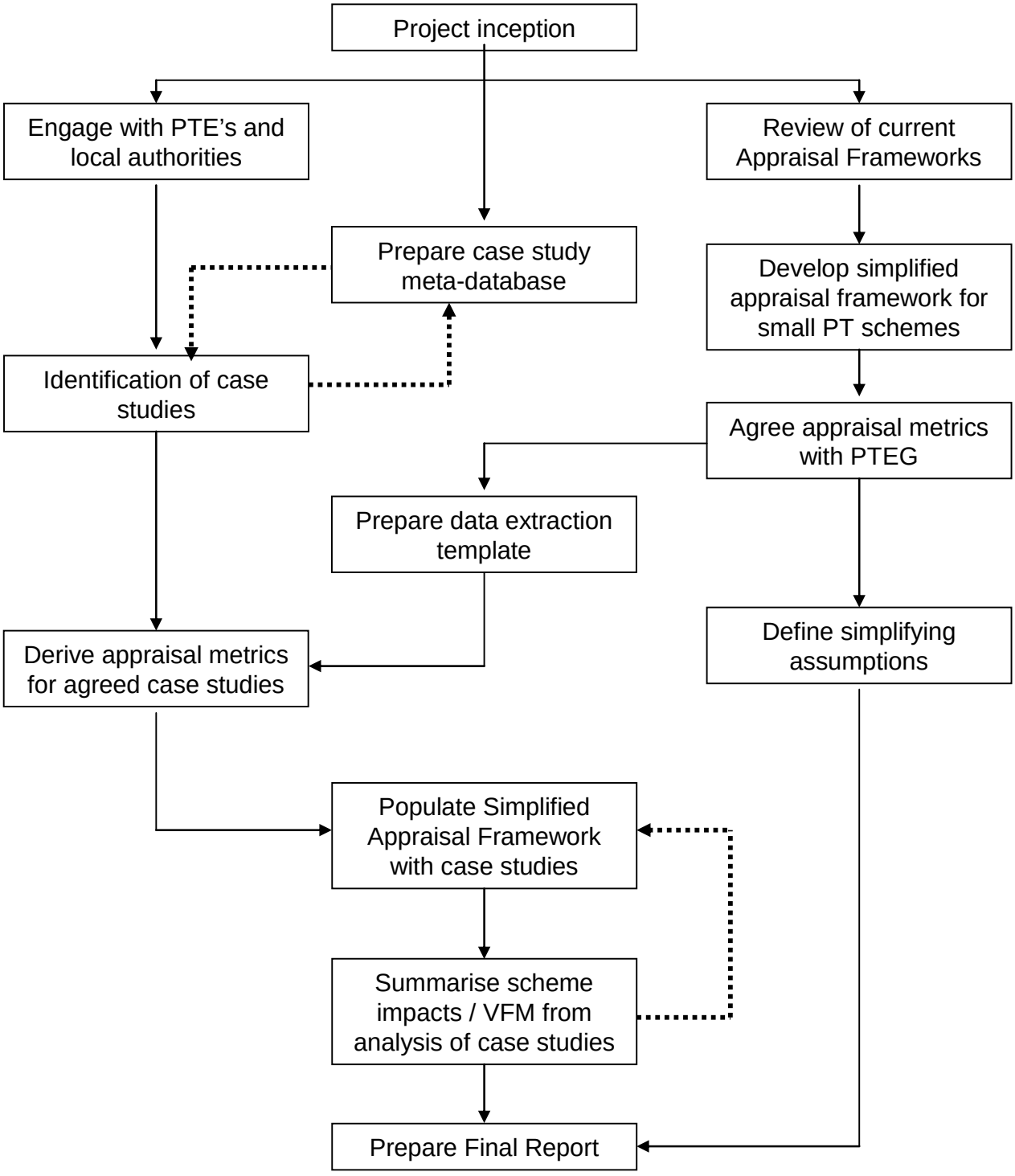
The methods employed focused on four deliverables:

- A reliable database of evidence derived from the PTEs and their partners (i-SET);
- A sub-set of case studies demonstrating good practice;
- Simplified Appraisal Framework consistent with DfT guidance, for application to small public transport schemes (SAF), and;
- Evidence-based report on the value for money of small public transport schemes to assist PTEG and the PTEs in making the case for future investment (this document).

Figure 2 provides an overview of the project methodology from project inception through to the final deliverables. The methods described within this chapter were designed to be logical and to maximise the content of received material for use in the three deliverables.

The main elements of the method were to review current appraisal work through communication with identified PTEs, to compile an evidence base, to use the evidence base to inform the development of the SAF and finally to report on the findings. These are discussed within subsequent chapters of the report.

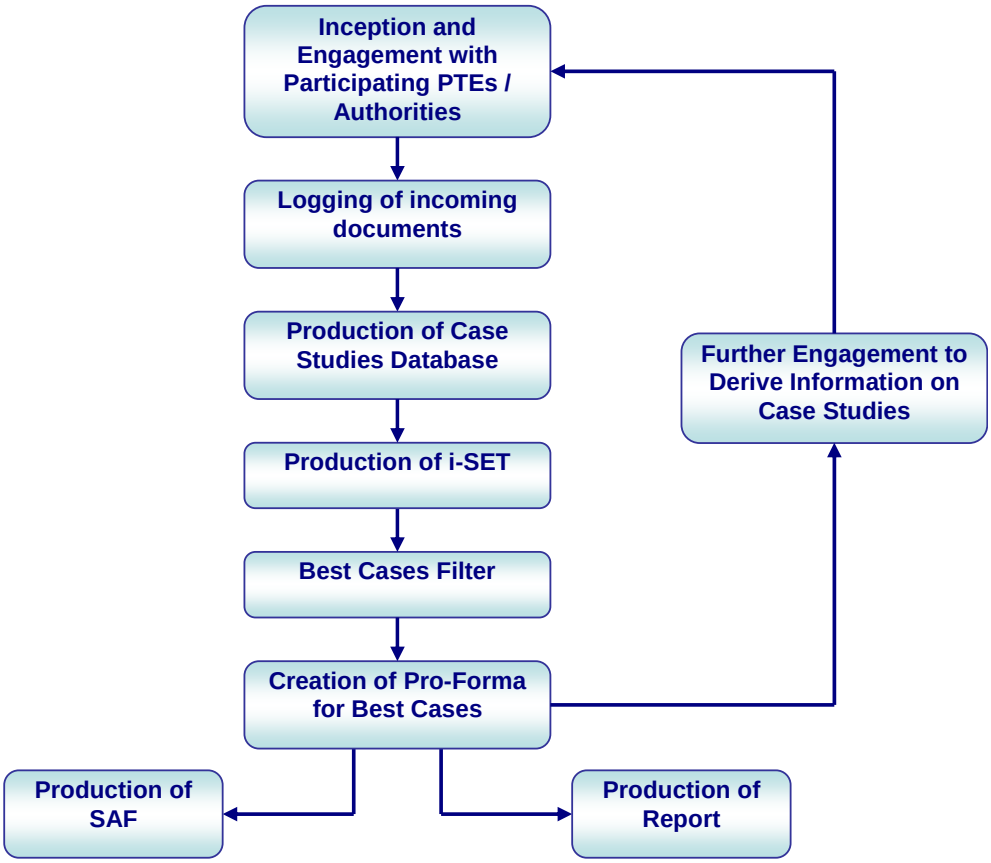
Figure 2 PTEG Small Schemes VFM Project Methodology



4.2 Data Collection Process

Data collection was pivotal to this study. Producing an extensive evidence base was necessary to provide a wide scope of small scale public transport schemes for review in terms of appraisal processes. An overview of the data collection process is shown in Figure 3.

Figure 3 Data Collection Methodology



4.2.1 Inception and Engagement with Participating PTE's / Authorities

The project commenced with an Inception Meeting to develop detailed understanding of the requirements of the study and to confirm the execution of the project. One of the most important elements of the inception meeting was identifying the key contacts from the PTEs who would provide data for the project. Table 3 identifies the contacts at the PTEs involved in this project. Pedro Abrantes, PTEG's Economist was the key point of contact at the PTEG Support Unit. These contacts were essential to the collection of data for the evidence base.

Table 3 Points of Contact at PTE's

PTE	Contact Names
Centro	Paul Cobain Rebecca Ellison Sarah Bayliss Helen Schofield
TfGM	Julian Laidler Tom Sansom
Merseytravel	David Jones Norman Rees
Nexus	Vince Hills Neill Davy Chris O'Keeffe
SYPTE	Yaron Hollander Sam Storer
TfL	Madina Fassassi Arnold Cohen
WYPTE	Chris Payne Steve Heckley Louise Porter Philip Joyce

Other sources of information have been obtained from Local Authorities; Nottingham City Council (Mark Garlick, Andy Gibbons & Chris Carter), York City Council (Tony Clark), Newcastle City Council (Roger Gill & Rohail Ahmed), Leeds City Council (Mervyn Hallworth).

4.2.2 Logging of Incoming Documents

The process of data collection and review was both thorough and extensive. An important element of the data collection system was ensuring the documentation of incoming case studies and maintaining a document code system.

The case studies received from the PTE's and Local Authorities provided the foundation to i-SET and ultimately this provided the details which underpin the mechanisms within the Simplified Appraisal Framework.

Incoming information was logged using an ID number on an incoming documents register. This included details of who sent the information, the date when the information was provided and what format the information was provided in.

4.3 Creation of the Case Studies Database

The ID number allocated within the Incoming Documents Register was used to log and extract information from the case studies in more detail into the case studies database. This was an Excel document which was used to inform the development of i-SET.

A range of sources were reviewed for the case studies database from Major Scheme Business cases to market research information. Small scale schemes were counted either as discrete schemes or derived through the disaggregation of 'composite' schemes. Information was documented using headings and sub-classifications shown in Table 4. This also allowed for consistency in the review of the incoming information and so that the maximum amount of relevant information could be quickly extracted.

The database is described in more detail in section 5.

Table 4 Information Extracted from Evidence Review

Generic Information	Type of Scheme	Scheme Sub-Type	Appraisal Information
• ID Number • PTE • Document Title • Scope of Works	Bus	Bus Priority Bus Station / Interchange Bus Real Time Information Other Bus Information Bus P&R Bus Other Quality Corridor	• NATA or Bespoke appraisal methods • BCR • Value • Post Monitoring of Scheme
	Rail/ Light Rail	Rail RealTime Information Rail Station Improvements New Rail Station Rail P&R Rail Other	

4.3.1 Best Cases Filter

Of the cases that were used in i-SET, a sift process was required to choose the schemes which represented cases of small scale schemes which showed good appraisal practice and / or good VfM.

The schemes were evaluated against the following criteria:

- Has the scheme undergone a clear appraisal process complying with NATA?
- Has the scheme undergone a VfM appraisal with a BCR calculated?
- Is the scheme subject to active / planned post-implementation monitoring of inputs?
- Does the scheme match one of the core scheme categories of interest to PTEs?
- Does the scheme identify benefits?

Schemes which agreed with these points were taken forward as detailed case studies. A total of 17 cases were taken forward which aimed to cover as many of the modes and sub-modes as far as possible across the set of PTE areas.

4.3.2 Creation of Pro-Forma for Detailed Case Studies

The selected case studies were summarised using a pro-forma template which provides key information such as scheme description, scheme objectives, scheme appraisal techniques, BCR, image of the scheme or location plan and cost of the scheme. These pro-forma provide a concise summary of each case study and present an accessible overview of the scheme, its outcomes and the appraisal practice applied in the PTE's.

4.4 Development of the Simplified Appraisal Framework

A Simplified Appraisal Framework (SAF) was required to enable robust, consistent and practical assessment of the impacts and value for money of small scale public transport schemes, making best use of information available to scheme promoters and making valid assumptions where necessary.

The information provided by the PTE's consisted of case studies which were presented in the case study database and information on existing appraisal processes, methodologies and models. Both sets of data were reviewed to inform the development of the SAF.

The SAF was developed in an Excel spreadsheet with a user interface and macro's guiding the user through the appraisal and results. The approach used within the SAF corresponds to the Economic element of the Transport Business Case approach (formerly the New Approach to Appraisal (NATA)) and the key appraisal parameters given within DfT guidance (WebTAG). The inputs were developed so that the user interface is easy to understand, simple to use and is quick to input information. The results of the SAF were designed to be quickly retrieved and simple to comprehend for the decision making process of small schemes.

The SAF was tested on a sample of case studies to test the model and demonstrate how it can be used. The SAF also provided a BCR estimate for some schemes for which no formal appraisal had been provided. The information on the development and testing of the SAF is presented in Section 8.

5 THE NEED FOR SMALL-SCALE APPRAISAL

5.1 Introduction

The government and the nation as a whole want to see that investment provides good value for money. Appraisal is used to show if good value for money can be achieved by a scheme, and to compare alternative schemes and options.

There is a lack of common guidelines for the appraisal of small scale public transport schemes and, partly as a result, there is limited publicly available analysis of the VfM case for such schemes. This may have future implications for the allocation of funding for these types of schemes and therefore an investigation into the approaches taken for appraisal and evaluation of small scale schemes is necessary.

5.2 DfT / Treasury Approaches to Investment Appraisal

The UK government's general approach to investment appraisal can be found in the Treasury's Green Book, released in January 2003. The Green Book aims to ensure appraisal is clear and uniform between schemes and departments. It seeks answers to whether there are better ways to achieve stated aims or objectives and to determine whether a scheme represents value for money. In the transport context, the principles of the Green Book have been developed into more detailed guidance known as the Transport Business Case (introduced in April 2011 and formerly known as the New Approach to Appraisal (NATA), originally introduced in 1998).

The Green Book sets out the 5-cases model for considering the social value of public expenditure and investment, as follows:

- Strategic fit
- Value-for-money
- Delivery
- Financial
- Commercial

5.3 Synopsis of Government Requirements in Major Scheme Appraisal

5.3.1 Former NATA Process

All schemes reviewed in the present study were developed prior to April 2011 when the NATA rules were in force. There were five overarching objectives which informed the NATA process:

- **Environmental impact**: A reduction in the direct and indirect impacts of transport schemes on the environment of users and non-users. This is made of a number of sub-objectives such as atmospheric pollution of differing kinds, noise and impacts on the countryside, wildlife, ancient monuments and historic buildings.

- **Safety**: A reduction in the loss of life / injuries and damage to property from transport accidents. There are two sub-objectives which are to reduce accidents and improve security.

- **Economy**: This is concerned with a better economic efficiency of transport. There are five sub-objectives which are to improve economic efficiency for users and providers of transport, to improve reliability and the wider economic impacts, and to get good value for money.

- **Accessibility**: This is concerned with the ability to reach different facilities by different modes for all societal sectors.

- **Integration**: This aims to make sure that decisions are all in the context of the Government's integrated transport policy.

Within NATA, the primary focus for value-for-money appraisal was the Economy objective, based on the assessment of the core components of transport economic efficiency largely based on the calculation of a Benefit:Cost ratio.

For each option of the scheme, it was necessary to complete an Appraisal Summary Table (AST) detailing how well that version of the scheme contributed to objectives. The AST was then used to assess whether the scheme represented good value for money overall. Where there are local objectives, a similar method using a similar AST should be developed in tandem. The AST is a standardised summary which can be used to submit an overview of the scheme to the public and to Ministers and is presented alongside its supporting analysis. The AST includes the BCR and other quantified evidence of a scheme's impacts.

5.3.2 2011 Transport Business Case

The Transport Business Case guidance requires scheme promoters to provide evidence on 5 'cases';

- Case for Change – the strategic case;
- Value for Money – the economic case;
- Commercial case demonstrating commercial viability;
- Financial Case demonstrating affordability, and;
- Management Case demonstrating that the scheme is achievable.

As schemes are developed – from concept through to detailed design – promoting authorities are required to assess the economic case for investment in progressively greater detail.

5.3.3 WebTAG

WebTAG is the Department for Transport's technical guidance on appraisal, which forms one of the cornerstones of both former NATA and the Transport Business Case process.

Investment appraisal is typically based on cost benefit analysis, which applies the principles of welfare economics. This can be described as "analysis which quantifies in monetary terms as many of the costs and benefits of a proposal as feasible, including items for which the market does not provide a satisfactory measure of economic value" (WebTAG Guidance).

Costs and benefits are presented as a Benefit to Cost Ratio (BCR). Monetary information which produces the BCR is calculated using standard software tools, TUBA, COBA and QUADRO. The results of these economic models are presented in

a Transport Economic Efficiency (TEE) table. The analysis of costs to central and local government is separated from benefits to business / consumers to form a 'Public Accounts' table. TEE table includes entries for the disbenefits (delays, increased vehicle operating costs and increased numbers of accidents) to transport users. Disbenefits caused by construction and maintenance are also included.

Development of simplified approaches to appraisal that are consistent with this guidance but applicable to small scale schemes has potential to enhance current practice by;

- Informing investment decisions on a more consistent basis across schemes of various scales;
- Informing promoting organisations about the likely performance of different investments in term of value-for-money;
- Ensuring that appraisal can be proportionate to the scale of expenditure on small schemes.

5.4 Overview of Current Appraisal Processes Employed by PTE's

Whilst PTEs and local authorities wishing to promote smaller scale public transport schemes are keen to understand the value for money of these investments, there is no requirement to employ full NATA / Transport Business Case appraisal methods. Indeed, the need for proportionality in appraisal is vital for smaller schemes. To inform decision-making and investment programming, local approaches to proportionate appraisal have been developed, in some cases based upon quantified cost benefit analysis.

From the consultations undertaken with each PTE we have ascertained current scheme appraisal and prioritisation processes employed. Table 5 summarises the prioritisation processes employed by each PTE in the development of their capital programmes. Almost all have strategic transport studies determining the overall investment priorities and programmes in terms of intervention requirements and geographic locations.

In terms of the appraisal and prioritisation of small scale public transport schemes there is a wide spectrum of practice, ranging from consensus-building approaches involving operators and key stakeholders through to rigorous but simplified appraisal frameworks which address not only value-for-money but also some of the commercial and financial considerations deemed important by sponsoring PTEs.

Table 5 Overview of PTEs' Prioritisation/Appraisal Processes

PTE	Current Prioritisation Process
Centro	Three Stage Process; • Coarse sieve against strategic objectives • Business Case Evaluation - including calculation of BCR • Transport Investment Model assessment which provides a ranking within the West Midlands capital programme
TfGM	Policy priorities set by TfGMC; strategic priorities derived from LTP. Investment appraisal of options that support strategic priorities following TfGM guidance using local simplified approaches to financial appraisal, cost-benefit appraisal, and cash-flow analysis which are used in preparation of business cases. TfGM appraisal guidance aims to provide a simplified version of WebTAG guidance to assist in the timely and proportionate assessment of smaller schemes and as preliminary appraisals of projects which may proceed to full major scheme appraisal.
Merseytravel	Priorities determined by strategic transport studies. Scheme prioritisation undertaken through framework based on strategic objectives and broad assessment of VfM. Much appraisal focused on EU requirements as key funder of transport schemes.
Nexus	Capital programme determined by Strategic Transport studies. Small schemes programme determined by internal framework based on achievement of objectives, broad VfM and deliverability.
SYPTE	Well established scheme prioritisation process used appraising against regional objectives using RAG (Red Amber Green) approach (colours allocated according to achievement of criteria using quantified and qualitative evidence). Included broad VfM for small schemes.
WYPTE	Established and continuously reviewed business case procedures to appraise investment options for strategic fit (contribution to LTP objectives and targets), deliverability / risk and value for money. Capital programmes are informed by strategic transport studies and modelling work, and are subject to stakeholder consultation (e.g. the Transport for Leeds project provided extensive research to quantify transport scheme contributions to economic, environmental and social objectives and impact per £ invested).

Tables 6 present an overview of the current approaches to appraisal carried out by PTEs for a range of different types of scheme. In the context of smaller schemes typically funded through the Integrated Transport Block and local government contributions, appraisal is undertaken at the level required to satisfy local decision makers and funders. Although smaller schemes clearly do not justify the same type of appraisal effort as major schemes, Table 6 shows that some PTEs do use decision making frameworks based on the principles of TBC/NATA, and reflecting WebTAG methods and parameter values.

Most PTE areas are also covered by strategic transport models. These models vary substantially between PTE areas, as does the purpose for which they are used, although their focus tends to be on major schemes.

Some PTEs have also invested in 'willingness to pay' research of bus and rail quality improvements for scheme appraisals and have well developed internal value for money appraisal techniques and tools in this area. Evidence from Centro, TfGM and WYPTE were used in the development of our Simplified Appraisal Framework alongside published research into the value of soft measures.[6]

[6] Aecom (2009) The Role of Soft Measures in Influencing Patronage Growth and Modal Split in the Bus Market in England, report to the Department for Transport.

Table 6 Level of Detail of VfM Appraisal Methods Employed by PTEs

PTE	Quality Bus Corridors	Bus Stations and Interchanges	Real Time Information	Bus Park and Ride
Centro	Application of Transport Models and WebTAG procedures.	Application of 'willingness to pay' based models	Application of 'willingness to pay' based models.	Some market research evidence only
TfGM	Application of Transport Models and WebTAG procedures.	Application of investment appraisal tool incorporating 'Willingness to pay' value from SP.	Application of investment appraisal tool incorporating 'Willingness to pay' value from SP.	Network-based model developed for one specific corridor.
Nexus	Application of Transport Models and WebTAG procedures.	After surveys evidence only	N/A	N/A
SYPTE	Application of Transport Models and WebTAG procedures.	After surveys evidence only	After surveys evidence only	Some market research evidence only
WYPTE	Application of Transport Models and WebTAG procedures including 'willingness to pay' research for quality / reliability.	After surveys evidence and ex-ante appraisal based on qualitative judgement.	Bespoke Appraisal Cost/Passenger and Qualitative Benefits	N/A

5.5 Review of VfM Evidence from PTEs

Review of the evidence provided by the PTEs, revealed that differing approaches have been taken to appraising small scale public transport schemes, a NATA / WebTAG style approach (typically for larger schemes) and more bespoke methods. In some cases, a BCR value was given but the methods to derive the value were not always evident.

49% of the cases had a BCR value however only 11% of these were calculated using a NATA / WebTAG approach and, in all but one cases were for bus schemes, the majority of which were over £5m. The remaining 89% cases which gave a BCR value were appraised using bespoke methods and only 2 of these cases were above the £5m threshold.

The remaining 51% of information received was generally not based on appraisal methods but rather on post monitoring and market research information. This information provides insight into how well a scheme is received by the general public and can therefore demonstrate scheme benefits though not precise demand impacts.

It appears that when it comes to the appraisal of small scale schemes, bespoke methods are more common. This could be due to bias in the type of data received so that NATA/WebTAG methods were not as equally represented in the database or that bespoke methods reflect inputs of the PTE area better. Another, perhaps more likely, explanation is that strict WebTAG methods are disproportionate in complexity relative to the scale of small schemes. In fact, we were told by some PTE officers that they felt WebTAG requirements (in particular relating to model calibration/validation) to be disproportionate to the degree of complexity of most medium and large scale public transport schemes, which can often be no more than a combination of a number of smaller schemes whose impact can often be easy to quantify accurately using simpler methods.

6 EVIDENCE ON THE VFM OF SMALL SCALE PT SCHEMES

6.1 Introduction

This chapter describes in more detail the depth of the information received from PTEs and the creation of the i-SET (Interactive Scheme Evidence Tool) database used to select the good practice case studies. The initial focus of the chapter is a broad review of the received information and the areas of transport it covers. We then focus on a small number of detailed case studies and 'lessons learnt'.

6.2 Development and Application of the I-SET Evidence Database

The i-SET spreadsheet database was created to summarise and analyse all the information received from the PTEs and other local government bodies. The database accompanies this report.

i-SET is a document library of relevant received case studies. It is an Excel-based search tool which allows searches of the full information collected.

Key aspects are;

- It contains 149 entries;
- The database contains search criteria with drop–down menus for sorting information by PTE / Scheme Promoter, Type of Scheme, value (scale) and BCR range.
- The search reports the schemes selected in a table detailing; Scheme ID (Reference number) Scheme Title, PTE, Mode, Sub-type, Post Implementation monitoring, Value, BCR and a ink to view the scheme details.
- Macros are provided to search, clear the selection and export results.
- Information can also be extracted from the search into a matrix format for 'at a glance' comparisons
- A 1 page summary of each scheme is reported detailing key aspects captured from the information provided and a link to the scheme promoter.

Further details of i-SET are included in Appendix C.

From the initial assessment of PTE information, an assessment of gaps in the evidence was made and further requests made to the PTE's and partner organisations to secure further evidence to complete the database.

6.3 Overview of Received Information

The information requested from the PTEs was for small scale schemes i.e. those up to £5m, though large quality bus corridor schemes were also requested. Bus, rail and light rail schemes were all considered however, softer measures were specifically excluded since they fall under areas where good VfM evidence is largely available.

The information received was first logged and then filtered to identify those case studies containing the most complete and useful information in illustrating VfM and appraisal methods.

Evidence within the database provides insight into a wide range of schemes, from different areas and with significant variation in capital cost. Schemes ranged from real time information improvements to traffic light priority schemes and park & ride schemes. Current appraisal practice, methodologies and models were also provided.

After deconstructing grouped schemes into separate small schemes, there were 158 example cases in the database. 72% of the cases were related to buses and 21% related to rail, another 3% of information was for 'all modes'. The remaining information could not be classified as a mode (typically appraisal guidance information).

6.4 Case Studies by Type of Scheme

A wide range of investment areas were identified. These were categorised under the headings provided in Table 4 in section 4.3.

The majority of cases focused on bus priority and quality bus corridor schemes. These were fairly evenly spread amongst PTEs.

Rail station improvements and rail park and ride within the mode of 'rail / light rail' were most prevalent amongst rail schemes. Most of the rail studies came from SYPTE.

Some of the bus schemes represented a significant capital commitment. For example, Leeds NGT is valued at around £245 million and the Leeds A65 quality bus corridor scheme at £20.7 million. Although these are beyond the definition of small-scale schemes within this study, these cases provide considerable detail about their appraisal process and the facilities that will be provided as part of the scheme and were therefore of considerable value to the creation of the economic appraisal tool (SAF). Effectively the appraisals may be the same as for smaller schemes except in scale.

At the other end of the cost scale were a number of schemes under £100k which showed strong BCR values, although many did not use the NATA/WebTAG framework for appraisal and often relied on bespoke methods instead. This emphasises the potential benefits of improved guidelines for appraising small scale public transport schemes. Some of these cases also provided useful inputs for the SAF.

There were fewer cases within the database for bus real time information (RTI), rail real time information schemes and new rail stations. Many of the cases received for these were not appraisal schemes but post implementation studies. However, ex-post information provides information on whether the scheme has delivered benefits and therefore can be a good indication of scheme VfM. Some of these examples have therefore been retained as detailed case studies and can be found in Appendix A.

In some cases ex-post monitoring information provided results capable of comparison with ex-ante information, allowing consideration of whether VfM envisaged at the project conception had been achieved. Examples of this are the bus priority schemes in Tyne and Wear and intelligent traffic light priority in West Yorkshire.

42 of the 158 cases provided gave a BCR value produced through either a bespoke or NATA method. Of these, 36% were scores relating to rail schemes and 64% were from bus schemes.

The distribution of information received and the number of schemes received from the PTEs with a BCR value is shown in Figure 4. A quarter of the schemes had a BCR calculated. More than half of the quoted BCR's were for bus schemes.

Figure 4 Breakdown of Schemes with BCR by Mode

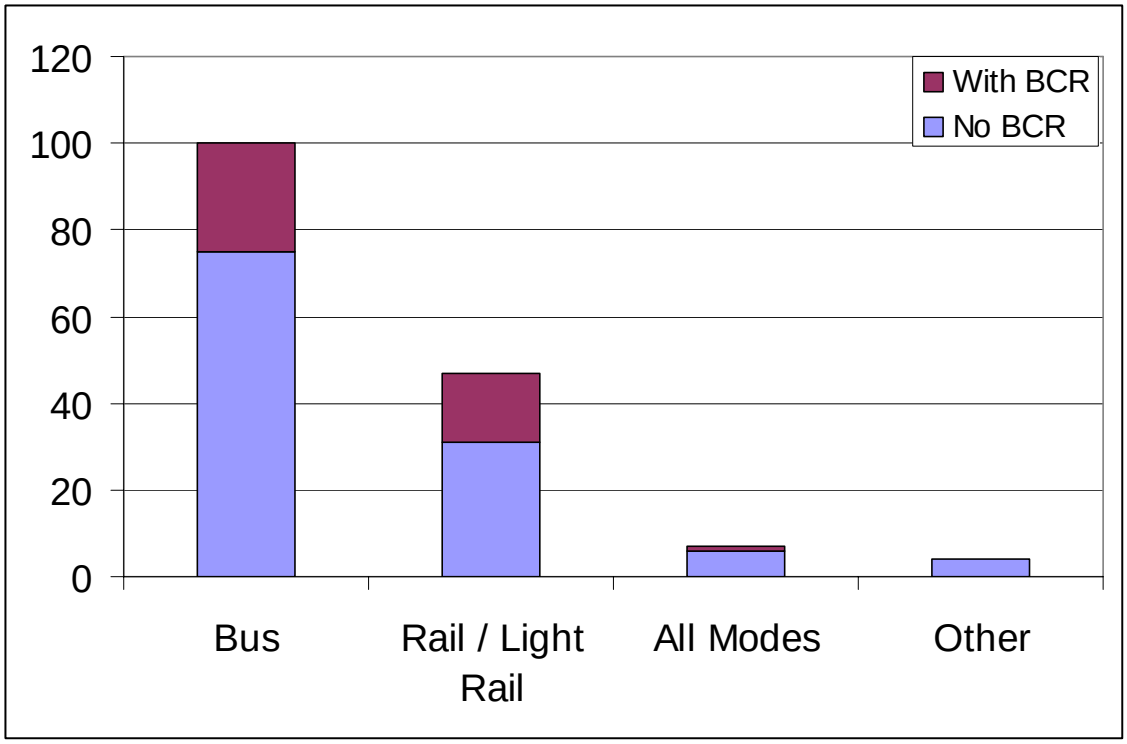


Figure 5 demonstrates the range of BCR values from each PTE. The majority of cases shown indicate that small scale schemes have shown good VfM. Of the schemes shown in Figure 5, 17% were in the 'low' VfM category, 25% were of 'medium' VfM, 28% showed 'high' VfM and 28% indicated 'Very High' VfM.

Figure 5 Range of BCR Values from Case Study Material

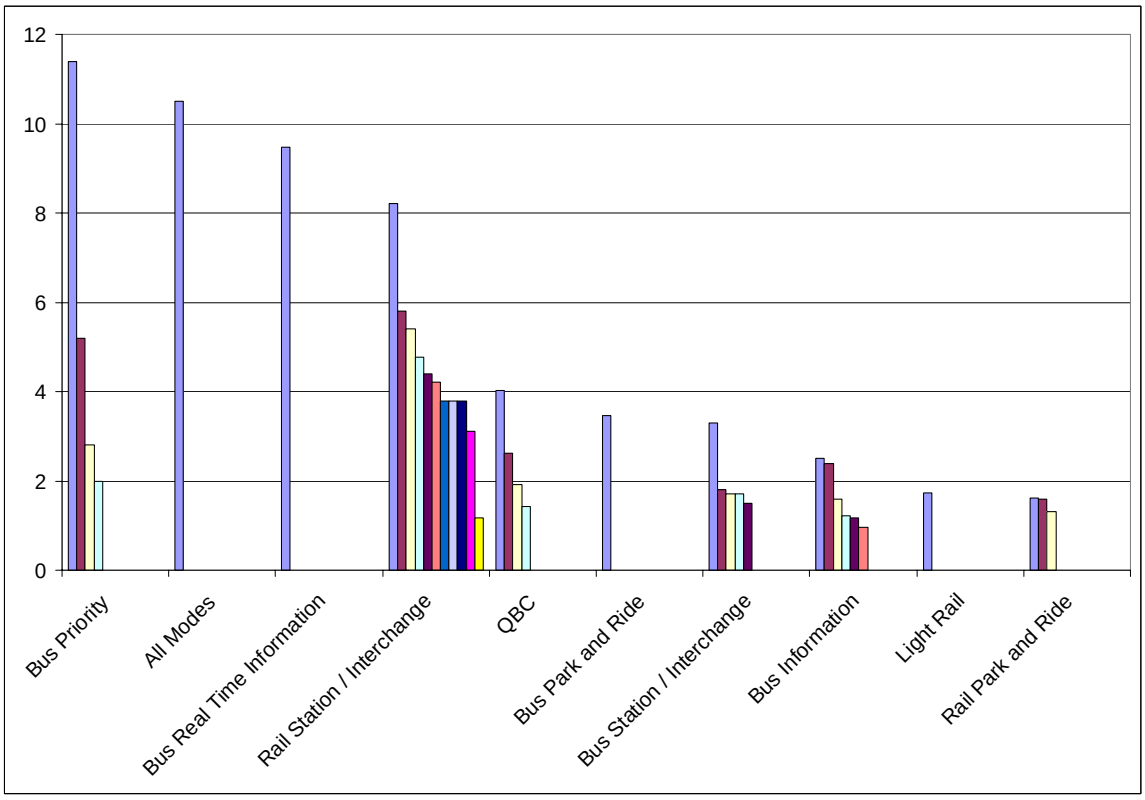


Table 7 summarises the average BCR by scheme type and the standard deviation (note that where there was only 1 example scheme in the category the standard deviation cannot be shown). This highlights that though the average BCR's for bus priority schemes are high there is significant range in the values, whereas though the BCR's are smaller for Bus information and Rail Park and ride schemes there is a small range in the data. The table shows that most categories of public transport schemes have high benefit cost ratio's and the average for all schemes is 3.5:1.

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Table 7 Average BCR and Standard Deviation by Scheme Type

Scheme Type	Average BCR	Standard Deviation	Number of Schemes
QBC	2.5	1.1	4
Bus Priority	5.4	4.3	4
Bus Information	1.6	0.7	6
Bus Real Time Info	9.5		1
Bus Station / Interchange	2.0	0.7	5
Bus Park and Ride	3.5		1
Rail Station Improvement	4.4	1.8	11
Rail Park and Ride	1.5	0.2	3
Light Rail	1.7		1
All Modes	10.5		1

6.4.1 Summary of VfM Evidence

The schemes analysed in this project had three main types of impact: user benefits, 'mobility' benefits and 'efficiency' benefits (Litman, 2011[7]).

User benefits result in improvements for travellers such as improved comfort, journey times or monetary savings. Improvements in facilities such as better bus stops and real time information also provide benefits to users. Examples of schemes which have shown good user benefits are priority lanes in Tyne and Wear where 'no car' priority lanes have shown large percentage decreases in traffic volumes; intelligent traffic light priority in West Yorkshire has shown, for some areas, a reduction in average inter-peak journey times of up to 30 seconds per journey per signal location.

Efficiency benefits are those which result from mode shift such as reductions in accidents, congestion or emissions. Examples of this include Acocks Green car park extension where 17% of people surveyed were new users of the park & ride, transferring from other motorised modes. Appraisals for Leeds New Generation Transport (NGT) identify reductions in greenhouse gas emissions of 516 tonnes per year in 2016.

Mobility benefits are those which help physically, financially or socially disadvantaged people. Improvements which aid accessibility to key services and employment provide the greatest mobility benefits. Examples of such cases are the Social Inclusion Facility Evaluation Model and the Workwise[8] scheme both delivered by Centro. These are however, considered to be 'soft' measures rather than fitting within the categories of small public transport schemes defined for the study.

The case studies assembled in this study have shown that a range of benefits can be generated by small scale schemes. However, the levels of benefits can be quite variable and are often related to the type and scale of the scheme. This can be exemplified by the case for increasing perceptions of security amongst users. In the case of Wythenshawe Bus Station, this scheme presents 4 options for the station layouts and notes that one of the advantages of the preferred design is that the waiting areas are grouped and therefore perceptions of security would be improved.

Conversely, a scheme of bus shelter improvements providing CCTV has shown strong positive benefits reflecting reductions in crime and therefore potential user safety benefits but at a lower financial burden. However, without BCR values for all schemes identified in this study and comparable evaluation / appraisal material it is difficult to make more direct comparisons of costs, relative benefits and value for money.

Results of market research also indicate that benefits of a scheme are sometimes not easy to express in monetary terms. For instance, users of the Washington Galleries Bus Station felt that some of the best improvements from the scheme were that the space was brighter and lighter which promoted a positive attitude towards using the station. Another example is the MyBus scheme, in which children felt more confident using public transport.

Transport Benefit:Cost ratios are therefore not the only relevant measure of the value of a scheme.. For example, impacts on the quality of the public realm can be a material benefit for some schemes. Transport for London has suggested that the case for high quality schemes such as public transport interchanges can be improved if

[7] Litman, T (2011) Evaluating Public Transit Benefits and Costs Best Practices Guidebook, Victoria Transport Policy Institute

[8] For further details refer to I-SET

benefits which are not as tangible as 'traditional' benefits such as increased patronage can be shown. Extraneous benefits derived from a positive impact on the public realm include increasing business activity close to the improvement, improving public perceptions of safety, enhancing the urban realm or providing efficiency savings for operators (TfL, 2011). The inclusion of public realm benefits to enhance the appraisal process for small scale schemes and ultimately, their VfM can thus be positive. Difficulties in quantifying / monetising some benefits should not preclude their inclusion in a scheme appraisal (TfL, 2011).

Many of the case studies show that some of these public realm impacts have already been realised contributing positively to the VfM of a scheme beyond that considered in standard appraisal practice. Moreover, monitoring and evaluation of these factors would provide greater certainty of these impacts and provide a basis for more routine inclusion in appraisal techniques. If proven more widely, they can further enhance the case for small scale public transport schemes.

At the lower cost end of the spectrum (schemes less than £2m) were improvements to signals to facilitate bus priority, bus real time information, the replacement and improvement of bus shelters and the use of MyBus school buses. These schemes all had BCR values in the range of medium to very high VfM. The benefits they provide are more localised to the scheme and to the people who use them, such as localised journey time savings, improvements to feelings of security and accessibility improvements.

Higher cost schemes were packages of measures which offer large benefits to all users and often to non-users, including QBC schemes, new bus stations and bus-based park & ride. The benefits they offer were spatially and temporally greater and contribute to better accessibility, reductions in social exclusion, changes to employment in terms of work patterns and geographies and can help reduce pollutants. These types of schemes typically showed medium BCR values.

Small rail and light rail schemes were typically station improvements and park & ride expansion schemes, and showed medium to very high BCR values. The schemes covered include passenger information systems, CCTV and accessibility improvements. These packaged measures provide benefits of modal shift (and therefore associated changes in air quality and accident reduction from reduced car use) and improved patronage and revenue as well as a range of other benefits.

6.4.2 Evidence Gaps

Despite a good variety of studies received from PTEs and local authorities there were some areas which were not well documented, such as bus park & ride. In other areas, notably bus priority schemes, there is a larger UK and international evidence which we were unable to tap into largely due to time constraints. In that particular area it is worth reading the present report in conjunction with other research, in particular a recent report by UiTP[9], which suggests that investment in traffic signal priority can be repaid in 3-16 months. Assuming an asset life of 10 years, this would give a Benefit:Cost ratio between 7.5 and 40, which is even higher than that found for some of the schemes included in our database.

[9] UiTP (2009) Review of bus priority at traffic signals around the world.
http://www.tfl.gov.uk/assets/downloads/businessandpartners/interaction-of-buses-and-signals-at-road-crossings(1).pdf

Overall, there was a marked lack of evidence comparing post implementation/market research and 'ex ante' information. Moreover, market research evidence tends to focus on passenger satisfaction rather than quantification of increased passenger trips or reduced journey times and other conventional user and non-user benefits. Where more detailed post scheme monitoring was undertaken the problems of sample size (when searching for relatively small impacts) and background changes in travel patterns (churn) such as work / education / home changes affected interpretation of scheme impacts. The time lag between project appraisal, completion and post scheme monitoring can also be a significant problem, which can potentially change public perceptions of a scheme's benefits and mask some of the underlying effects. A more general issue is that post implementation monitoring is not common practice due to funding constraints.

Another issue was that much of the material received tended to be summary information or statistical analysis of schemes rather than full business cases. This meant that important information required to derive value for moneywas sometimes not available.

7 DETAILED CASE STUDIES

7.1 Selection of Case Studies

Table 8 shows the selected case studies which were chosen so as to;

- Provide examples of each scheme type;
- Draw from examples of scheme appraisals generating a Benefit Cost Ratio;
- Draw from post implementation research / results, and;
- Provide a geographical spread of case studies from a variety of PTE's and partners.

In total, 17 case studies are presented using a standard pro-forma designed to summarise information in a consistent manner.

The case studies have been used to understand what can be learnt from a wide range of schemes, current application of appraisal techniques (bespoke or NATA), what benefits have been achieved through schemes, and which schemes appear to offer VfM. Lessons learnt from these case studies may help to inform small scheme appraisal in the future.

The modes and sub-modes included within the list of case studies are:

- Bus
  - Bus priority,
  - Quality Bus Corridors,
  - Bus Information
  - Bus Real Time Information
  - Bus Station / Interchanges

- Rail
  - Rail Station Improvements
  - Rail Park and Ride

There are two broad types of case study:

- **Appraisal** – used NATA / WebTAG style approaches or bespoke appraisal methods to obtain a BCR to describe VfM. It is important to note that many of these cases are well above the £5m value.

- **Evaluation / Customer Satisfaction** - Matching of ex-ante and ex-post evidence which can demonstrate the VfM of a scheme following its rollout. None of the evidence reported a post-scheme implementation but we have applied the SAF to some reported outcomes to derive a post scheme BCR. Evidence from market research generally reports strong public perceptions of benefits after scheme implementation. There were very few examples of both appraisal and evaluation for the same scheme. The one case study selected is Acocks Green (Birmingham) Park and Ride which was also tested in the SAF.

Development of the Simplified Appraisal Framework provides a means to appraisal value-for-money retrospectively should further details on costs and impacts be available in future.

Table 8 Case Studies Selection Against Criteria

	Scheme	Bus QC	Bus Priority	Bus station / Interchange	Rus RTI	Bus P & R	Bus Vehicle Quality	Rail Station	Rail P&R	NATA	Value	BCR?	Post Scheme Evaluation
1	Project 3rd Generation Bus Priority Programme (3GBP) Route 177 Section H		✓								£0.3m	✓	
2	Centro Real Time Information Review				✓								✓
3	Mybus North Halifax Grammar School						✓				£0.5m	✓	✓
4	Tranche 3 Rail Station Improvements Strategy: Heald Green							✓		✓	£0.1m	✓	
5	Outer Circle Quality Corridor	✓								✓	£17m	✓	
6	Assessment of Priority Lanes in Tyne & Wear		✓										✓
7	Transforming Bus Travel Infrastructure			✓						✓	£1.7m	✓	
8	Dudley Port Park and Ride								✓	✓	£0.9m	✓	
9	Washington Galleries Bus Station			✓									✓
10	Rotherham - M1 QBC	✓											✓
11	Derby Road Modal Shift Project (Quality Corridor)	✓					✓				£0.5m		✓
12	Intelligent Traffic Light Priority in West Yorkshire		✓								£3m	✓	✓
13	Access York Phase 1 Park and Ride Development					✓				✓	£25m	✓	
14	A65 QBC Scheme Funding Submission	✓								✓	£21m	✓	
15	Leeds New Generation Transport (NGT)	✓					✓			✓	£245m	✓	
16	Integrated Transport Knowledge Base (ITKB)				✓					✓	£1.3m	✓	
17	Acocks Green Rail Park & Ride Expansion								✓	✓	£0.4m	✓	✓

7.2 Case Study Information

The detailed case study summary sheets are included below.

Case Study Profile: Summary

Scheme Name:	A65 QBC Scheme
PTE Area	Metro
Scheme Type	Bus
Scheme Sub-Type	Quality Bus Corridor

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	✓
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

A Quality Bus Corridor on the A65 route extending from Leeds city centre to Rawdon. The scheme design incorporates bus lanes with gating and pre signal control.

Scheme Costs (£000s) £20,600

Scheme Objectives

- Reduce the delays to bus services currently experienced along the corridor;
- Reduce the variability in the delays to bus services;
- Improve the level of service and attractiveness of public transport along the corridor
- Promote modal shift by the provision of an attractive public transport alternative to the private car;
- Provide an integrated public transport system
- Contribute to the LTP targets of reducing the rate of traffic growth and increasing the use of public transport;
- Minimise the impacts of the scheme on non-users;
- Provide enhanced access measures and facilities for pedestrians and cyclists;
- Promote equal opportunities;
- Reduce severance and accidents by the provision of additional crossing facilities.

Appraisal Techniques

The MSBC conforms to the New Approach to Appraisal (NATA) following guidance for Local Authorities seeking Government funding for Local Schemes..

Appraisal Inputs

- Outputs e.g. traffic flows, car park occupancy from AIMSUM/SATURN traffic model to inform assessments of economy, safety and some of the environmental objectives
- Scheme Costs
- Assessments for environment, integration, accessibility objectives

i-SET Database Scheme ID	ID 059
Location	A65 from Leeds City Centre to Rawdon

Appraisal Information (required inputs for SAF)

Source Data Type: Model outputs (e.g TUBA & SATURN model)

Journey Time Savings	6-7 minute improvement in bus journey times AM peak inbound and PM peak outbound Improvements of 3-4 minutes at other times.
Journey Time Reliability	-
Improved Facilities (at the station)	Pedestrian crossings and cycle facilities
Improved Facilities (on the bus/train)	Low floor buses
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	Scheme minimises the impact on non-users. Small congestion relief benefits for car users from bus lane
Patronage	Generates an extra 276,000 bus trips annually
Revenue Generated (e.g.ticket cost)	Net present Value of Benefits (PVB) £46m. The Net Present Value (NPV) of the scheme is £22m.
Scheme Costs (Capital & Operating)	Capital Cost = £20.6m, Annual Operating Cost = £42k

Post Implementation Monitoring? Key Impacts?

None available

Benefit : Cost Ratio (if known)

Very High >4 High 2-4
Medium 1-2 Low <1

1.9

Scheme Contact and Email

Gary.bartlett@leeds.gov.uk

Case Study Profile: Summary

Scheme Name: Outer Circle Quality Corridor

PTE Area Centro

Scheme Type Bus

Scheme Sub-Type Quality Corridor

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	✓
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description

Introduction of a Quality Bus Corridor on the A4040 Outer Circle, Birmingham

Corridor to include bus lanes, junction improvements, cycle features and new or improved pedestrian facilities.

Scheme Costs (£000s) £16,800

Scheme Objectives

- To encourage modal shift
- To help reduce congestion
- To make public transport more attractive
- To improve bus journey times and reliability

Appraisal Techniques

NATA appraisal for LTP Annex E submission following major scheme guidance.

Appraisal Inputs

- Public Transport Assignment model forecast public transport impacts
- Journey time savings forecast from local model
- Generated demand factor based on surveys of previous QBC schemes
- Patronage growth rate assumed to halve annually in line with DETR advice
- Revenues for Outer Circle calculated using standard revenue rates (11p/km)
- Operating costs - DETR formulae in Highways Economics Note 2
- Time savings benefit – local model (spreadsheet)
- Decongestion benefits from car transfer using DETR standard rate of 10p/km
- Impacts on freight - observed proportions of freight traffic in traffic surveys
- Disruption During Construction - % annual traffic disbenefits relative to build time

i-SET Database Scheme ID ID 035a

Location Birmingham Outer Circle (Perry Barr, Yardley, King's Heath and Bearwood)

Journey Time Savings	Bus time savings of 15-20 minutes each (12-14%)
Journey Time Reliability	Assessment of reduction in lateness and variability of lateness suggests possible savings of £7.6m and £5.6m p.a.
Improved Facilities (at the station)	✗
Improved Facilities (on the bus/train)	Low floor buses were part of the scheme
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	Net time increase for orbital traffic of up to 2½ minutes per vehicle. Induced traffic disbenefits (Year 1) = £0.3m.
Patronage	Average Existing Passenger Numbers per day = 2800
Revenue Generated (e.g. ticket cost)	Net Revenue Gain (Year 1) = £1.068m
Scheme Costs (Capital & Operating)	Capital Cost = £16.8m, Annual Operating Cost = £200,000

Appraisal Information (required inputs for SAF)

Source Data Type: Models built for years 2005 and 2034 using TEMPRO forecasts

Post Implementation Monitoring? Key Impacts? None

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

5.4

Scheme Contact and Email RebeccaEllison@centro.org.uk

Case Study Profile: Summary

Scheme Name:	Leeds New Generation Transport (NGT)
PTE Area	Metro
Scheme Type	Bus
Scheme Sub-Type	Quality Bus Corridor

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	✓
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description	Introduction of single deck, articulated trolleybuses along a 14 km network, comprising a city centre hub with 3 radial lines - creating a showcase bus system. High quality, highly segregated, rapid transit service with greater reliability and faster journey times than existing bus services. Park & Ride sites; North Line at Bodington, South Line terminus at Stourton providing 3,000 spaces.
Scheme Costs (£000s)	£244,900

Scheme Objectives

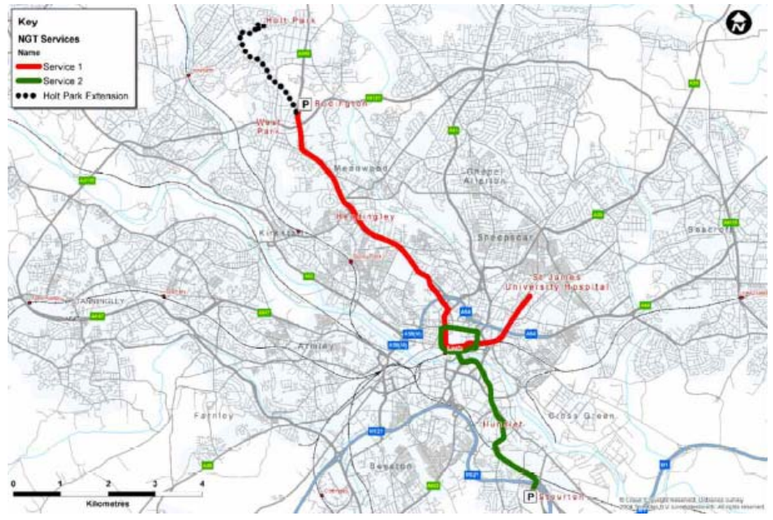
- Improve Public transport in Leeds – provide more reliable and punctual journeys, lower emission vehicles
- Highway Network – reduced congestion and GHG emissions, encourages modal shift
- Social Equality – assist in the regeneration of pockets of deprivation, link people to employment opportunities
- Economy – reduce unemployment by linking people to jobs

Appraisal Techniques	NATA style appraisal techniques: Transport Economic Efficiency and Full AST. Wider analysis of distribution and equity affordability and Financial Sustainability; and practicality and public acceptability

Appraisal Inputs

- Public transport and highway demand-TEMPRO 5.4
- Highway data-SATURN model
- Levels of demand by bus route from Electronic Ticket Machine (ETM)
- Validation of base year PT assignment model bus times- on-board Automatic Vehicle location (AVL)
- City centre parking charges roadside interview data.
- Mode choice model

i-SET Database Scheme ID	ID 058
Location	Leeds City Centre loop with three radial lines to Stourton (South Line), St James's University Hospital (East Line) and Bodington (North Line).



Appraisal Information (required inputs for SAF)

Source Data Type: Model Outputs (e.g TUBA)

Journey Time Savings	peak direction improvements of 3-4 minutes / bus
Journey Time Reliability	Valued as £94m PV
Improved Facilities (at the station)	pedestrian crossings and cycle facilities
Improved Facilities (on the bus/train)	Low floor buses are part of the scheme
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	£525m public transport journey time benefits £14m of net highway congestion relief.
Patronage	-
Revenue Generated (e.g. ticket cost)	Revenue forecast = £10.4m . Average yield £1.33
Scheme Costs (Capital & Operating)	Capital Cost = £245m, Operating Cost = £4.7m

Post Implementation Monitoring? **Key Impacts?**	None
Benefit : Cost Ratio (if known) Very High >4 High 2-4 Medium 1-2 Low <1	**2.6**
Scheme Contact and Email	dave.haskins@wypte.gov.uk gary.bartlett@leeds.gov.uk

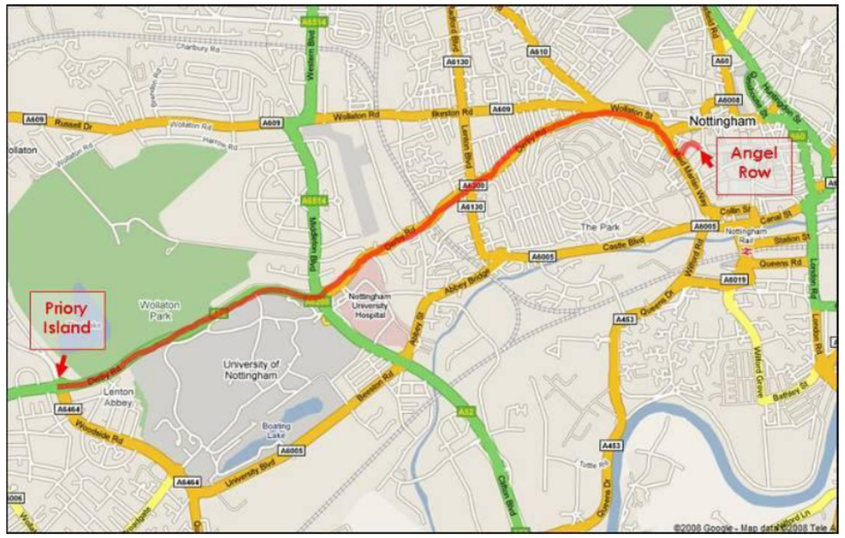
Case Study Profile: Summary

Scheme Name: Derby Road Modal Shift Project (Quality Corridor)

i-SET Database Scheme ID ID 066

PTE Area Nottingham City Council

Location Derby Road, Nottingham



Scheme Type Bus

Scheme Sub-Type Quality Bus Corridor

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

Nottingham City Council with local bus operators, implemented a series of measures along Quality Bus Partnership Corridors in the city, to generate more bus travel and induce modal shift. The Derby Road improvements implemented were;

- 24h bus lanes
- High quality bus shelters with cased timetables and real time information
- 'Citycard' Travel card
- Information hubs
- Onboard CCTV
- Low floor buses

Scheme Costs (£000s) £9,000 (£8,000 of this for new vehicle costs, £459 from Nottingham City Council for infrastructure and promotional costs)

Scheme Objectives

- Investigate the impacts of the soft measures implemented on the Derby Road Corridor on influencing modal shift and behavioural change.
- Develop a series of recommendations for future investment in soft measures elsewhere in the conurbation.

Appraisal Techniques Use of timing points along the route, quarterly patronage data, total sales of 'kangaroo' tickets, customer satisfaction surveys, focus groups, stakeholder meetings.

Appraisal Inputs For appraisal with the SAF existing passenger numbers, costs and facility improvements were input from the available evidence.

Appraisal Information (required inputs for SAF)

Source Data Type: Observed Values

Journey Time Savings	✓
Journey Time Reliability	✓
Improved Facilities (at the station)	RTPI improved shelter and timetable cases, 'info hubs'
Improved Facilities (on the bus/train)	Low floor buses
Non-User Benefits**	✓
Patronage	✓
Revenue Generated (e.g.ticket cost)	✓
Scheme Costs (Capital & Operating)	£9m Capital £48.6k p.a. operating

Post Implementation Monitoring? Key Impacts?

- Stabilised punctuality for buses
- Some increased patronage
- Slight increase is customer satisfaction
- Perception that CCTV makes passengers feel safer
- Perception that RTI brings considerable benefits to scheme

Benefit : Cost Ratio (if known), Very High >4 High 2-4 Medium 1-2 Low <1

7.6 (calculated by application of the SAF)

Scheme Contact and Email Mark.Garlick@nottinghamcity.gov.uk

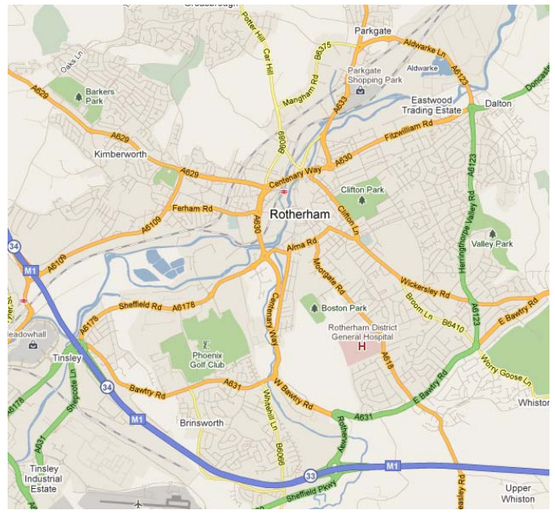
Case Study Profile: Summary

Scheme Name: Rotherham - M1 QBC

Mi-SET Database Scheme ID ID108

PTE Area SYPTE

Location Rotherham, South Yorkshire



Scheme Type Bus

Scheme Sub-Type Quality Bus Corridors

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	✓
Has the scheme undergone a VfM appraisal with a BCR calculated?	
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description In partnership with the bus operators and Rotherham MBC, SYPTE developed a Quality Bus Corridor on the Rotherham – M1 corridor.

Scheme Costs (£000s) Not Supplied

Scheme Objectives

Objectives of the scheme are to:

- Improve bus journey times and their reliability along the corridor.
- Improve facilities for bus passengers
- Encourage modal shift from private car to public transport.

Appraisal Techniques ‘Before’ and ’after’ surveys were carried out by conducting interviews with residents along the full length of the corridor. A total of 500 respondents were interviewed for the ‘before’ surveys and 503 were interviewed for the ‘after’ surveys.

Appraisal Inputs Not Supplied

Appraisal Information (required inputs for SAF)

Source Data Type: Appraisal information not provided

Journey Time Savings	✗
Journey Time Reliability	✗
Improved Facilities (at the station)	✗
Improved Facilities (on the bus/train)	✗
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	✗
Patronage	✗
Revenue Generated (e.g.ticket cost)	✗
Scheme Costs (Capital & Operating)	✗

Post Implementation Monitoring? Key Impacts?

- More users of the service since the ‘before’ surveys
- Three quarters of non-users might use the bus if improvements are made (one quarter would never use bus).
- Some respondents not aware of any improvements along the corridor. Of those which did, users saw improvements to journey time reliability and non-users saw improvement to roadside infrastructure.

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

Not supplied

Scheme Contact and Email **Leanne Holgate, SYPTE, 0114 2211408**

Case Study Profile: Summary

Scheme Name: Project 3rd Generation Bus Priority Programme (3GBP) Route 177 Section H

Mi-SET Database Scheme ID ID 112b

PTE Area TfL

Location London

Scheme Type Bus

Scheme Sub-Type Bus Priority

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description Route 177 Section H is on Basildon Road, between Plumstead High Street and Harrow Manor Way (LB Greenwich). Introducing a mini-roundabout and one way working at Basildon Road j/w McLeod Road so priority can be restored for buses; currently this junction is a give way junction where the 177 gives priority to other traffic. Proposed new Parking Bays and Revision of Waiting and Loading on Eynsham Drive, introducing yellow lines where parked vehicles are obstructing 2 way traffic flow.

Scheme Costs (£000s) £215

Scheme Objectives

-
- 3G Route 177 Section H aims to improve service reliability, minimise delays and protect buses from future traffic congestion
- To contribute towards meeting the projected demand for bus transport over the next 10 years
- To deliver real journey-time savings, equivalent or in excess of the effects of congestion (predicted to be c. 13% increase by 2016) and to reduce journey time variability for the chosen routes
- To allocate road space to sustainable modes of transport

Appraisal Information (required inputs for SAF)

Source Data Type: Appraisal information not provided

Journey Time Savings	✓
Journey Time Reliability	✓
Improved Facilities (at the station)	×
Improved Facilities (on the bus/train)	×
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	✓
Patronage	✓
Revenue Generated (e.g.ticket cost)	✓
Scheme Costs (Capital & Operating)	**£215k**

Appraisal Techniques The BCR value has been based only on journey time benefits.

Post Implementation Monitoring?
Key Impacts? None

Appraisal Inputs The key assumptions included: A congestion rate increase for London which will increase bus journey times similarly and cost / benefit assumptions from a cost validation report /feasibility report. Non-quantifiable benefits noted as part of the business case including better bus quality services for communities arising from protected bus journey times, potential modal shift, improved accessibility and social inclusion form DDA compliance, promotion of sustainable modes, reductions in pollution and improvements for all road user including pedestrians and cyclists.

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

11.4

Scheme Contact and Email madinafassassi@tfl.gov.uk

Case Study Profile: Summary

Scheme Name: Implementation of Intelligent Traffic Light Priority in West Yorkshire

i-SET Database Scheme ID: ID 065 and ID 036

PTE Area: Metro

Location: Throughout West Yorkshire

Scheme Type: Bus

Scheme Sub-Type: Bus Priority

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	✓
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

Implementing bus priority measures at 67 junctions throughout West Yorkshire. Traffic Light Priority using GIS detection enables signals to turn green (or remain green) to facilitate bus movements and help maintain reliable journey times.

Scheme Costs (£000s)

£2,950

Scheme Objectives

Improve bus journey times and their reliability along key public transport routes.

Appraisal Information (required inputs for SAF)

Source Data Type: Predicted Values

Journey Time Savings	Total thoughout W.Yorkshire: £12.1million
Journey Time Reliability	Not detailed
Improved Facilities (at the station)	✗
Improved Facilities (on the bus/train)	✗
Non-User Benefits**	Accident savings throughout W.Yorkshire: £210,231
Patronage	Not detailed
Revenue Generated (e.g.ticket cost)	✓
Scheme Costs (Capital & Operating)	Throughout W.Yorkshire: £2.95m

Appraisal Techniques

At each of the 67 junctions where priority measures were proposed, a BCR was calculated, using a spreadsheet based calculation. User benefits were calculated from time savings input from the traffic light simulation models and estimates of passengers volumes at each junction.

Post Implementation Monitoring? Key Impacts?

Using SPRUCE, Metro has been able to reliably measure the benefits of implementing bus traffic light priority schemes. Three junctions have been monitored post-implementation and show that averaged throughout the day, bus journey time reductions are in the region of 5 – 10 seconds per bus per junction. However, in inter-peak times, this reduction increases to up to 30 seconds due to lack of synchronisation between traffic lights and bus journey times.

Appraisal Inputs

- Bus frequency
- Journey time saving per bus
- Cost of scheme implementation
- Value of Time (VOT) Statistics
- VOT growth
- Bus patronage level

Benefit : Cost Ratio (if known)

Very High >4 High 2-4
Medium 1-2 Low <1

BCRs vary between individual junctions with the highest at 7.6.

Scheme Contact and Email

chris.payne@wypte.gov.uk

Case Study Profile: Summary

Scheme Name: Assessment of Priority Lanes in Tyne and Wear

PTE Area Nexus

Scheme Type Bus

Scheme Sub-Type Bus Priority

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

Post monitoring work comparing bus lanes against no car lanes and quantifying their benefits to inform policy development across 12 chosen corridors.
Bus Lanes may be used only by local buses and cycles and, in some instances, by taxis. No Car Lanes are used by buses, goods vehicles, taxis and PHV, and some other modes of transport, but cars are prevented from using No Car lanes.

Scheme Costs (£000s)

12 schemes included in the review each with the range £100k to £500k, excepting CentreLink major scheme (total cost = circa £13million) within which priority lanes were one element.

Scheme Objectives

- To reduce highway congestion on key corridors
- To encourage modal shift from car to bus
- To provide mode reliable and punctual bus services
- To provide a consistent approach across the distinct councils for bus and No Car Lanes to avoid confusion and encourage police enforcement

Appraisal Techniques

Post implementation assessment techniques including;
Comparison of before and after data for some schemes where before data is available
Microsimulation assessments of different types of priority lanes and configurations
Road safety and environmental appraisals.
Stakeholder consultation with bus operators, police and other agencies.

Appraisal Inputs

Bus punctuality survey data (Nexus)
ITIS traffic data
Traffic flow and accident data (TADU, Gateshead Council)
Interview responses from key stakeholder

Mi-SET Database Scheme ID ID024, ID025 and ID027

Location 12 key corridors throughout Tyne and Wear

Summary of impacts by type of priority measure
(+5 greatest positive, -5 greatest negative)

Priority Measure	Impact: Journey Time (by mode)				Journey Time Reliability (by mode)				Environment: fuel / noise / emissions	Safety	Difficulty of enforcement
	Bus	Freight	Taxi	Car	Bus	Freight	Taxi	Car			
BUS & CYCLE LANE	1	0	1	1	2	0	0	0	1	-1	-1
BUS & TAXI LANE	2	1	2	2	3	1	2	1	2	-3	-1
NO CAR LANE	3	3	3	4	4	2	3	2	3	-4	-3

Source: *Assessment of Priority Lanes in Tyne & Wear, Technical Report Part 2*, JMP Consulting and Newcastle University, August 2007.

Post implementation appraisal of A690 Durham Road No Car Lanes (using SAF)

Appraisal Information (required inputs for SAF)

Source Data Type: JMP Review Report (2007)

Journey Time Savings per bus passenger	Max saving 126.41 seconds AM peak A690 inbound Max saving 28.93 seconds AM peak A690 outbound
Journey Time Reliability	Standard deviation of journey times reduced by 2minutes (approx)
Improved Facilities (at the station)	✗
Improved Facilities (on the bus/train)	✗
Non-User Benefits**	Change in congestion (-1.9% 2003-2005) Journey time reliability improved for other users
Patronage	Peak hour bus patronage for A690 = 1,100
Revenue Generated (e.g.ticket cost)	✗
Scheme Costs (Capital & Operating)	Capital cost = £500,000 Revenue costs estimated at £10,000 pa

Post Implementation Monitoring?
Key Impacts?

- No Car Lanes = lower journey times and improved reliability for all vehicles
- Trade-off of bus priority /other traffic needs assessment on case by case basis
- No Car Lanes = good balance between competing demands for road space.
- Emissions / fuel consumption increase as the level of priority increases
- The largest percentage decreases in traffic volumes were from No Car Lanes
- Bus Lanes have a lower percentage lane violation rate than No Car Lanes

Benefit : Cost (if known). Very High >4 High 2-4
Medium 1-2 Low <1

BCR = 8.6 (Estimated using the SAF) i.e. Very High

Scheme Contact and Email roger.gill@newcastle.gov.uk

Case Study Profile: Summary

Scheme Name:	TBT Infrastructure
PTE Area	Centro
Scheme Type	Bus
Scheme Sub-Type	Bus Infrastructure Improvements

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description

Replacement of 366 shelters and rebranding of 53 shelters. These are spread over North Walsall, West Birmingham and East Birmingham/North Solihull network review areas.

Scheme Costs (£000s)

£1710

Scheme Objectives

- Improvements to bus facilities will therefore improve the bus experience which will help to encourage bus use overall.

Appraisal Techniques

- Coarse sieve – Broad assessment of the need for enhancement of public transport infrastructure based upon strategic indicators
- Business case – Economic evaluation of the proposal based upon quantification of user and non user benefits, in accordance with guidance from the Department for Transport
- Prioritisation – Ranking of proposals against all other capital schemes using the Transport Investment Model (TIM). This feeds into the programming of capital schemes within funding streams available.

Appraisal Inputs

- As a transport 'node' TBT Infrastructure is assessed using the following criteria:
- Interchange status within 20 Year Strategy
- Reference within UDP as a 'centre'
- Passenger usage – boarding, alighting and interchange (sourced from VISUM model) or based on scheme type for new facilities
- Scheme type of on street stops/interchange works for impact on shared priorities.

i-SET Database Scheme ID	ID 005
Location	West Midlands

Appraisal Information (required inputs for SAF)

Source Data Type: Predicted Values

Journey Time Savings	✗
Journey Time Reliability	✗
Improved Facilities (at the station)	Facility Benefits £198,390
Improved Facilities (on the bus/train)	✗
Non-User Benefits**	✗
Patronage	An additional 0.19m trips per annum to existing 14.63m trips per annum
Revenue Generated (e.g.ticket cost)	£197,209 per year for next 5 years
Scheme Costs (Capital & Operating)	£1,171,314 Capital

Post Implementation Monitoring?
Key Impacts?

None

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

4.0

Scheme Contact and Email

john.bird@centro.gov.uk

Case Study Profile: Summary

Scheme Name:	Washington Galleries Bus Station
PTE Area	Nexus
Scheme Type	Bus
Scheme Sub-Type	Bus Station / Interchanges

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

Provision of a new bus station at Washington Galleries, in Sunderland

Scheme Costs (£000s)

Not supplied

Scheme Objectives

The aim of the new bus station was to tackle the top ten 'hates' of bus station users. This included elements such as: Confusion over who is in charge, poor quality waiting areas, poor quality cleaning standards and a lack of security
(Source: www.onenortheast.co.uk)

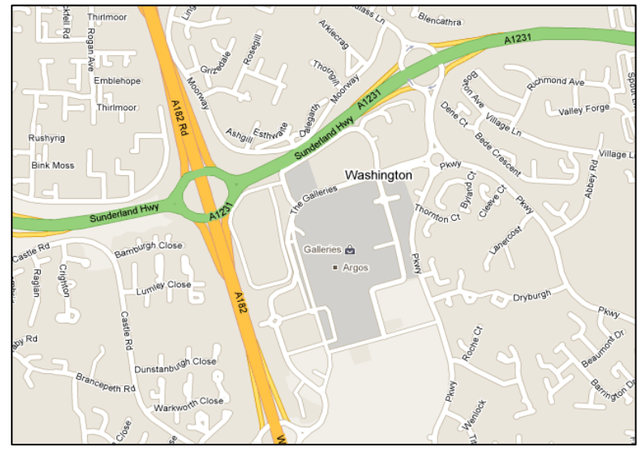
Appraisal Techniques

255 face to face interviews were undertaken at 6 of the bus stands within the new Washington Galleries Bus Station to establish public opinions on the following Frequency of use, Modal use, Journey purpose, Ease of use of information provided, Ease of access, Satisfaction with various aspects of the station, Best and worst aspects of the new station, Perceived ownership of the bus station, If passengers think the new bus station will increase use of public transport

Appraisal Inputs

Not supplied

i-SET Database Scheme ID	ID114
Location	Washington Galleries Bus Station, Sunderland



Appraisal Information (required inputs for SAF)

Source Data Type: Appraisal information not provided

Journey Time Savings	✗
Journey Time Reliability	✗
Improved Facilities (at the station)	✓
Improved Facilities (on the bus/train)	✗
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	✗
Patronage	✗
Revenue Generated (e.g.ticket cost)	✗
Scheme Costs (Capital & Operating)	✗

Post Implementation Monitoring?
Key Impacts?

Majority of respondents were very satisfied. All aspects scored very highly.

- 95% of passengers found the electronic information very easy to use.
- 99% of passengers considered the information stand very easy to use.
- 100% considered the timetable information very easy to use.
- Respondents found it easy to get to the station and to get on and off buses.
- Best aspects - enclosed environment, cleanliness, light and airy environment.
- The worst aspects - lack of toilets, still cold and draughty
- 76% of passengers thought that public transport usage would increase.

Benefit : Cost Ratio (if known) Very High >4 High 2-4 Medium 1-2 Low <1

Not supplied

Scheme Contact and Email

Neill.Davy@nexus.org.uk

Case Study Profile: Summary

Scheme Name: Integrated Transport Knowledge Base (ITKB)

i-SET Database Scheme ID ID 003

PTE Area Centro

Location Throughout West Midlands

Scheme Type Bus

Scheme Sub-Type Bus Information

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description

The Integrated Transport Knowledge Base (ITKB) will deliver:
- Intelligent multi-modal journey planner for mobile phone and web systems
- Automated timetable production for leaflets, mobile and web
- Electronic bus registration by operators and fed to VOSA
- RTI prediction engine for improved co-modal information to passengers
- Enquiry management system to replace existing inefficient system
- Integrated Transport Knowledge Base for all travel modes ensuring information integrity
- Shared core database with WMTIS

Scheme Costs (£000s) £1,250

Scheme Objectives

- New technology to make using transport easier and the door to door journey seamless
- Provide information that can be accessed and understood by everyone and ensure that information meets the most rigorous equality and quality standards

Appraisal Techniques

1. Coarse sieve – Broad assessment of the need for enhancement of public transport infrastructure based upon strategic indicators
2. Business case – Economic evaluation of the proposal based upon quantification of user and non user benefits, in accordance with guidance from the Department for Transport
3. Prioritisation – Ranking of proposals against all other capital schemes using the Transport Investment Model (TIM).

Appraisal Inputs

As a 'local area bus' scheme the ITKB is assessed using the following criteria:
- Deprivation index of wards affected by the scheme
- Passenger usage – boarding, alighting and interchange or load per km of route (sourced from VISUM model)
- Scheme type of Information for impact on shared priorities

Appraisal Information (required inputs for SAF)

Source Data Type:

Journey Time Savings	✗
Journey Time Reliability	✗
Improved Facilities (at the station)	Provision of more service information through the internet, mobile phone and RTI.
Improved Facilities (on the bus/train)	Provision of more service information through modes such as the internet, mobile phone and RTI.
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	Scheme encourages modal shift from car to public transport resulting in congestion benefits
Patronage	Additional 16.7m trip legs
Revenue Generated (e.g.ticket cost)	Revenue benefits per year = £1.3m
Scheme Costs (Capital & Operating)	Capital Cost = £1.25m, Annual Operating Cost = 0

Post Implementation Monitoring? Key Impacts? None

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

9.5

Scheme Contact and Email john.bird@centro.gov.uk

Case Study Profile: Summary

Scheme Name:	Real Time Information Review
PTE Area	Centro
Scheme Type	Bus
Scheme Sub-Type	Bus Real Time Information

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	✓
Has the scheme undergone a VfM appraisal with a BCR calculated?	
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

Centro installed RTI at bus stops and on buses on 7 corridors within West Midlands and undertook post scheme monitoring and research to assess passenger satisfaction.

As part of the Transforming Bus Travel programme Centro has appraised a scheme to provide RTI units in 133 shelters, IBIS displays at 39 stops giving network information, dynamic timetables and marking information, + RNIB key fob distribution for RTI.

Scheme Costs (£000s) Not Supplied

Scheme Objectives

- To improve attractiveness of bus travel
- To encourage increased use of buses

Appraisal Techniques

Application of Centro's Station Facilities Valuation model based on willingness to pay surveys. Application of elasticity factor for demand and revenue estimation.

Appraisal Inputs

Estimation of existing passengers (£7.79m p.a.)

i-SET Database Scheme ID	ID 103
Location	West Midlands

Appraisal Information (required inputs for SAF)

Source Data Type: Appraisal information not provided

Journey Time Savings	✗
Journey Time Reliability	✗
Improved Facilities (at the station)	£115,982 p.a.
Improved Facilities (on the bus/train)	✗
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	✗
Patronage	**100,000 additional passengers p.a.**
Revenue Generated (e.g.ticket cost)	**£115,195 p.a.**
Scheme Costs (Capital & Operating)	**£851,797 Capital, £30,000 p.a. operating**

Post Implementation Monitoring? Key Impacts?

In 2006 two surveys were conducted to review passenger opinion of RTI along the Hagley Road, KIngstanding Road and Alcester Road routes. Results indicated that

- 96% of respondents were aware of the RTI systems,
- 87% of respondents felt that the RTI was beneficial and
- 77% preferred RTI to printed timetable information.

Benefit : Cost Ratio (if known), Very High >4 High 2-4 Medium 1-2 Low <1

1.9

Scheme Contact and Email john.bird@centro.gov.uk

Case Study Profile: Summary

Scheme Name: Mybus Major Scheme 2004-2008: North Halifax Grammar School

i-SET Database Scheme ID ID 069

PTE Area Metro

Location North Halifax Grammar, Halifax, West Yorkshire

Scheme Type Bus

Scheme Sub-Type Bus Vehicle Quality and Information

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	✓
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description

- The Mybus project is a multi-operator scheme providing 206 high quality school transport services using dedicated yellow buses.
- The scheme now operates at 78 primary schools, 52 secondary schools and two Special Educational Needs schools.

Scheme Costs (£000s) £9 annually for network, £552 for this school

Scheme Objectives

- To promote modal shift for school travel
- To reduce the number of cars on the school run
- To encourage pupils to develop confidence in public transport throughout their school career
- To create a new generation of public transport users.

Appraisal Information (required inputs for SAF)

Source Data Type: Info from observed data (scheme implemented 2006/7)

Journey Time Savings	Parents saving an average of one hour each week
Journey Time Reliability	Mybus service more reliable than public services
Improved Facilities (at the station)	×
Improved Facilities (on the bus/train)	Dedicated drivers, CCTV and low floor buses
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	64% of the pupils used to travel to school by car. over 2 million car km saved resulting in congestion benefits.
Patronage	22 direct services to the campus giving a capacity for 1254 pupils (2900 pupils attend the campus)
Revenue Generated (e.g.ticket cost)	Revenue created around £250,000 and an extra contribution from the schools and LEA of £35,000
Scheme Costs (Capital & Operating)	Capital Cost = £552k, Annual Operating Cost = £168k

Appraisal Techniques The BCR value was calculated by using the capital cost of the bus depreciated over 15 years and revenue costs against the benefits of time savings to parents and car kilometre removed from the network. This was discounted to 2002 prices.

Post Implementation Monitoring? Key Impacts?

Monitoring / evaluation programme developed at the beginning of the scheme.

- Small increase in revenue costs
- 36% modal shift from car for high school parents
- Average distance high school parents save is 17km.
- High take up on services and high occupancy of vehicles due to length of trips.

Appraisal Inputs The costs and disbenefits include values provided are from the original appraisal report. Values include savings in decongestion benefits (£0.33/km), car operating savings (£0.07p/km), accident savings (£0.026p/km), driver time savings (£4.48/hour) and Child time savings (£0.501/hour).

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

2.5

Scheme Contact and Email chris.payne@wypte.gov.uk

Case Study Profile: Summary

Scheme Name: Access York Phase 1 Park and Ride Development

i-SET Database Scheme ID: ID 062

PTE Area: None

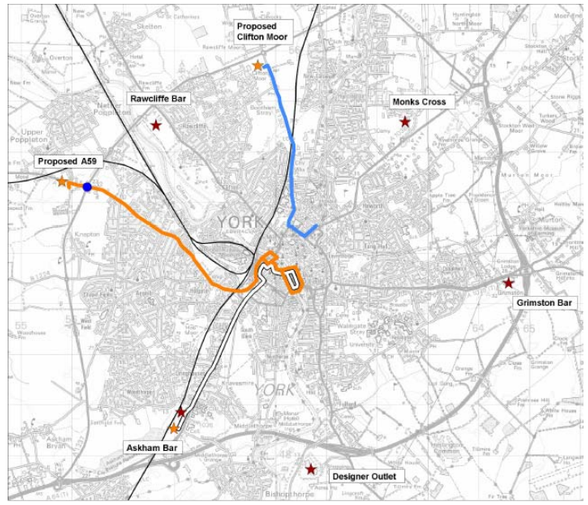
Location: York

Scheme Type: Bus

Scheme Sub-Type: Bus Park & Ride

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	✓
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓



Scheme Description: To increase the number of Park and Ride sites from 5 to 7 (and parking spaces from 3,750 to 5,350) in order to reduce traffic congestion and improve air quality in the city centre, and support the projected economic growth for the sub-area.

The scheme also includes capacity enhancement to a roundabout and bus priorities along the corridors.

Scheme Costs (£000s): £25,500

Scheme Objectives:

- Reduce traffic congestion and improve air quality in the city centre, and support the projected economic growth for the sub-area.

Appraisal Information (required inputs for SAF)

Source Data Type: Predicted Values

Journey Time Savings	£93m
Journey Time Reliability	Valued at £19.4m PV
Improved Facilities (at the station)	✗
Improved Facilities (on the bus/train)	✗
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	Noise: £1.3 million Air Quality: £4000 Greenhouse Gases: £5.4m Accidents -£15,000
Patronage	Bus passenger trips forecast to increase to 7.5m by 2026, from current 4.3m trips. The number of vehicles parked at sites is forecast to increase to 2.9m from the current 1.7m.
Revenue Generated (e.g.ticket cost)	✓
Scheme Costs (Capital & Operating)	Capital Cost = £25.5m, Annual Operating Cost = £1.55m

Appraisal Techniques: A MSBC was submitted to the DfT in June 2009. The MSBC conforms to the New Approach to Appraisal (NATA) following guidance for Local Authorities seeking Government funding for Local Schemes.

Post Implementation Monitoring? Key Impacts? Not Available.

Appraisal Inputs:

- Outputs e.g. traffic flows, car park occupancy from SATURN traffic model to inform assessments of economy, safety and some of the environmental objectives
- Scheme Costs
- Assessments for environment, integration, accessibility objectives

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

3.5

Scheme Contact and Email: ycc@york.gov.uk

Case Study Profile: Summary

Scheme Name: Tranche 3 Rail Station Improvements Strategy: Heald Green

i-SET Database Scheme ID: ID 045

PTE Area: Transport for Greater Manchester

Location: Heald Green, Manchester

Scheme Type: Rail

Scheme Sub-Type: Rail Station Improvements

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description

- Rail station improvements for a station with an approximate footfall of 290,000 people in 2005/6.
- Improvements include help points, CCTV and Customer Services Information (CIS)

Scheme Costs (£000s) £109

Scheme Objectives

- To overcome security barriers to using public transport for users.
- CCTV installations to monitor the stations and platforms with the capability for future expansion.
- CIS to provide accurate real time information on journey options and assistance.
- Help points to provide passengers with the ability to gain further assistance when required.

Appraisal Information (required inputs for SAF)

Source Data Type: Predicted Values

Journey Time Savings	×
Journey Time Reliability	×
Improved Facilities (at the station)	CIS, CCTV, Help Point
Improved Facilities (on the bus/train)	×
Non-User Benefits (Congestion, Infrastructure, Accidents, Local Air Quality, Noise and Greenhouse Gas Benefits)	Congestion reduction (£112,863) Accident reduction (£22,344) Other (£17,623) Crowding Impacts of New Trains (£-71,383)
Patronage	Additional Passengers in Year 2013 (16,016)
Revenue Generated (e.g.ticket cost)	Additional Revenue during Northern Franchise (£15,141) Additional Revenue after Northern Franchise (£220,202) Revenue Abstracted from other Public Transport (£-47,069)
Scheme Costs (Capital & Operating)	£108,974

Appraisal Techniques

- Application of ‘willingness to pay’ functions for user benefits
- Application of elasticity to forecast increased rail use
- Calculation of non-user benefits using rail appraisal guidance formulae

Post Implementation Monitoring? Key Impacts? None

Appraisal Inputs Existing passenger data

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

8.2

Scheme Contact and Email tom.sansom@gmpte.gov.uk

Case Study Profile: Summary

Scheme Name: Dudley Port Park and Ride

i-SET Database Scheme ID ID 001

PTE Area Centro

Location Dudley

Scheme Type Rail

Scheme Sub-Type Rail Park and Ride

ion Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	
Is the scheme subject to active / planned post-implementation monitoring of inputs?	
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	

Scheme Description

The West Midlands park & ride sites help to reduce congestion through modal shift especially in the AM peak. Many sites are over subscribed such as Dudley Port which results in on-street parking. Dudley Port station is located on the Wolverhampton to Birmingham rail line. An additional 46 car parking spaces and refurbishment of the footbridge between the existing and proposed car park sites is planned.

Scheme Costs (£000s) £906

Scheme Objectives

- To increase footfall in the future at the station
- To enable interchange with the planned rapid transport route of Wednesbury to Brierley Hill
- Modal Switch and reduced congestion

Appraisal Information (required inputs for SAF)

Source Data Type: Predicted Values

Journey Time Savings	×
Journey Time Reliability	×
Improved Facilities (at the station)	Facility Benefits (£45)
Improved Facilities (on the bus/train)	×
Non-User Benefits**	Decongestion (£36,621), Vehicle Operating Cost Savings (£16,363), Time Savings (£8,417), Accidents (£7,776)
Patronage	×
Revenue Generated (e.g.ticket cost)	£29,550
Scheme Costs (Capital & Operating)	£906,000

Appraisal Techniques

1. Coarse sieve – Broad assessment of the need for enhancement of public transport infrastructure based upon strategic indicators
2. Business case – Economic evaluation of the proposal based upon quantification of user and non user benefits, in accordance with guidance from the Department for Transport
3. Prioritisation – Ranking of proposals against all other capital schemes using the Transport Investment Model (TIM).

Post Implementation Monitoring? Key Impacts?

None available for this scheme but Centro post scheme monitoring of other rail park and ride schemes reveal trips new to rail (key appraisal assumption) as follows; Selly Oak 21%, Hall Green 19%, Stourbridge Junction 16%, Whitlocks End 19%, Chester Road 14% and Acocks Green 17%.

Appraisal Inputs

Degree of uptake of new car parking spaces- forecast using trip rates that have been derived from the results of market research carried out at rail park and ride expansions across the conurbation. Demand forecasts are constrained by the maximum potential supply of parking spaces at any station.

Benefit : Cost Ratio (if known)

Very High >4 High 2-4
Medium 1-2 Low <1

1.6

Scheme Contact john.bird@centro.gov.uk

Case Study Profile: Summary

Scheme Name: Acocks Green Park and Ride Expansion

Mi-SET Database Scheme ID ID 028

PTE Area Centro

Location Birmingham

Scheme Type Rail

Scheme Sub-Type Rail Park and Ride

Selection Criteria

Has the scheme undergone a clear appraisal process complying with NATA?	✓
Is the scheme subject to active / planned post-implementation monitoring of inputs?	✓
Has the scheme undergone a VfM appraisal with a BCR calculated?	✓
Does the scheme match one of the core scheme categories of interest to PTEs?	✓
Does the scheme identify benefits following its implementation?	✓

Scheme Description The West Midlands park and ride sites help to reduce congestion through modal shift especially in the AM peak. Many sites were over subscribed such as Acocks Green where there was significant on-street parking around the station. Acocks Green station is located on the Solihull to Birmingham rail line. An additional 29 car parking spaces were created.

Scheme Costs (£000s) £424 Capital, £11.6 annual operating costs.

Scheme Objectives

- To increase footfall in the future at the station;
- To reduce on street parking, and;
- To encourage mode shift from car.

Appraised Benefits (from application of SAF)

Journey Time Savings	PV £92k (resulting from transfer from other modes)
Journey Time Reliability	-
Improved Facilities (at the station)	-
Improved Facilities(on the train)	-
Non – user benefits	PV £998k + Indirect Tax £170k
Patronage	17.5k per annum
Revenue	PV £62k
Capital and Operating Costs	Capital £424,000 Operating £11,600 p.a.

Appraisal Techniques Business case – Economic evaluation of the proposal based upon quantification of user and non user benefits, in accordance with guidance from the Department for Transport.

Post Implementation Monitoring? Key Impacts?

- 13% of existing users travelling more frequently
- 75% users had parking problems previously, 1% post implementation
- 17% of users = new
- Of those 11% car transfer, 8% journeys not previously made
- Parking reduced on street – further highway benefits
- Scheme identified as important for new users who started new jobs.

Appraisal Inputs Additional spaces and degree of uptake of new car parking spaces, capital and operating costs, journey time savings for new users, additional revenues and highway decongestion and accidence benefit rates.

Benefit : Cost Ratio (if known)
Very High >4 High 2-4
Medium 1-2 Low <1

Appraisal PVC £741k PVB £1.17m - BCR 1.6
SAF based on Outcome Data PVC £637k PVB £1,25m - BCR 2.0

Scheme Contact john.bird@centro.gov.uk

7.3 Lessons Learnt from Detailed Case Studies

There is a significant difference between the types of small scheme appraisal undertaken across the PTEs, with only a minority attempting to estimate the BCR for a majority of proposed projects. Restricted availability of funding and lack of consistent appraisal methods also means that there is likely to be demand for a standard PT scheme appraisal tool. However, some PTEs have developed their own in-house methods which are used to produce fairly complete appraisal summary sheets.

It is not always possible to quantify all the benefits specific to a proposed scheme either before or after implementation. But given the need to make informed investment decisions, it is important that some form of ex-ante appraisal is undertaken. Other means of informing investment decision include the analysis of results from similar schemes through post-implementation monitoring. This can help in the appraisal of future schemes and , more generally, in validating ex-ante appraisal . Difficulties with quantifying some benefits should not deter their inclusion in a scheme appraisal (TfL, 2011), so long as there is reliable evidence of cause and effect.

Overall, the detailed case studies have shown that even where full appraisal inputs have not been derived it is possible to arrive at reasonable estimates of value for money based on a combination of readily available indicators, simplifying assumptions and evidence from comparable schemes.

7.4 Selection of Detailed Case Studies for Piloting the SAF Tool

Table 9 summarises the key metrics used in selecting the schemes for further analysis using the SAF. Schemes were chosen so as to demonstrate that using a simplified appraisal process can reliably assess the benefits and value for money of small schemes using commonly available indicators.

Table 9 Key Metrics from Appraisal for Best Practice Cases

Scheme Name	Assessment Criteria								
	User Benefits								
	Journey Time Savings	Journey Time Reliability	Improved Facilities (at station)	Improved Facilities (on vehicle)	Non-User Benefits	Patronage	Revenue Generated	Scheme Costs (Capital & Operating	SAF proof
Business Case for Project 3rd Generation Bus Priority Programme (3GBP) Route 177 Section H (London)	✓					✓		✓	
Real Time Information Review									
Mybus Major Scheme 2004-2008: North Halifax Grammar School	✓			✓	✓	✓	✓	✓	Yes
Tranche 3 Rail Station Improvements Strategy: Heald Green			✓		✓	✓	✓	✓	
Outer Circle Quality Corridor	✓			✓	✓	✓	✓	✓	Yes
Assessment of Priority Lanes in Tyne and Wear	✓	✓			✓				
TBT Infrastructure					✓	✓	✓	✓	Yes
Dudley Port Park and Ride					✓		✓	✓	Yes
Washington Galleries Bus Station								✓	
Rotherham - M1 QBC									
Electronic Passenger Information									
Derby Road Modal Shift Project (Quality Corridor)	✓		✓	✓		✓			Yes
Implementation of Intelligent Traffic Light Priority in West Yorkshire	✓				✓			✓	
Access York Phase 1 Park and Ride Development	✓		✓		✓	✓		✓	Yes
A65 QBC Scheme Funding Submission	✓	✓	✓	✓	✓	✓	✓	✓	Yes
Leeds New Generation Transport (NGT)	✓	✓	✓	✓	✓	✓	✓	✓	
Appraisal of Integrated Transport Knowledge Base (ITKB)			✓	✓		✓	✓	✓	Yes
Acocks Green Park and Ride expansion	✓				✓	✓	✓	✓	Yes
Irlam Station P&R									Yes

In addition to the selected case studies used as proofs for the SAF, further information was sought for a rail-based park & ride scheme, with Irlam Station park and ride site improvement used as an example of the application of SAF for this type of scheme.

Further details on the nature and scale of the appraisal metrics relating to each of these schemes are included in Appendix B.

8 SIMPLIFIED APPRAISAL FRAMEWORK (SAF)

8.1 Introduction

Some PTEs already apply value for money appraisal techniques to small public transport schemes but use differing techniques and levels of detail. The case study review has shown that some PTEs could benefit from a low cost standardised means of value for money appraisal. This is also helpful in analysing schemes in our database on a comparable basis. This would enable increased quantification of the value for money of small projects to input to wider appraisal and capital programming processes and to provide assistance in presenting the business case for a project within funding applications.

The DfT appraisal guidance refers to proportionate appraisal, by which it is meant that the the level of effort (and scheme development costs) should reflect the scale of the scheme. A Simplified Appraisal Tool for the appraisal of small schemes fits with this requirement and the SAF is designed to reduce the level of effort (and costs) of the appraisal of small schemes for PTE's.

The purpose of the SAF is to provide a relatively reliable and quick scheme appraisal requiring limited data input and enabling use by a range of staff.

The SAF aims to be consistent with Government Appraisal Guidance (WebTAG) and utilise best practice demonstrated by the existing tools used by the PTE's and by background research.

8.2 Development of the Simplified Appraisal Framework

The scope of the SAF was defined as enabling the economic appraisal of a range of public transport schemes;

- Bus Quality Corridor
- Bus Station / Interchanges
- Bus Real Time Information
- Bus Vehicle Quality / service
- Bus Park and Ride
- Rail Park and Ride

It was agreed with the PTE Steering Group that the key requirements for the SAF were that

- The main structure should be applicable to all schemes and cover the following set of parameters:
    - Capital Costs
    - Operating Costs (and/ or savings)
    - Demand
    - Revenues
    - User Benefits (and Disbenefits)
    - Non-User Benefits (and Disbenefits)
    - Congestion, accidents, etc
    - Cost Benefit Analysis
- The SAF should be one model with an input sheet linked to appraisal sheets.

In addition the PTE Steering group agreed the range of types of schemes and relevant impacts that the SAF needed to cover;

- Time savings
- Reliability benefits
- Safety Benefits
- Quality Improvements – using their willingness to pay evidence
- Operating cost savings
- Expected life of different types of scheme.

The SAF is structured as follows:

- A front sheet guiding the user to the input page for each type of scheme;
- A scheme related input sheet gathering key variables driving the appraisal, such as costs, passenger levels, the impacts of the improvements e.g. Journey Time Savings and bus service and infrastructure quality improvements.
- A calculation sheet creating the annual inputs to the appraisal, the underlying assumptions of which can be altered by the expert user as required);
- A Cost Benefit Analysis sheet undertaking the expansion of the data throughout the appraisal period, applying the discounting procedures to create the economic output and Benefit Cost Ratio (BCR), and;
- A summary sheet detailing key scheme aspects, inputs and appraisal outputs.

For each type of scheme within the SAF the calculation of the costs and benefits are undertaken using the best available evidence, including;

- Research undertaken by the PTEs for public transport facility improvements, and;
- Standard guides for demand forecasting and appraisal including;
    - DfT WebTAG notes;
    - The Demand for public transport – Practical guide.

Supporting evidence to guide the choice of parameters is provided, including that available from the case studies , from other studies and from research undertaken by the authors.

Table 10 below summarises the scheme types included in the appraisal framework and the aspects of the appraisal most relevant to each scheme. All schemes have some types of user benefits plus non-user benefits, patronage and revenue impacts and scheme costs. The schemes vary in relation to provision of journey time savings, reliability benefits, improved facilities (off vehicle) and improved on-vehicle facilities.

Table 10 Assessment Criteria

Scheme Type	Assessment Criteria							
	User Benefits				Non-User Benefits**	Patronage	Revenue Generated (e.g.ticket cost)	Scheme Costs (Capital & Operating)
	Journey Time Savings	Journey Time Reliability	Improved Facilities (at the station)	Improved Facilities (on the bus/train)				
Bus Quality Corridor	✓	✓	✓	✓	✓	✓	✓	✓
Bus Station / Interchanges[10]			✓		✓	✓	✓	✓
Bus Real Time Information			✓		✓	✓	✓	✓
Bus P&R	✓	✓		✓	✓	✓	✓	✓
Bus Vehicle Quality / Service			✓	✓	✓	✓	✓	✓

8.3 Key Appraisal Assumptions

8.3.1 Cost Benefit Analysis Assumptions

The basic cost benefit analysis assumptions are the same for all scheme types. The economic appraisal has been undertaken in accordance with the WebTAG Guidance (applicable in March 2011) though some simplifications were made in relation to the assessment of taxation implications. Key assumptions were;

- 2002 price base and 2002 prices, deflating values using RPI factors;
- Capital costs are subject to uplift for optimism bias – specified by the user with guidance on factors at different project stages given[11];
- Operating costs are subject to an optimism bias factor and a factor for growth in relation to RPI over time;
- The user can specify the appraisal period over 15 years, 30 years and 60 years of operation from 2014 (assuming the minimum asset life of 15 years), assuming a discount rate of 3.5% for the first 30 years and 3.0% for the remaining years[12].;
- Assuming value of time growth in accordance with WebTAG appraisal guidance[13];
- The user can specify the revenue growth rate in relation to RPI. A revenue elasticity of 0.4 is applied to the fares increase to determine revenue growth[14];

[10] Assuming a replacement / improvement at the same location.
[11] Based on WebTAG unit 3.5.9 'The estimation and Treatment of Scheme Costs' In Draft January 2010, Table 9.
[12] Note that for assets with a longer life a residual value would need to be entered by the user as a negative cost in the final year within the Cost Benefit Analysis spreadsheet.
[13] Based on WebTAG Unit 3.5.6 'Values of Time and Operating Costs' In Draft March 2010, Table 3b.
[14] Based on The demand for public transport: a practical guide, TRL 593, 2004, Table 5.2, short run elasticity as it is applied to each year.

- Market Price adjustment factors of 20.9% are applied to the Capital Costs, Operating Costs and Revenues. User benefits are calculated using the factors specified in Market Prices[15]; Market price refers to the price paid by consumers for goods and services in the market and therefore includes all indirect taxation (indirect taxation refers to taxation levied on a product and therefore includes excises, duties and VAT). Prices that do not include taxation (e.g. public transport fares) are still perceived by consumers in the market price unit of account.

- The user specifies the proportion of work (business) and commuting trips for the application of the appropriate values of time which differ between bus and rail. Guidance is given on the range of business trips for different modes[16];

- The user specifies the passenger demand growth assumptions for the appraisal period. Default values for bus passenger changes have been specified as 1% per annum decline, zero growth and 1% per annum growth.

The spreadsheet calculates the present values of costs and benefits and calculates the Present Value Cost and Present Value Benefits taking account of the need for subsidy – in accordance with the Transport Economic Efficiency and Public Accounts tables in WebTAG[17]. The Net Present Value and Benefit to Cost Ratio are calculated for the appraisal period specified by the user.[18]

8.3.2 Assumptions Relating to Bus Quality Corridors / Bus Priority Schemes

The user is requested to input scheme assumptions relating to;

- Capital Costs and price base;
- Operating Costs and price base;
- Average fare;
- Expected Journey Time savings[19] ;
- Expected reliability impacts (change in standard deviation of journey times);
- Facilities and service improvements;
- Existing (base) passenger numbers, and;
- Average passenger journey assumptions.

It is assumed that the user will know these details for the scheme and guidance based on evidence from elsewhere is given where appropriate[20].

[15] Based on WebTAG Unit 3.5.6 ' Values of Time and Operating Costs, In Draft March 2010, Tables 1 and 2.
[16] Based on WebTAG Unit 3.5.6 'Values of Time and Operating Costs, In Draft March 2010, Table 7.
[17] Based on WebTAG Units 3.5.1 'Public Accounts Sub-Objective' and 3.5.2 Transport Economic Efficiency Sub-Objectives and associated spreadsheets.
[18] If the NPV is very large (over 5:1) or reported by the SAF as negative, the user is recommended to check whether the scheme is commercial and could therefore be funded through other sources – eg by the operator or through borrowing as there could be a short payback period.
[19] note for a frequency improvement the reduction in waiting time with suitable weighting applied should be added
[20] Eg: Centro's Bus User Profile March – May 2009 for bus journey elements .

(a) User and New User Time Savings Benefits

The user benefits are calculated from the time savings assumptions and value of time applied to the existing passengers.

The benefits to new users (i.e., passengers generated by the scheme) are calculated from the time savings assumption and value of time and the rule of half is applied as per WebTAG guidance.

(b) Station / Interchange Facility Benefits

A review of Centro, TfGM and DfT-sponsored research[21] was undertaken to determine an appropriate set of passenger 'willingness to pay' variables for a set of Bus Station / Interchange improvements.

The Centro models were based on Stated Preference (SP) Surveys in which passengers were asked to rank a long list of facilities, values for key facility improvements were then calculated from analysis of a set of SP trading questions and the values for all factors determined by interpolation. A scaling factor was then calculated through second SP set of questions trading facilities within a whole journey (including a package of soft measures with main journey components times and fares). There was a measure of similarity between the Bus Station and Bus Interchange data sets.

The TfGM data based on similar SP exercises gave higher values but for a more restricted set of parameters. The 'package value' (the overall value for a package of improvements) was around the same level as the Centro model when converted to the same price base.

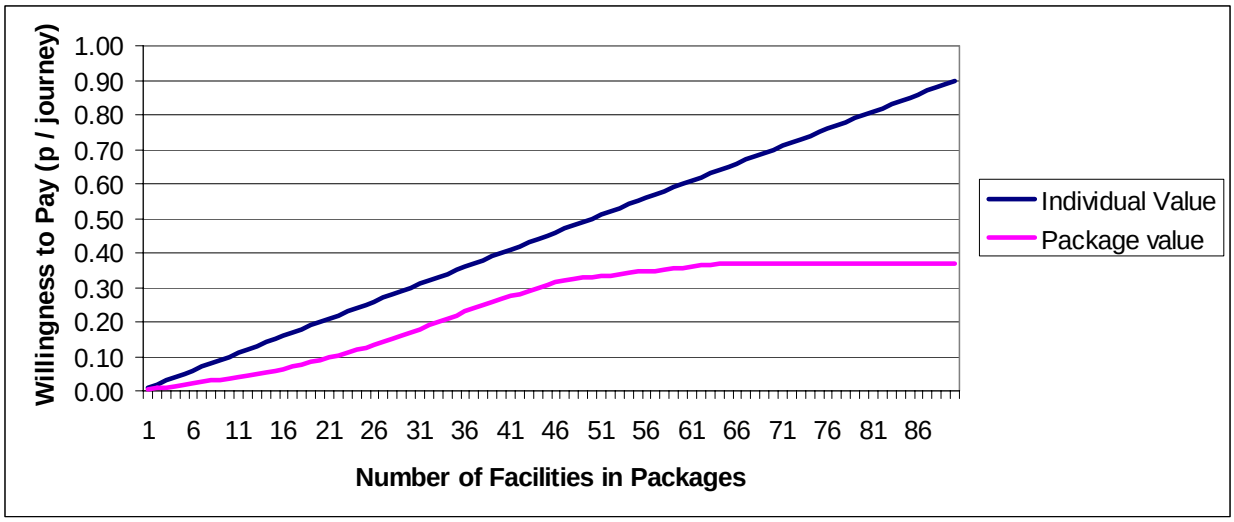
The Aecom data was presented in p/minute rather than p/journey for the other models and therefore depend on the journey length. This made comparison difficult.

It was decided to provide one representative data set in the appraisal framework, rather than employing the different models which would produce different outputs. It was decided to base this on the Centro data which gives values for a wide range of measures.

Willingness to pay research has revealed higher willingness to pay for individual elements but a lower willingness to pay for subsequent additional elements on a package of improvements and a maximum willingness to pay for quality. The Centro data included facility 'packaging' factors and determination of maximum values within the whole journey an example of which is shown in Figure 6. This shows the 'package value' compared to the sum of the individual values as more are added to the package of improvements. There were differences between the various bus station / bus interchange survey results. It was decided that the data could be approximated to a broad factoring in the order of halving the individual values up to a maximum of around 35p.

[21] Aecom (2009) The Role of Soft Measures in Influencing Patronage Growth and Modal Split in the Bus Market in England, report to Department for Transport.

Figure 6 Example Graph of Bus Facilities Individual and 'Package' Values



The selected facility values are shown in Table 11.

Table 11 Bus Station and Interchange Values

Facility Improvement	Value p/journey	Halved
Weatherproof shelters at all stands	5.4	2.7
Well lit waiting areas	5.2	2.6
'Real Time' display showing bus status	5.1	2.6
Direction signs to where buses depart	4.5	2.3
Safe crossings between bus stands	3.5	1.8
Interactive information point for trip planning	3.9	2.0
Modern seating	3.9	2.0
Short wait pick-up/set-down parking	3.9	2.0
CCTV system covering all the bus station	2.9	1.5
Unstaffed free toilets	3.8	1.9
Climate controlled building	3.0	1.5
Crossing on road outside bus station	2.6	1.3
Emergency help points at stands	2.6	1.3
Staff always at the bus station	2.3	1.2
Secure cycle storage	2.3	1.2
Printed timetables at stands	2.2	1.1
Outlet for tickets and information	2.1	1.1
Café selling hot/cold drinks and snacks	2.1	1.1
Large Shelter with large waiting area	2.0	1.0
Newsagent	1.7	0.9

For a scheme with both a Corridor and Bus Station improvements the user is requested to specify the percentage of people interchanging at the bus station. The demand is then factored to generate the corridor benefits and bus station benefits,.

For a scheme with only corridor enhancements and including bus stop improvements (such as new shelters and RTI) the user should specify the percentage interchanging as the percentage of users benefiting from the at-stop facility measures. Therefore if all passengers receive the facility benefits the '% interchanging' should be entered as 100%.

(c) Service Improvement Benefits

The Aecom data provided values for within journey improvements and reported 'perfect service' values from a range of other studies. The service improvement values selected for inclusion in the appraisal framework are shown in Table 12.

Table 12 Bus Service Improvement Values

Improvement	Value (mins)
Trained Drivers	2.46
New Bus Low Floor	1.78
CCTV on Bus	1.66
Climate Control	1.24
Audio Announcements	1.22

(d) Reliability Benefits

Bus service reliability can be assessed in a number of ways; for example, it can be based on reduced delays, reduced lateness and reduce journey time variability. The calculation of the reliability benefits is based on the change in standard deviation of journey time in minutes, which is given a weight of 3 times the value of in-vehicle time to reflect the greater inconvenience caused to users by reliability relative to in-vehicle time (in accordance with The Demand for Public Transport / WebTAG[22] and PDFH).

Users are recommended to be cautious in forecasting reliability improvements as a result of infrastructure improvements, as evidence suggests that even the best designed bus priority schemes improve reliability by 50%[23].

The benefits are increased over the appraisal period in line with passenger growth and value of time growth assumptions.

(e) New Users Calculation and Benefits

The appraisal framework estimates new, generated, public transport trips through application of an elasticity to the change in the generalised cost of travel. The journey time changes have to be related to the whole journey costs so the user is requested to provide average access time, waiting time, in-vehicle time, interchange waiting time and egress time assumptions which are weighted by passenger perception weights from WebTAG[24]. The times are converted to fare equivalent values through application of the value of time for non-working time public transport trips and the fare added. The change in the generalised costs as a result of the Journey Time Savings, Facility and service improvements and reliability benefits is computed and the elasticity applied to the difference in the generalised costs.

[22] WebTAG Unit 3.5.7 'The reliability sub-objective', April 2009.
[23] 'Modelling Service Reliability, New Generation Transport in Leeds, Steer Davies Gleave for Leeds City Council, 2009.
[24] WebTAG Unit 3.5.6 'Values of Time and Operating Costs, In Draft, 2010

There is significant evidence of valuation in the elasticity of bus travel to change in fares and differences between the short term (1 year) and longer term (5 year). Evidence suggests that bus service elasticity's typically range from 0.1 to 0.4 in the short term and between 0.3 and 0.9 in the long term. To provide a simplified approach for the estimation of new passenger trip generation the generalised cost elasticity is computed from an assumed fare elasticity of 0.5[25] and the proportion of fare within the generalised costs. The user can alter the fare elasticity parameter based on local evidence and can test the sensitivity of the value for money for the scheme through varying the fare elasticity parameter.

The estimated new users are converted into additional revenue through application of the average fare and new user time savings are calculated employing the rule of half compared to user time savings. The estimated new users also drive the non-user benefits calculations – see below.

(f) Non-User Benefits

The non-user benefits have been assessed using the DfT Guidance on the External Costs of Car Use[26] and associated spreadsheets. This procedure produces recommended values for congestion, infrastructure, accident, local air quality and greenhouse gases benefits resulting from the assumed transfer of trips from car for 2013 and 2025.

The appraisal takes account of the assumed car trip transfer length, assumed proportion of car trips transfering to public transport and a car occupancy factor to derive the net change in car kms. The user specifies the factors on the input sheet of the SAF and guidance from research evidence is given where appropriate.

The values derived for the decongestion impacts are based on Conurbation A-roads (where it is assumed most schemes will be implemented) taking the average congestion levels by congestion bands for the regions relevant to the English PTE's. The weighting is shown in Table 13 and the resultant external benefits factors are shown in Table 14. The congestion value for the most congested roads is high but the weighting process in Table 13 takes account of the proportion of traffic observed on the different parts of the network and therefore reflects a typical journey and avoids over-forecasting decongestion effects of public transport schemes.

Table 13 Calculation of Weighted Congestion Benefits Factor

Congestion Band	Proportion of Traffic by Band (average of PTE Conurbations for A-roads)	Rate 2013 (pence per car-km)	Weighted Values (pence per car-km)
1	0.16	0.7	0.11
2	0.32	2.0	0.64
3	0.26	13.4	4.24
4	0.13	78.9	9.93
5	0.14	206	28.11
Weighted average			8.61

[25] Based on 'The Demand for Public Transport: a practical guide', TRL 2004,.
[26] WebTAG Unit 3.13.2 'Guidance on Rail Appraisal: External costs of car use', April 2007 and spreadsheets 3.13.2-1 and 3.13.2-2

Table 14 External Costs of Car Use Benefit Rates (p/pcu transferred)

Marginal External Cost	Rate p/pass car unit-km 2013	Rate p/pass car unit-km 2025
Congestion (weighted average)	8.6	13.2
Infrastructure	0.10	0.10
Accident	3.10	3.90
Local Air Quality	0.90	0.60
Noise	0.20	0.30
Greenhouse gases	0.40	0.30
Total	13.3	18.4

The figures are calculated for 2013 and 2025 and interpolated for intervening years and then grown by demand growth and value of time growth post 2025.

It should be noted that this assessment is considered cautious as the appraisal uses the weighted average congestion rates, whereas the majority of trips will be travelling into the congested urban areas of the PTE's Cities which would significantly increase the congestion value depending on the final destination of existing car journeys.

The transfer of journeys from the private car to public transport results in a change of government revenue as a result of the reduction in fuel sales and the resulting change in fuel tax income. For this appraisal the value of this factor was estimated using the same guidance which suggested values of 3.5p / car km in 2013 and 3.3p / car km in 2025 (which incorporates the DfT's assumption that vehicles become more fuel efficient over time).

While the use of this spreadsheet value in this context does not strictly follow Transport Appraisal Guidance, this represents a suitable simplified approach which is considered proportionate for the appraisal of small public transport schemes. The values are included in the cost benefit analysis as benefits in accordance with the latest WebTAG guidance. The values are interpolated between 2013 and 2025 and held constant thereafter as a proxy for the combined increase in demand offset by increasing fuel efficiency. The calculations can be viewed by the user on the User Benefits tab of the SAF. A link to this is provided on the input sheet.

8.3.3 Bus Station / Interchange and Real Time Information Schemes

These parts of the appraisal framework uses only the Facility Valuations section described in section 8.3.2 b) above and the user is required to enter the cost and existing passenger and existing journey details .

8.3.4 Bus Vehicle Quality / Service Assumptions

This part of the appraisal framework uses the relevant service improvement valuations described in section 8.3.2 c) above and the user is required to enter the cost and existing passenger and existing journey details.

8.3.5 Assumptions for Bus Park and Ride Schemes

Bus park and ride schemes have been successful in historic towns and locations with high central area attraction and poor parking supply and high parking costs. There are typically three objectives;

- Stimulate economic activity – not usually quantified in the appraisal of schemes;
- Making better use of parking – a transport / land use benefit.
- Reducing congestion, noise and pollution – a transport related impact although there is little evidence that bus park & ride provides these benefits.

Success therefore depends on local factors. Best practice suggests bus park and ride is valuable in combination with traffic restraint and bus priority.

Users are recommended to determine the potential demand and affordability of the scheme based on the analysis of generalised cost including parking, bus service costs and revenues. Car park spaces need to generate enough demand to support the bus service operation with the wider benefits appraised against the capital costs.

For the appraisal the user is asked to provide a number of assumptions – for which guidance is given from available evidence within the SAF:

- Car – bus transfer.
- Generated demand.
- Abstraction from bus.
- Planned average weekday occupancy (of car park).
- Planned holiday (peak weeks) occupancy.

Having evidence that there is an underlying demand for bus park and ride the user is required to enter the scheme data into the framework; the number of car park spaces, the average revenue per journey, the user time-saving assumption, the business use factor, net average car km change per user[27], capital costs including risk and contingency and operating costs including bus service and site maintenance. Advice on the range of factors is drawn from the substantial evidence from other park and ride schemes[28].

The appraisal framework calculates additional revenue and user time savings. Non-user benefits are estimated as described in section 8.3.2 (f) above.

[27] Bus park and ride includes a car leg which may be longer to reach the site and buses operating on the highway taking up some of the space released. The net reduction in car kms is therefore a key determinant of decongestion benefits and a range of evidence is presented in the SAF.

[28] TRL (2004) The Demand for Public Transport: a practical guide, section 12.4

8.3.6 Rail Park and Ride Assumptions

The user is requested to ensure that there is evidence of suppressed demand for the station car park scheme before entering the number of spaces planned into the framework along with the average fare per journey, average user time saving assumption, business use factor, average journey length, capital costs and operating cost. The assumed proportion of new rail demand is requested, with guidance to the user from a range of post scheme surveys provided.

The appraisal framework calculates the new demand, additional revenue, user time savings and non-user benefits in accordance with the procedure in section 8.3.2 (f).

8.4 Limitations of the SAF

The appraisal framework uses several simplifying assumptions including average values for users (rather than disaggregate analysis of individual flows) and is therefore recommended for small scale schemes with an impact in a relatively local area. It covers improvements to existing transport facilities and services rather than new bus services and new rail lines and stations.

The appraisal framework assumes initial capital expenditure in 2013 and will need updating / adjustment in the future to remain in line with WebTAG guidance. The appraisal framework provides some of the inputs to value for money assessments (such as Appraisal Summary Tables) but cannot provide the comprehensive appraisal which requires significant local knowledge and interpretation.

However, the appraisal tool enables rapid cost-effective appraisal of options and can be used by scheme promoters to inform the development of a scheme such as how much capital cost reduction or additional benefit is required to enhance value for money for the project.

8.5 Application of the SAF

8.5.1 Use of the SAF

The SAF is an Excel-based economic appraisal tool, delivered alongside this report. Appendix A provides an overview of the SAF and guide to users.

8.5.2 Validation of the SAF

The BCR results obtained from the SAF for selected case studies were compared with those provided by PTEs and local authorities. The results are shown in Table 15. Figure 7 provides a graphical comparison of the difference between the reported scheme BCR and the BCR calculated using the SAF tool.

The SAF tool has shown broadly similar BCR values to those given in the case study appraisals. For the majority of cases, the SAF tool has replicated the same levels of VfM or a grade lower or higher for VfM. Despite the need for more extensive testing and validation this is encouraging and suggests that it may be possible to make use of simplifying assumptions without much loss of accuracy. These initial results are also in line with those reported by Laidler and Palmer (2009) who found the elasticity-based appraisal framework used in Greater Manchester produced results in line with their own WebTAG-compliant GMSPM model.

Table 15 Application Tests of the Appraisal Framework

Scheme Type	Scheme Title	Reported BCR	SAF calculated BCR	Reported VfM	SAF Calculated VfM
Bus Quality Corridor	A65 Quality Bus Corridor	1.92	1.9	Medium	High
Bus Quality Corridor	Outer Circle Quality Corridor	5.4	3.5	Low	High
Bus Quality Corridor	Derby Road, Nottingham	-	7.8	-	Very High
Bus Station / Interchange	Wythenshawe Bus Station Appraisal	1.7	1.9	Medium	Medium
Bus Station / Interchange	TBT Infrastructure Project	4.02	5.5	Very High	Very High
Bus RTI	Centro ITKB	9.5	9.5	Very High	Very High
Bus Vehicle Quality / Service	Mybus North Halifax Grammar	2.5	1.8	High	Medium
Bus Park & Ride	Access York Phase 1 Park and Ride Development	3.5	3.9	High	High
Rail Park & Ride	Dudley Port Rail Station Park & Ride	1.6	2.2	Medium	High
Rail Park & Ride	Acocks Green Park and Ride expansion	1.6	2.0	Medium	High
Rail Park & Ride	Irlam Rail Station P&R Site Improvement Scheme	1.9	1.9	Medium	Medium

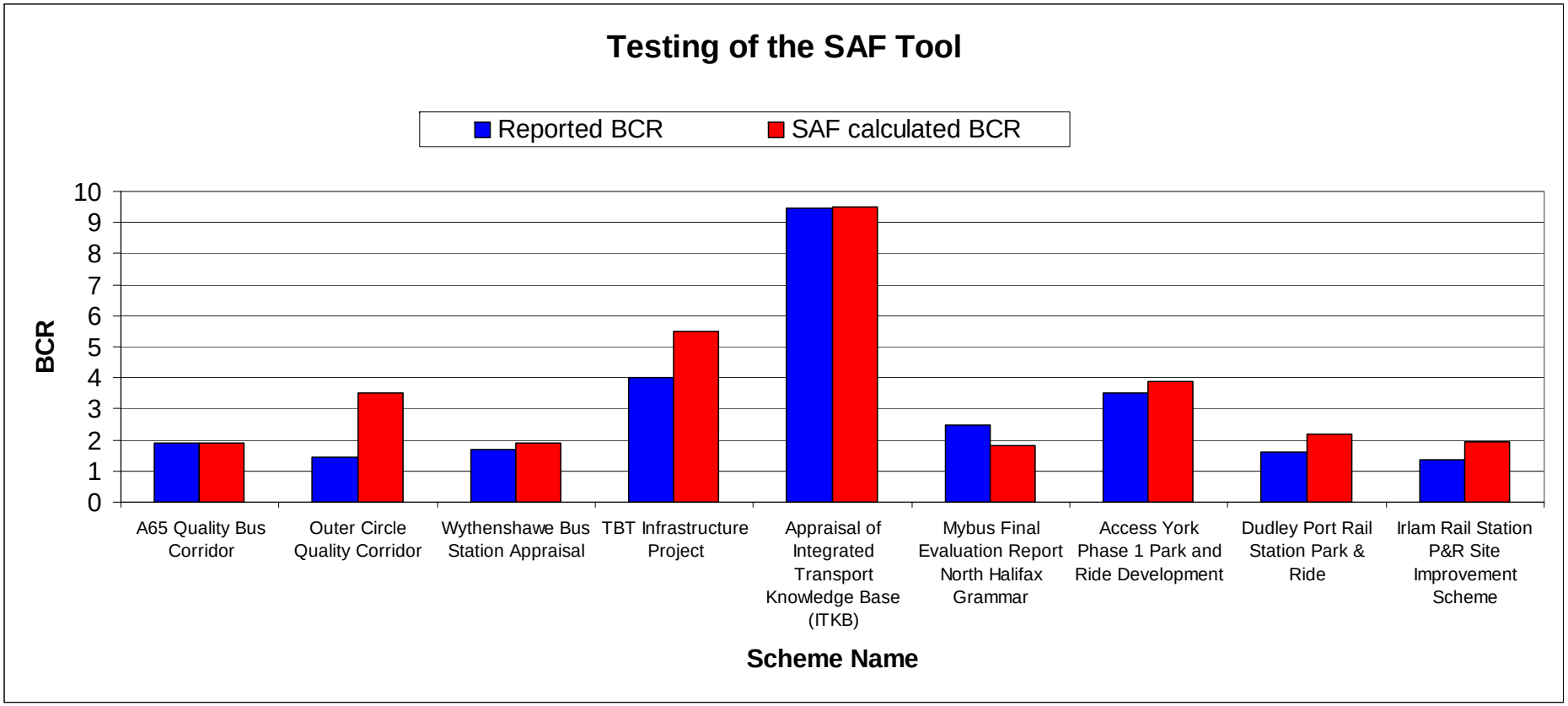
One of the reasons for differences in VfM is that the SAF inputs could only be based on the information provided in the case studies. Where values were unknown, information was substituted with sensible values which followed guidance or a similar scheme type.

For the MyBus appraisal the benefits to parents saving time of not driving their children to school had to be added.

The bus information and bus interchange projects have high BCR's in both the original and SAF appraisals, differences could relate to the adjustment to the values of facilities input to the SAF from the PTE models and assumptions on the proportions of people benefiting from the measures. In addition, the SAF applies up-to-date assumptions on the value of time change over time and the treatment of indirect tax impacts. The A65 corridor, Wythenshawe Bus Station, bus and rail park and ride appraisals using the SAF produced results very close to the original appraisals, aided by the level of detail reported for those schemes.

Overall, it is concluded that the SAF provides a valid, simple and reasonably accurate tool for the appraisal of small public transport schemes, capable of rapidly generating VfM assessments with relatively modest input requirements. At the same time, the SAF is sufficiently flexible to allow more experienced users flexibility to adjust assessment variables to reflect local data.

Figure 7 Comparison of Reported and SAF Calculated BCR Values



9 SUMMARY AND CONCLUSIONS

9.1 Value for Money of Small Scale Public Transport Schemes

Where case studies provide evidence of appraisal, the outcomes are summarized by type of scheme.

- **Bus Priority Schemes**

Bus priority schemes capital costs range between £14,000 and £10.9million.

11 bus priority schemes included Benefit to Cost ratios, ranging from 2.0 to 11.4, which demonstrate High or Very High value-for-money.

Examples of very high value schemes include;

Traffic light reconfiguration in Central Leeds with a BCR = 7.6 (Very High VfM)

Bus priority measures in suburban London reach BCR = 11.4 (Very High VfM)

- **Bus Stations and Interchanges**

Only Wythenshawe bus station (TfGM) has an associated appraisal yielding Benefit:Cost ratios in the range 1.5 - 3.3 depending upon the design specification, demonstrating Medium to High value-for-money.

Centro's TBT Infrastructure scheme replaced shelters and provided branding between Birmingham and Walsall. The scheme cost £1.7million and yielded very high value-for-money with a BCR = 4.0.

- **Real time Information**

Real-time information projects costs range between £25,000 and £1.25million.

Only Centro's Integrated Transport Knowledge project has been appraised to derive a Benefit:Cost ratio = 9.5 (Very High VfM).

- **Bus Branding and Information**

WYPTE's *MyBus* School Travel programme can be analysed at the school-specific level, with scheme costs between £5.6k and £19.4k.

Benefit:Cost ratios vary widely with the best BCRs = 2.5.

- **Quality Bus Corridors**

17 Quality Corridor projects were identified in the review, though some are part of much larger scale major projects.

Derby Rd in Nottingham yielded a BCR = 7.7 (Very high VfM)

The A65 Quality Bus Corridor in Leeds yielded a BCR = 1.92 (medium VfM)

Outer Circle Quality Corridor in Birmingham yielded a BCR = 1.43 (low VfM).

- **Park & Ride**

Access to York (phase 1) was a major bus Park & Ride scheme yielding a BCR = 3.5 (high VfM))

Rail Park & Ride schemes in the West Midlands – at Dudley Port and Acocks Green – both yielded BCRs = 1.6 (medium VfM), whilst extension of the Irlam Station P&R in Manchester yielded a BCR = 1.9 (medium VfM).

9.2 Conclusions

The following conclusions have been drawn from the study;

- Small scale PT schemes typically offer medium to very high value for money. The average Benefit Cost Ratio for our sample of schemes was 3.5.
- Small scale schemes offer a wide range of benefits to the user;
- The majority of benefits that small scale schemes produce cannot always be defined in monetary terms. However, this is not to suggest that they do not offer positive VfM.
- VfM and BCR have intrinsic linkages in policy and appraisal however; it is difficult to assess benefits that are not monetised. VfM based solely upon BCR calculations in the appraisal process of a scheme does not always match how it is received by users 'on the ground'.
- The cost effectiveness of schemes can be ascertained if good practice is employed for small schemes through ex-ante and ex-post research. Where PTEs employ these practices small scale schemes can be more readily evaluated and are often seen to demonstrate strong value-for-money credentials.
- Current practice in the appraisal of small schemes is wide ranging. Where economic appraisal techniques are used a range of bespoke, simplified approaches is employed which comply with national appraisal guidance (NATA / WebTAG) to varying degrees.
- A lack of good quality local data to inform bespoke appraisal techniques can be effectively addressed by information-sharing and collaboration across the PTE's.

- Simplified appraisal frameworks can be developed which relate closely to national guidelines and provide reliable and effective means of value-for-money assessment during the planning of small-scale schemes. A set of such frameworks has been developed drawing upon best practice identified during this study.

- The simplified appraisal framework approach reflects the principles of proportionate appraisal which can be applied to small public transport schemes.

The evidence base for the study has been developed through dialogue with PTEs, local authorities associated to PTEG and Transport for London. A fair proportion of these examples provide indicative Benefit:Cost ratios for small schemes which have been derived through various simplified appraisal techniques.

9.3 Recommendations for Further Work

The evidence database could be further developed as an on-line database with links to scheme promoters to aid transport planners in a understanding scheme issues, best practice and outcomes. The on-line database could be further developed by enabling scheme promoters to add additional evidence over time.

The appraisal framework was developed for bus schemes and rail park & ride but many PTE's requested the appraisal framework to cover small rail schemes such as station facility improvements. The planning of the SAF included rail schemes and the SAF can therefore be expanded to cover more rail schemes.

In addition, some PTE's suggested expansion of the SAF to cover smarter choices schemes enabling one tool to appraise a wider range of projects. This should be practical using the published guidance for smarter choices.

The SAF was developed in March 2011 and therefore does not take account of the revised appraisal guidance issued by the DfT in April 2011 including changes to some webTAG units (though the in draft version of Unit 3.5.6 was used based on DfT advice) and the new Transport Business Case and Early Assessment and Sifting Tool (EAST) guidance. The assumptions built into the SAF will need to be reviewed and updated periodically to remain valid in the context of revised DfT guidance.

Further quantification of scheme impacts for determining outcomes for presentation in the Appraisal Summary Table (e.g.: CO2 impacts) could be added to the SAF. This would aid presentation of the wider VfM case for smaller schemes.

Further research could be undertaken on development of best practice in simplified demand forecasting for various schemes.

Further research could be undertaken into the barriers for Public Transport use and how these could be overcome. This could further develop the 'quality' willingness to pay modelling by understanding basic levels of service standards and quality packages that would make most difference.

There was considerable variation in the results of the willingness to pay research for bus passengers (and more consistency for rail passengers). Further research could usefully be targeted at establishing whether the willingness to pay values vary by PTE area and by users and non-users. This research needs to apply a consistent approach across the PTE areas and also cover the range of facilities in both the smaller towns and Cities in the PTE areas.

Further research could be directed at post scheme monitoring and determining best practice for establishing value for money and achievement of key outcomes to determine success.

9.4 References

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APPENDIX A USER GUIDE TO SAF APPLICATION

Figure 8 shows the front screen of the SAF from which the user selects the type of scheme to be appraised. This links the user to the appropriate data input sheet.

Figure 8 Front Screen / Scheme Selection

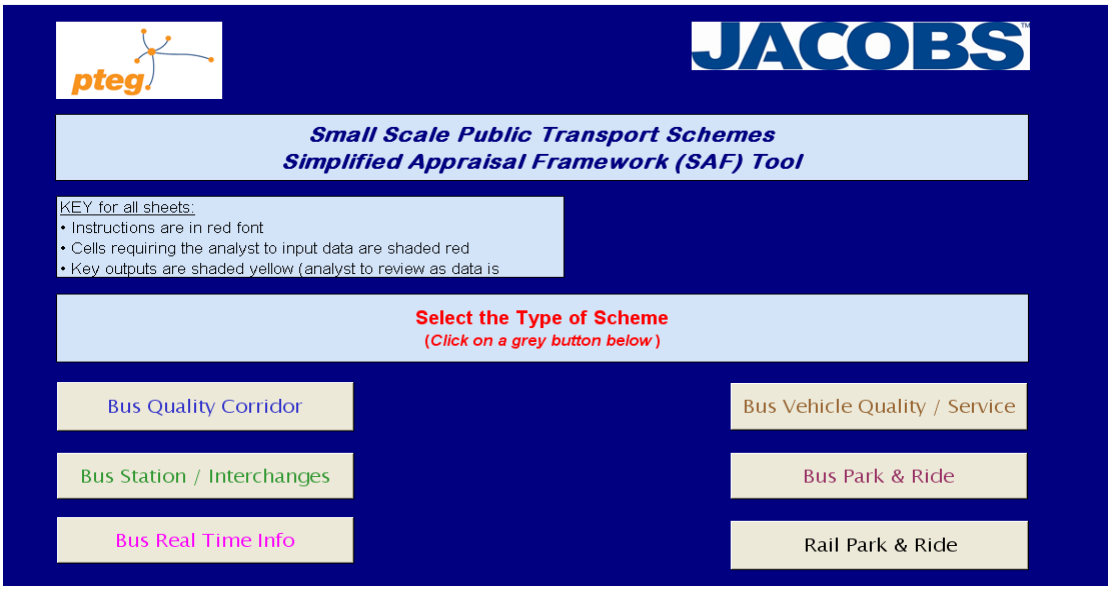


Figure 9 shows an example user input sheet. The red boxes require users to input a value. Clicking on the box reveals guidance on the range or default assumptions for a parameter or provides a drop down menu for selecting an assumption or input value. Macro buttons are also provided to link the user to example data from a range of evidence on key parameters within the model.

The yellow boxes report the results of calculations based on the input data and processes within the model. The user is recommended to review the results to ensure that are within the expected range for the type of scheme being considered. If the reported numbers are too high or too low it is recommended that the user reviews the input assumptions.

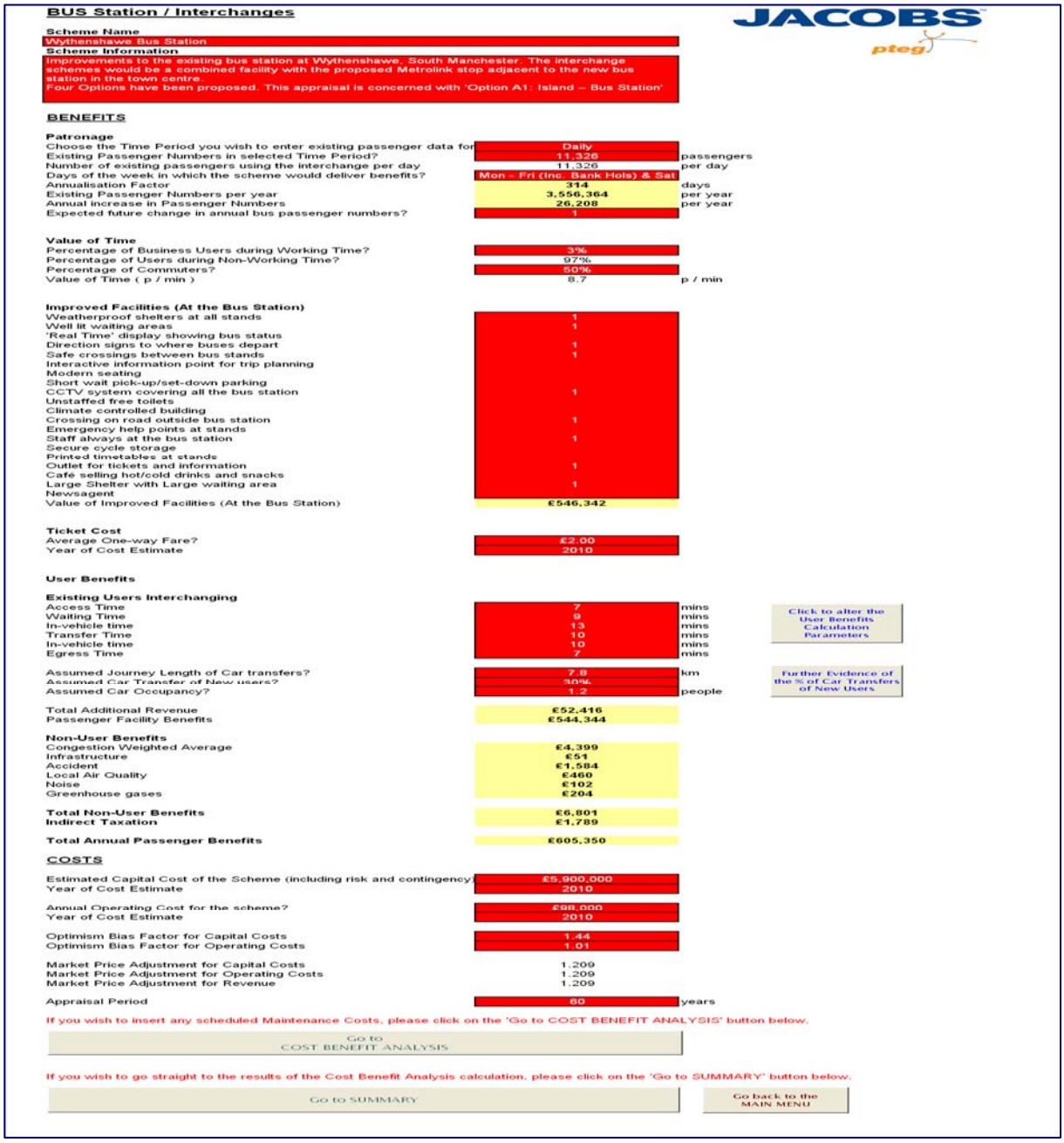
This page has macro buttons from which the user can link to;

- The Cost Benefit Analysis – where the user needs to add additional capital costs over the life of the projects and where the user can view the present values of the key appraisal inputs and the 15, 30 and 60 year appraisal results, or;

- The Summary – providing the key outputs of the Appraisal.

In addition, the expert user can click on the model tabs and review the appraisal assumptions and adjust key parameters such as the assumed elasticity of demand to change in generalized travel costs.

Figure 9 Example User Input Sheet



BUS Station / Interchanges

Scheme Name
Wythenshawe Bus Station
Scheme Information
Improvements to the existing bus station at Wythenshawe, South Manchester. The interchange schemes would be a combined facility with the proposed Metrolink stop adjacent to the new bus station in the town centre.
Four Options have been proposed. This appraisal is concerned with 'Option A1: Island – Bus Station'

BENEFITS

Patronage

Choose the Time Period you wish to enter existing passenger data for	Daily	
Existing Passenger Numbers in selected Time Period?	11,326	passengers
Number of existing passengers using the interchange per day	11,326	per day
Days of the week in which the scheme would deliver benefits?	Mon - Fri (Inc. Bank Hols) & Sat	
Annualisation Factor	314	days
Existing Passenger Numbers per year	3,556,364	per year
Annual increase in Passenger Numbers	26,208	per year
Expected future change in annual bus passenger numbers?	1	

Value of Time

Percentage of Business Users during Working Time?	3%	
Percentage of Users during Non-Working Time?	97%	
Percentage of Commuters?	50%	
Value of Time (p / min)	8.7	p / min

Improved Facilities (At the Bus Station)

Weatherproof shelters at all stands	1
Well lit waiting areas	1
'Real Time' display showing bus status	
Direction signs to where buses depart	1
Safe crossings between bus stands	1
Interactive information point for trip planning	
Modern seating	
Short wait pick-up/set-down parking	
CCTV system covering all the bus station	1
Unstaffed free toilets	
Climate controlled building	
Crossing on road outside bus station	1
Emergency help points at stands	
Staff always at the bus station	1
Secure cycle storage	
Printed timetables at stands	
Outlet for tickets and information	1
Cafe selling hot/cold drinks and snacks	
Large Shelter with Large waiting area	1
Newsagent	
Value of Improved Facilities (At the Bus Station)	£546,342

Ticket Cost

Average One-way Fare?	£2.00
Year of Cost Estimate	2010

User Benefits

Existing Users Interchanging

Access Time	7	mins
Waiting Time	9	mins
In-vehicle time	13	mins
Transfer Time	10	mins
In-vehicle time	10	mins
Egress Time	7	mins

Click to alter the User Benefits Calculation Parameters

Assumed Journey Length of Car transfers?	7.8	km
Assumed Car Transfer of New users?	30%	
Assumed Car Occupancy?	1.2	people

Further Evidence of the % of Car Transfers of New Users

Total Additional Revenue	£52,416
Passenger Facility Benefits	£544,344

Non-User Benefits

Congestion Weighted Average	£4,399
Infrastructure	£51
Accident	£1,584
Local Air Quality	£460
Noise	£102
Greenhouse gases	£204
Total Non-User Benefits	£6,801
Indirect Taxation	£1,789
Total Annual Passenger Benefits	£605,350

COSTS

Estimated Capital Cost of the Scheme (including risk and contingency)	£5,900,000	
Year of Cost Estimate	2010	
Annual Operating Cost for the scheme?	£98,000	
Year of Cost Estimate	2010	
Optimism Bias Factor for Capital Costs	1.44	
Optimism Bias Factor for Operating Costs	1.01	
Market Price Adjustment for Capital Costs	1.209	
Market Price Adjustment for Operating Costs	1.209	
Market Price Adjustment for Revenue	1.209	
Appraisal Period	60	years

If you wish to insert any scheduled Maintenance Costs, please click on the 'Go to COST BENEFIT ANALYSIS' button below.

Go to COST BENEFIT ANALYSIS

If you wish to go straight to the results of the Cost Benefit Analysis calculation, please click on the 'Go to SUMMARY' button below.

Go to SUMMARY

Go back to the MAIN MENU

Figure 10 shows an example summary of results screen which presents key scheme data from the input page and the resultant economic value for money assessment. This page has macro buttons linking back to the data input sheet, the cost benefit analysis sheet and the main menu and the print option prints the summary sheet.

Figure 10 Example SAF Results Summary

Summary of Results

JACOBS pteg

Cost–Benefit Analysis: BUS Vehicle Quality / Service

PRINT Results

Go back to DATA INPUT

Go back to COST BENEFIT ANALYSIS

Go back to the MAIN MENU

Scheme Name		
Mybus Major Scheme - North Halifax Grammar School		
Scheme Description		
The Mybus project is a multi-operator scheme, centrally procured and co-ordinated by Metro, providing 206 high quality home-to-school transport services using dedicated yellow buses. This appraisal is concerned specifically with the Mybus service to North Halifax Grammar School Case Study.		
Inputs :		
Existing Passenger Numbers / year		273,240
Increase in Passenger Numbers / year		32,795
Capital Cost of the Scheme	2002 prices	£552,000
Annual Operating Costs	2002 prices	£168,642
Outputs :		
PVC		£2,813,843
PVB		£4,903,046
NPV		£2,089,203
BCR		**1.74**
Assumptions:		
Appraisal Period (years)		15
Optimism Bias for Capital Cost		0%
Optimism Bias for Operating Costs		0%

APPENDIX B SAF INPUTS FROM CASE STUDY EVIDENCE

Scheme Name		Assessment Criteria								
		User Benefits								
		Journey Time Savings	Journey Time Reliability	Improved Facilities (at the station)	Improved Facilities (on the bus/train)	Non-User Benefits**	Patronage	Revenue Generated (e.g.ticket cost)	Scheme Costs (Capital & Operating)	Input Source
	Mybus Major Scheme 2004-2008: North Halifax Grammar School	Parents saving an average of one hour each week by putting children on to the bus	Mybus service more reliable than public services - positive impact on educational attainment.		Dedicated drivers, CCTV and low floor buses	No specific details for North Halifax Grammar scheme. However for mybus in general, 64% of the pupils using the schemes used to travel to school by car. In total over 2 million car km saved resulting in congestion benefits.	22 direct services to the campus giving a capacity for 1254 pupils (2900 pupils attend the campus)	Revenue created from the new services is around £250,000 and an extra contribution from the schools and LEA of £35,000	Capital Cost = £552k, Annual Operating Cost = £168k	Info from observed data (scheme implemented 2006/7)
	Outer Circle Quality Corridor	Bus time savings of 15-20 minutes (12-14%)	Assessment of reduction in lateness and variability of lateness suggests possible savings of £7.6m and £5.6m p.a.		Low floor buses	Net time increase for orbital traffic of up to 2½ minutes. Induced traffic disbenefits (Year 1) = £0.3m.	Average Existing Passenger Numbers per day = 2800 passengers	Net Revenue Gain (Year 1) = £1.068m	Capital Cost = £16.8m, Annual Operating Cost = £200k	Models built for years 2005 and 2034 using TEMPRO forecasts
	Assessment of Priority Lanes in Tyne and Wear	Max saving 126.41 seconds in AM peak for A690 inbound for buses on section Prospect Hotel to Barns Gyratory Max saving 28.93 seconds in AM peak for A690 outbound for buses on section Barns Gyratory to Prospect Hotel				Change in congestion (-1.9% 2003-2005)				Info from observed data

	TBT Infrastructure			Facility Benefits £198,390			An additional 0.19m trips per annum to existing 14.63m trips per annum	£197,209 per year for next 5 years	£1,171,314	Info from predicted values
	Dudley Port Park and Ride			Facility Benefits (£45)		Decongestion (£36,621) Veh Operating Cost Savings (£16,363) Time Savings (£8,417) Accidents (£7,776)		£29,550	£906,000	Info from predicted values
	Derby Road Modal Shift Project (Quality Corridor)	24 hour bus lanes		RTPI improved shelter and timetable cases, 'infohubs'	Low floor buses		Cannot be accurately measured			Info from observed data
	Implementation of Intelligent Traffic Light Priority in West Yorkshire	Total thoughout W.Yorkshire: £13.75 million				Accidents throughout W.Yorkshire: £93,000			Throughout W.Yorkshire: £3.5m	Info from predicted values
	Access York Phase 1 Park and Ride Development	£93m	£19.4m			Noise: £1.3 million Air Quality: £4000 Greenhouse Gases: £5.4m Accidents - £15,000	With the new sites and extra spaces, the annual number of bus passenger trips is forecast to increase to 7.5m by 2026, from the current 4.3m, and the number of vehicles parked at sites to 2.9m from the current 1.7m.		Capital Cost = £25.5m, Annual Operating Cost = £36m	Info from predicted values

	A65 QBC Scheme Funding Submission	Forecast to provide a 6-7 minute improvement in bus journey times in the AM peak (inbound direction) and PM peak (outbound direction) with improvements of 3-4 minutes expected at other times.	Scheme expected to improve journey time reliability. Currently variability in journey times of up to 200% on the A65.	Design benefits pedestrians (e.g. crossings) and cycle users	Low floor buses	Scheme minimises the impact on non-users. Small congestion relief benefits for car users from bus lane	Generates an extra 276,000 bus trips annually	Net present Value of Benefits (PVB) £46m. The Net Present Value (NPV) of the scheme is £22m.	Capital Cost = £20.6m, Annual Operating Cost = £42k	Model outputs (e.g. TUBA & SATURN model)
	Leeds New Generation Transport (NGT)	Relative to the do minimum situation, NGT will provide £525m of public transport journey time benefits. Journey time savings on the 3 lines range from 1-6minutes.	Public transport reliability will also improve, generating about £94m of benefits.	Associated pedestrian crossings and cycle facilities	Low floor buses	Relative to the do minimum situation, NGT will provide £14m of net highway congestion relief.	3000 additional park & ride spaces	Total NGT revenue forecast = £10.4m (preferred option). Average yield per NGT passenger is £1.33 in the AM peak using projected year 2016 fares.	Capital Cost = £245m, Annual Operating Cost = £4.7m	Model outputs (e.g. TUBA)
	Appraisal of Integrated Transport Knowledge Base (ITKB)			The ITKB scheme will provide public transport users with more service information through modes such as the internet, mobile phone and RTI.	The ITKB scheme will provide public transport users with more service information through modes such as the internet, mobile phone and RTI.	The scheme encourages modal shift from car to public transport resulting in congestion benefits	The 2008 patronage on the public transport network is 326.8m on bus, 37.6m on rail and 5m on metro. Predicted to be an additional 16.7m trip legs as a result of the change in facilities provided.	Revenue benefits per year = £1.3m	Capital Cost = £1.25m, Annual Operating Cost = 0	Passenger usage outputs sourced from VISUM model
	Acocks Green Rail Park and Ride Expansion					To be calculated from 29 additional parking spaces, 8 km distance from Birmingham	To be calculated from 29 additional parking spaces and evidence of 17% new rail users	To be calculated from additional parking spaces and £1 1 –way rail fare	Capital £424,000 Operating £11,600 p.a.	Business case briefing note and post scheme market research report

APPENDIX C – I-SET

Figure 11 shows the front page of the i-SET database, Figure 12 the Assessment Workbook in which the grey cells have drop-down menus for selection options. Figure 13 shows an example scheme summary produced from the database and Figure 14 shows the supporting version log / about sheet providing details of PTEG and its partners and further hyperlinks to relevant organisations.

Figure 11 Schemes Evidence Tool (i-SET)

Figure 12 i-SET Assessment Workbook

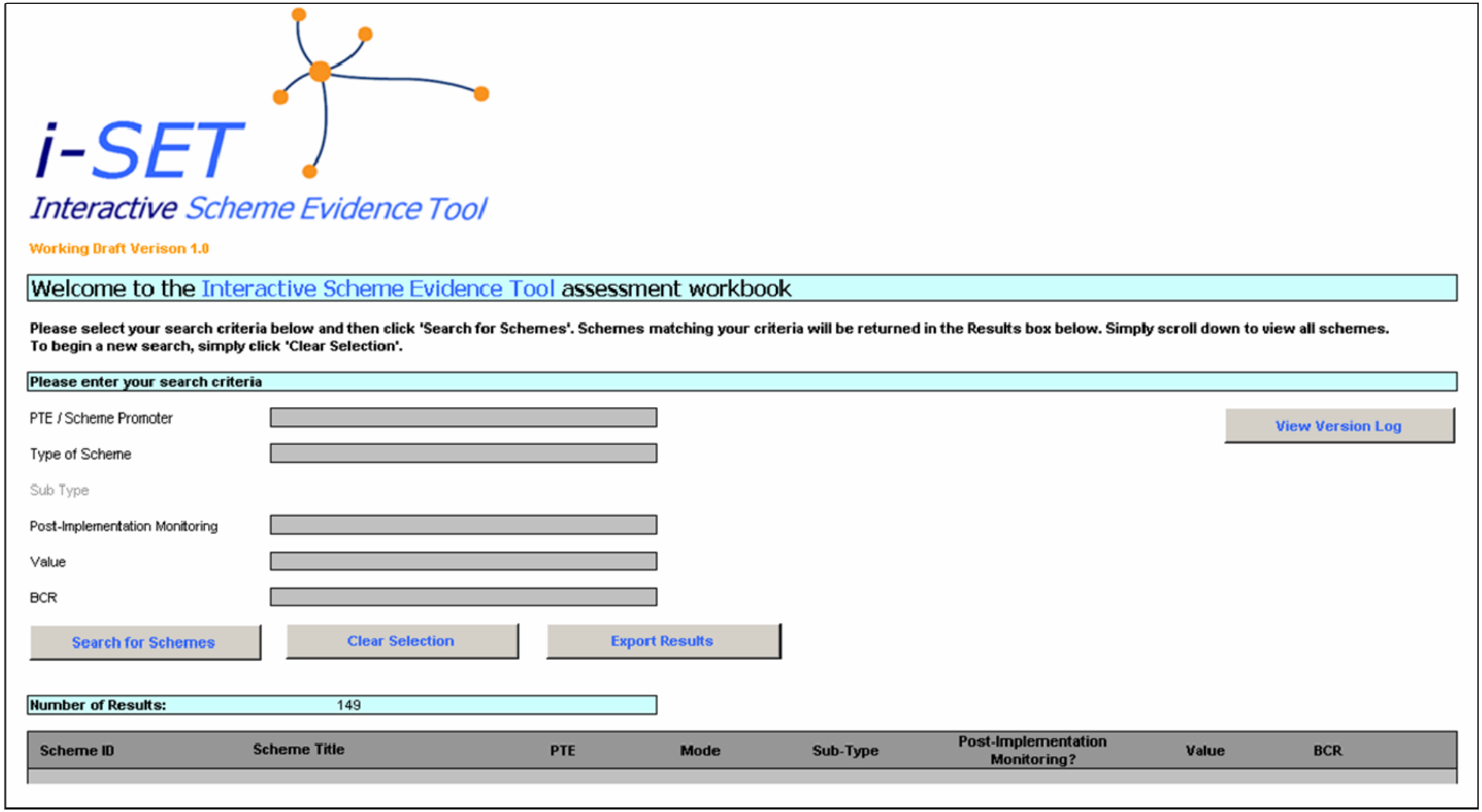


Figure 13 i-SET Example Scheme Details Presentation

JACOBS pteg

i-SET
Interactive Scheme Evidence Tool

Section A: Scheme Details

Scheme ID	ID035c
PTE	Centro
Scheme Name	Chester Road Park and Ride
Scheme Type	Rail
Scheme Sub Type	Rail Park & Ride
Scheme Description	Economic case for Park and Ride Expansion with two options. Option 1: An addition of 60 parking spaces and Option 2: An addition of 28 parking spaces Option 1: £612,000 Option 2: £204,000
Value	-

Appraisal Methodology

Appraisal Compliance:	None

Evaluation Criteria

Bespoke?	Yes
Details/Key Parameters	For each option the number of users required to cover all costs over a scheme life is calculated, along with the level of benefits accrued through 100% occupancy of the expansion over the scheme life
BCR	-
Additional Notes	Consideration of the impacts upon bus patronage and journey time savings for both cars and buses provided. Option 1 BCR is 1.37. Option 2 BCR is 1.82.
Pertinant to the apprasial of small schemes?	Yes
Post Implementation Monitoring	No

Scheme Contact

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Figure 14 i-SET Version Log - About