



Department
for Transport

Value for Money Assessment for Major Bus-Related Schemes

February 2016

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This report was originally published on 11th February 2016. Since then errors have been discovered in some of the values used. These have been corrected to reflect the most up-to-date appraisal values for the schemes considered in this report. The impact of the changes made have been to increase the aggregate BCR from 3.9 to 4.2.

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1. Executive Summary

- 1.1** England's local bus operations constitute an integral public transport service that increases mobility and facilitates economic growth. Consequently they form an important part of the Department for Transport's (DfT) vision for Local Transport.
- 1.2** A number of major bus-related schemes have been implemented under various funds. Bus-related schemes are defined as any scheme which has a bus-related element¹.
- 1.3** This report summarises the assessment results of the Value for Money (VfM) for major bus-related schemes approved in the last five years. The funds included in this analysis are the Local Majors (LM) fund, the Local Sustainable Transport Fund (LSTF) and the Better Bus Areas (BBA) fund. Please note that only monetised benefits and costs are included in this analysis. As part of the economic appraisal process for schemes, non-monetised benefits and costs are appraised qualitatively.
- 1.4** VfM appraisal was carried out on all bids under these funds, in line with the funds' relevant published guidance documents²³⁴.
- 1.5** Major schemes are usually defined as having a Departmental contribution of £5 million or more. However, in this report, a major scheme is defined as having a Departmental contribution of £4.975m or more. This allows the analysis to include a number of BBA schemes which involved a Departmental contribution just below the £5 million threshold.
- 1.6** This report finds that the 33 major bus-related schemes that qualified for funding have a combined Benefit-Cost Ratio (BCR) of 4.2. In other words, every £1 invested in these schemes will yield roughly £4 in benefits. This represents very high value for money under Departmental guidelines.
- 1.7** This report provides background information on the funds, summarises their value for money and then concludes with the main findings. The Annex provides further information on value for money guidelines and the specific bus-related schemes that were appraised.

¹ It is important to note that many of the bus-related schemes analysed in this paper include non-bus-related elements - unfortunately it is not possible to isolate the effects of bus-related interventions, not least because any scheme's elements will be interrelated

² LM fund VfM Guidance:

<http://webarchive.nationalarchives.gov.uk/20121025123854/http://assets.dft.gov.uk/publications/local-authority-major-transport-schemes/Value-for-money-guidance.pdf>

³ LSTF Guidance:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/43561/guidance.pdf

⁴ BBA fund guidance:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3229/bid-guidance.pdf

2. Background to the Funds

Local Majors Fund

- 2.1** The LM Fund aims to improve Britain's transport infrastructure via large-scale projects and thus promote economic growth.
- 2.2** As part of Spending Review 2010, a programme of 56 LM schemes were approved for funding. A total of £1.5 billion was originally made available in October 2010. A £170 million funding top-up was awarded in 2011.
- 2.3** £273 million was awarded to 12 major bus-related schemes which include a variety of bus infrastructure improvements.

Local Sustainable Transport Fund

- 2.4** The LSTF was launched in January 2011 with the aim of enabling local authorities to fund schemes that created local economic growth whilst also cutting carbon emissions.
- 2.5** £560 million was originally made available through the LSTF. Funding was topped up with a further £40 million in 2012 (and local contributions provided by local authority partners). In total, DfT awarded funding to 96 sustainable transport packages from 77 local authorities between 2011 and 2015. Along with local contributions provided by all funded project teams, over £1 billion is now being invested in local sustainable travel.
- 2.6** £225 million was awarded to 12 major schemes within 12 local transport authorities. Every one of these major schemes includes bus-related improvements, which were made up of a variety of bus infrastructure, bus service and bus information/marketing investments.

Better Bus Areas Fund

- 2.7** The BBA Fund was launched in December 2011 with the aim of increasing bus patronage, and reducing carbon emissions and congestion in urban areas. The Fund supports local authorities who partner-up with operators to deliver better bus services. Two distinct BBA funding competitions were held - BBA Round 1 and BBA Round 2.
- 2.8** In April 2012 BBA Round 1 awarded £70 million to 24 local authorities. In BBA Round 2 the funding mechanism changed. Rather than direct funding from DfT, BBA's under Round 2 are mainly funded by the Bus Service Operator Grant (BSOG). BSOG is currently paid directly to bus operators - but in BBA's it was devolved to the local transport authorities and topped up with an annual grant worth 20% of the BSOG for

commercial services⁵. BBA Round 2 will pay out £34 million to 5 BBA's up to April 2017.

- 2.9** £82 million was awarded to 9 major schemes representing 8 local transport authorities. These schemes include investments in bus infrastructure, bus service improvements and bus information.

⁵ The grant top up rate of 20% is applied to all Round 2 BBA's except Sheffield, where a 33% rate was negotiated as part of their city deal

3. Economic Appraisal and Scheme Benefit-Cost Ratios

- 3.1** All submitted schemes for the three funds were appraised for their Value for Money as part of the wider assessment processes
- 3.2** The Department extensively scrutinised the appraisals received and the various assumptions underlying each analysis. These were benchmarked against other bids received as well as existing evidence on the effectiveness of similar transport schemes.
- 3.3** Appendix A contains explanations and definitions of VfM terms and categories mentioned in this section.

Table 3.1 - Average headline Value for Money indicators for all funds

	Number of schemes	Average PVB (£m)	Average PVC (£m)	Average BCR
LM Fund	12	146.5	36.2	4.0
LSTF	12	180.6	35.6	5.1
BBA Fund	9	25.5	14.3	1.8 ⁶
TOTAL	33	125.9	30.0	4.2

- 3.4** Table 3.1 above outlines the average PVB (Present Value of Benefits), PVC (Present Value of Costs)⁷ and BCR values for all major bus-related schemes under the three funds. The following sections address these funds in aggregate and then each individual fund in turn.

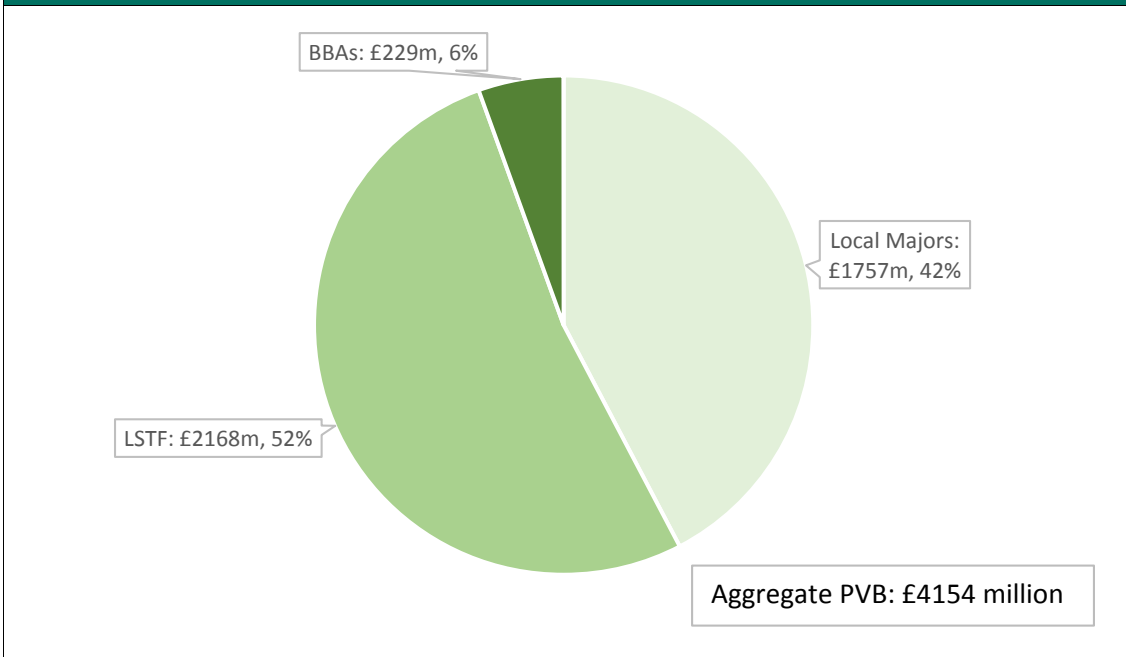
Aggregate Benefit-Cost Ratio (BCR) for all Funds

- 3.5** Pie charts for aggregate Present Value of Benefits (PVB) and Present Value of Costs (PVC) figures are found below. These represent the respective PVB/PVC estimates for all major bus-related schemes under the three funds.

⁶ 7 out of the 9 major BBA's analysed in this report were part of BBA Round 1 - which had a lower BCR threshold than the minimum BCR of 2 implemented in BBA Round 2.

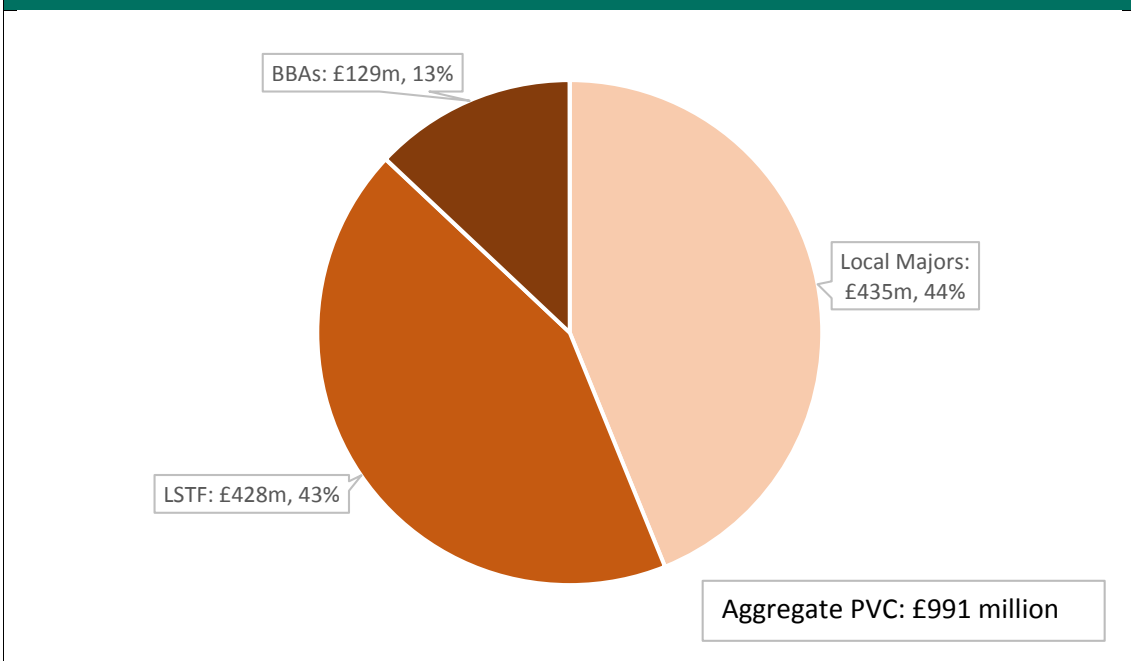
⁷ Costs and benefits occurring in the future are discounted to present values to reflect the fact that consumers value the present more than the future and that expected economic growth will make future monetised gains slightly less attractive as incomes are expected to rise.

Figure 3.1 - Aggregate PVB for the three funds



3.6 Figure 3.1 displays the aggregate PVB for the three funds, broken down by fund type. LSTF schemes constitute the largest share of the total PVB of £4154 million, followed by Local Major and BBA schemes.

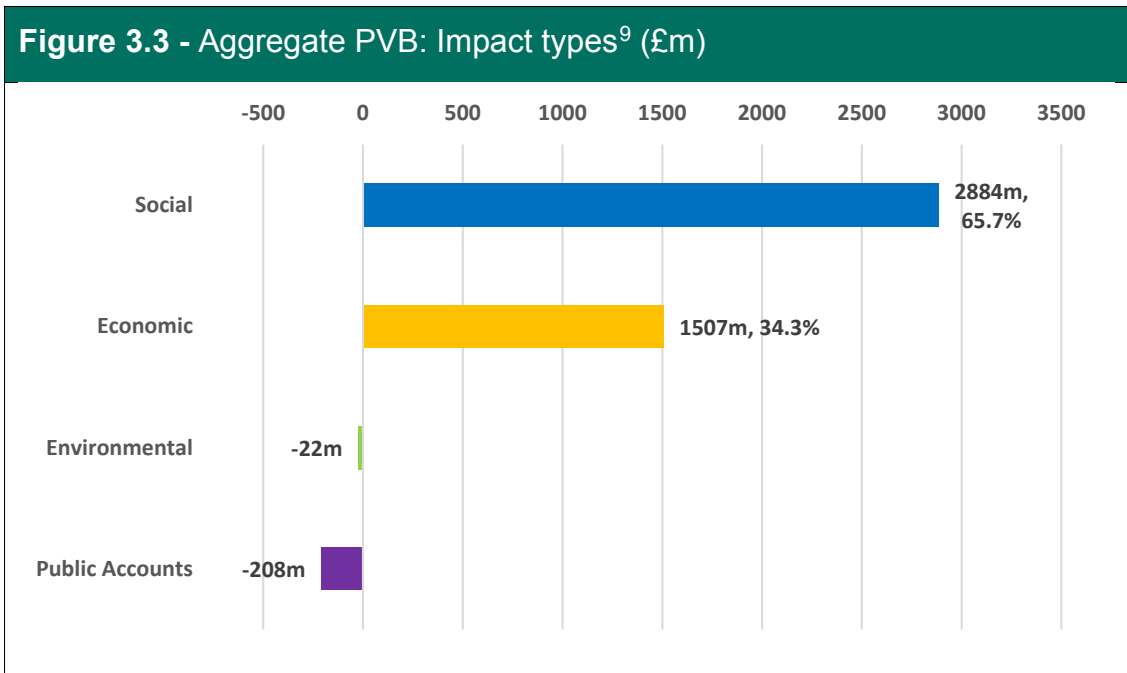
Figure 3.2 - Aggregate PVC for the three funds



3.7 Figure 3.2 displays the aggregate PVC for the three funds, broken down by fund type. Local Majors schemes take up the largest share at 44% of the aggregate PVC value of £991 million, followed by LSTF and BBA schemes.

3.8 The aggregate PVB and PVC values give an aggregate BCR of 4.2 for the three funds. For every £1 invested in these schemes, £4.20 of benefits will be realised. This represents very high value for money under Departmental guidelines.

Breakdown of aggregate PVB in terms of economic, environmental, social and public accounts impacts⁸



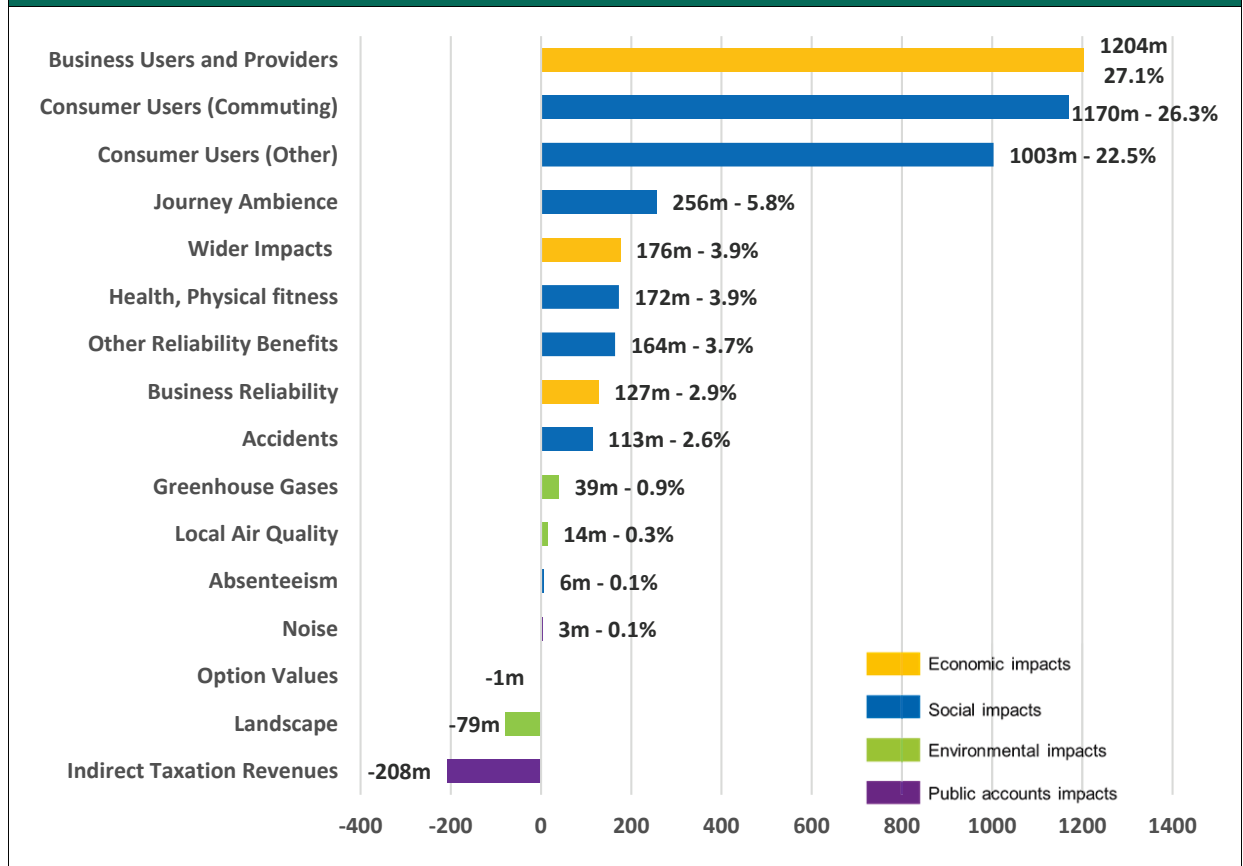
3.9 Figure 3.3 displays the aggregate PVB for the three funds broken down by impact type (economic, social, environmental and public accounts). Social impacts represent the largest share at 66%, whereas economic impacts are smaller, contributing £1,507m to aggregate PVB. It is important to appreciate these are net impacts - PVB analysis involves both benefits and disbenefits (e.g. landscape impacts).

⁸ Further information on impact types and their definitions can be found in Annex A

⁹ This bar chart and subsequent bar charts calculate aggregate PVB subcategory percentages in relation to the net benefits total. I.e. if a subcategory is a net benefit, its percentage is in relation to aggregate PVB net benefits

Breakdown of aggregate PVB: Impact type subcategories

Figure 3.4 - Aggregate PVB Subcategories (£m)

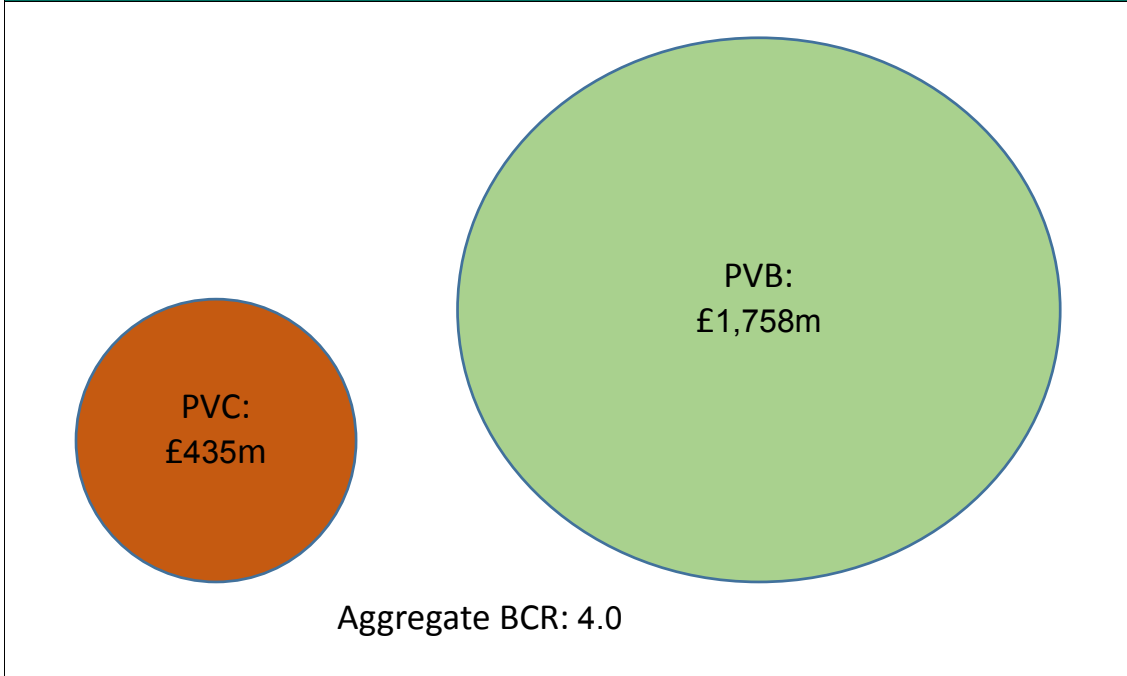


3.10 Figure 3.4 breaks down the aggregate PVB into its constituent subcategories. Economic impacts on business users and providers¹⁰ provide the biggest net benefits at £1,204 million, with the combined consumer user benefits amounting to 49% of total positive benefits.

¹⁰ "Providers" refers to transport providers (e.g. bus operators)

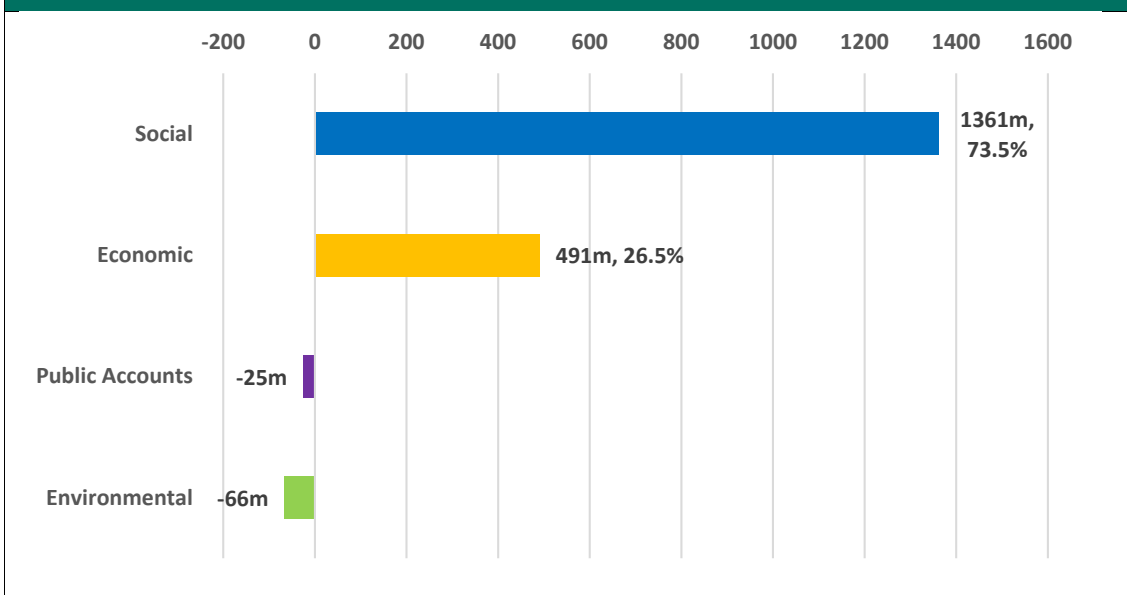
Aggregate BCR for Local Majors Bus Schemes

Figure 3.5 - Aggregate BCR: Local Majors



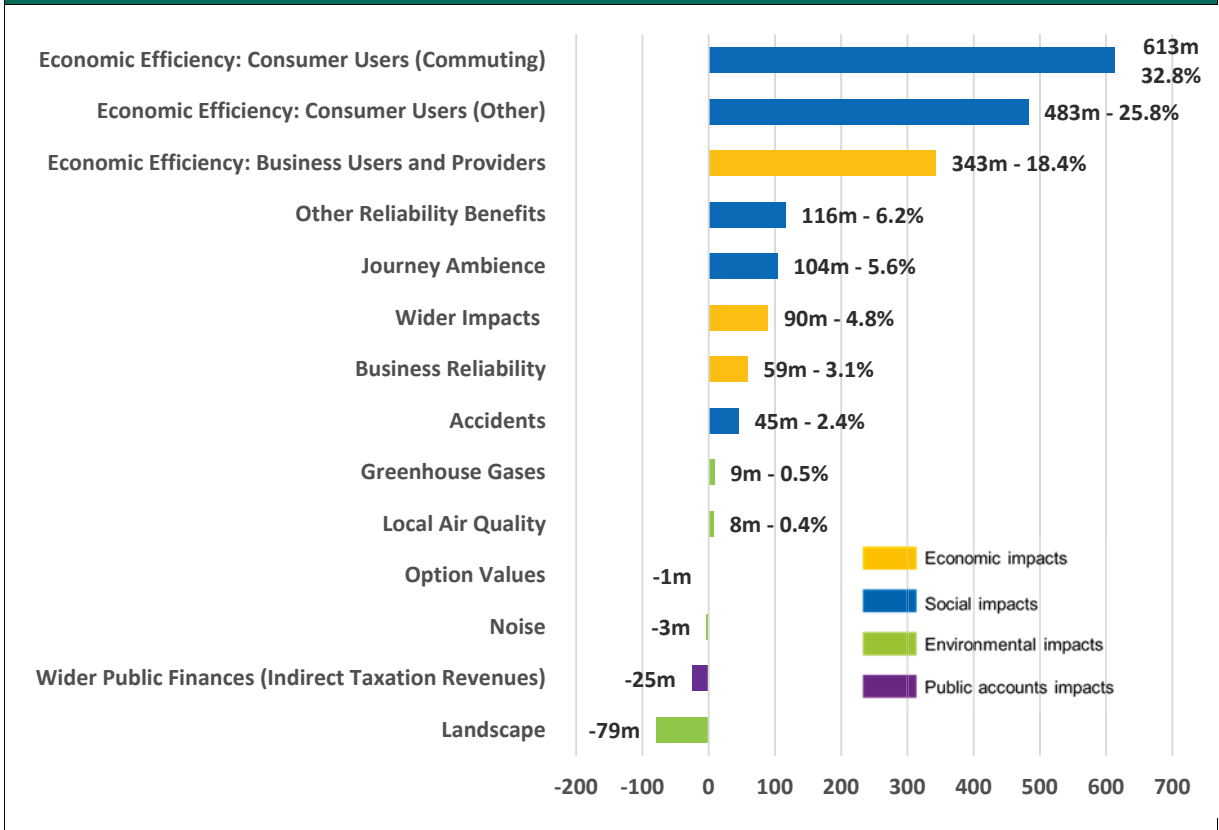
3.11 Figure 3.5 shows the aggregate BCR for the 12 Local Majors bus-related schemes in terms of total PVC and PVB. For every £1 invested in these schemes, £4.00 will be realised in benefits - this represents very high value for money.

Figure 3.6 - Aggregate PVB by impact type (£m)



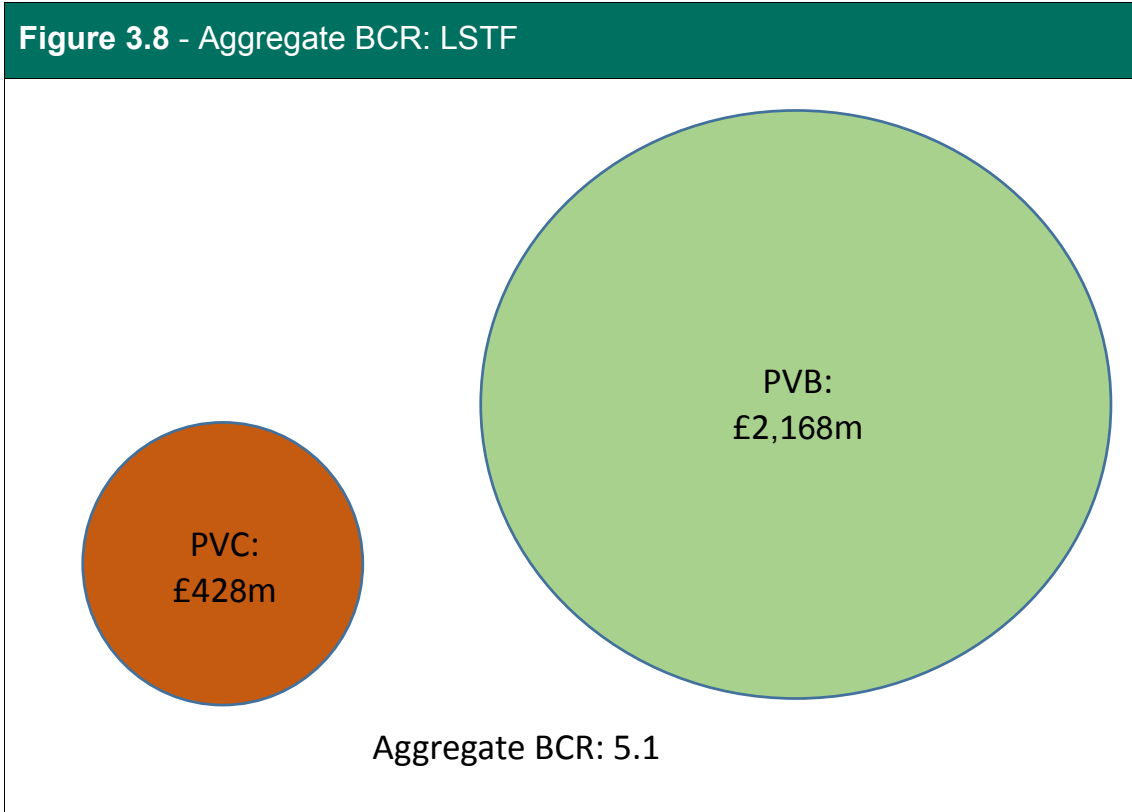
3.12 Figure 3.6 displays the aggregate PVB breakdown in terms of economic, environmental, social and public account impacts. Social impacts form the greatest proportion of aggregate PVB net benefits at 74%, whereas environmental impacts represent a net disbenefit of -£66m.

Figure 3.7 - Aggregate PVB subcategories (£m)

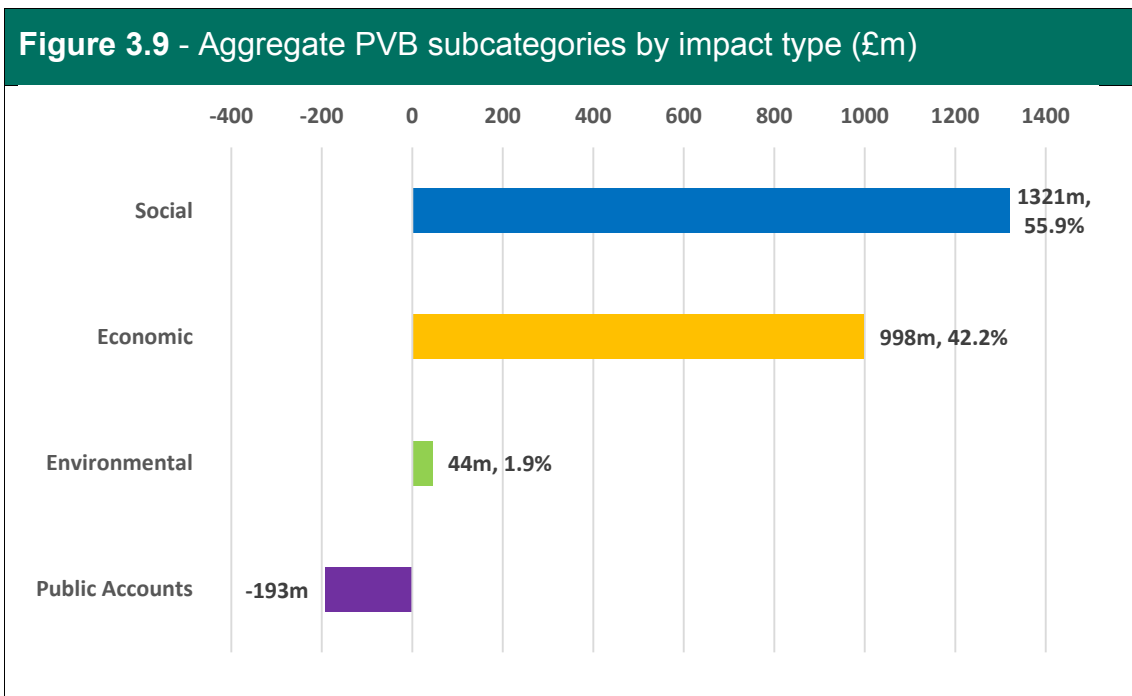


3.13 Figure 3.7 breaks down the aggregate PVB into its constituent subcategories. Benefits to consumer users, and business users and providers provide the greatest proportion of benefits at a combined total of 77%.

Aggregate BCR for LSTF Major Bus Schemes

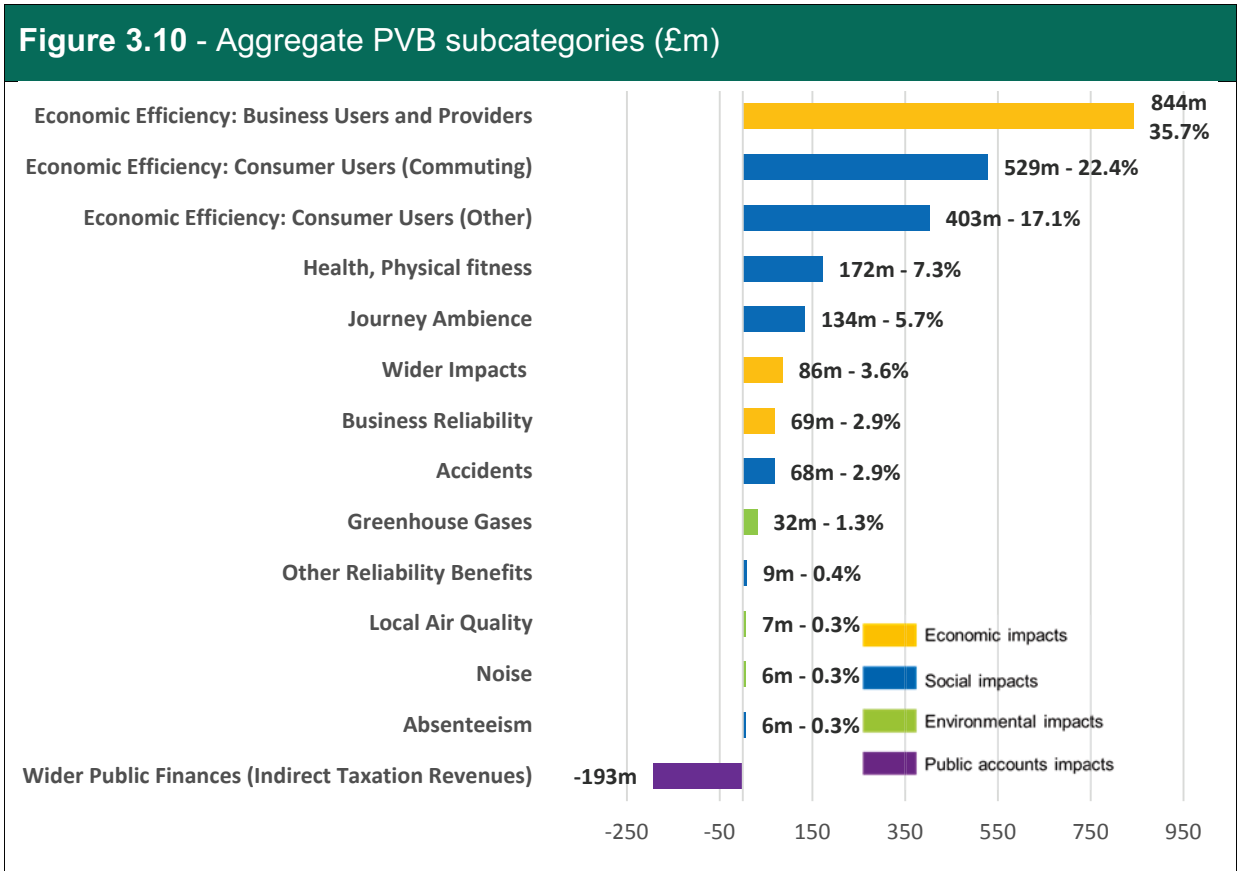


3.14 Figure 3.8 shows the aggregate BCR for the 12 LSTF major bus-related schemes in terms of total PVC and PVB. For every £1 invested in these schemes, £5.10 will be realised in benefits - this represents very high value for money.



3.15 Figure 3.9 displays the aggregate PVB in terms of economic, environmental, social and public account impacts. Social impacts

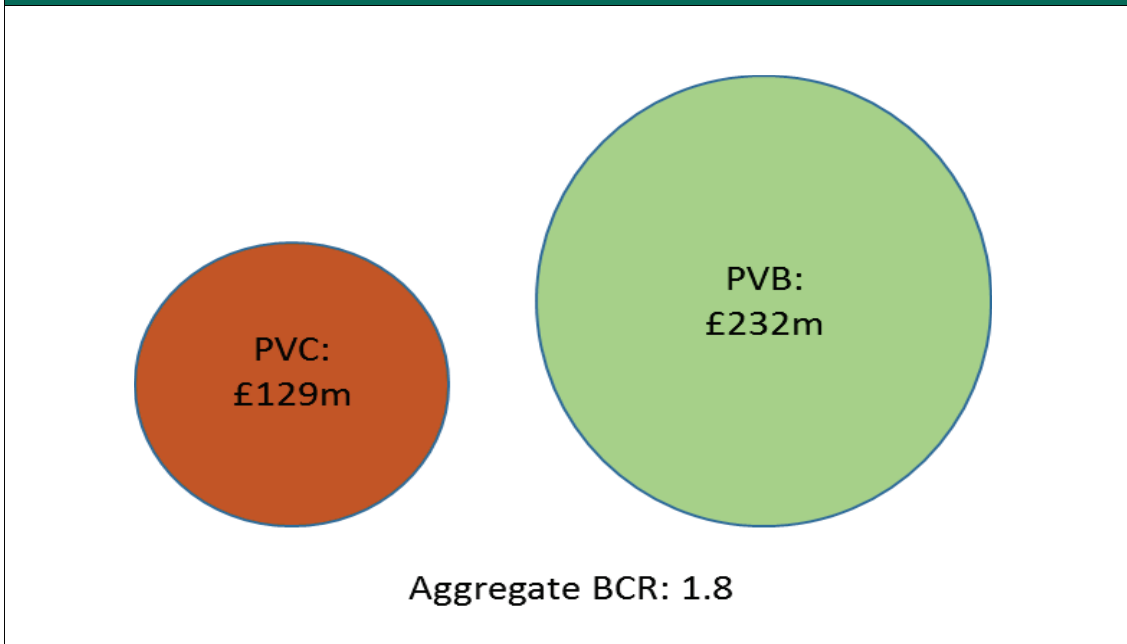
constitute the greatest proportion of aggregate PVB net benefits at 56% and environmental impacts have a positive share of 2%.



3.16 Figure 3.10 breaks down the aggregate PVB into its constituent subcategories. Benefits to commuters, and business users and providers provide the greatest proportion of benefits at a combined total of 58%. Health and physical fitness benefits form a notable proportion of benefits at 7% - these benefits accrue from increased physical activity such as walking to a bus stop.

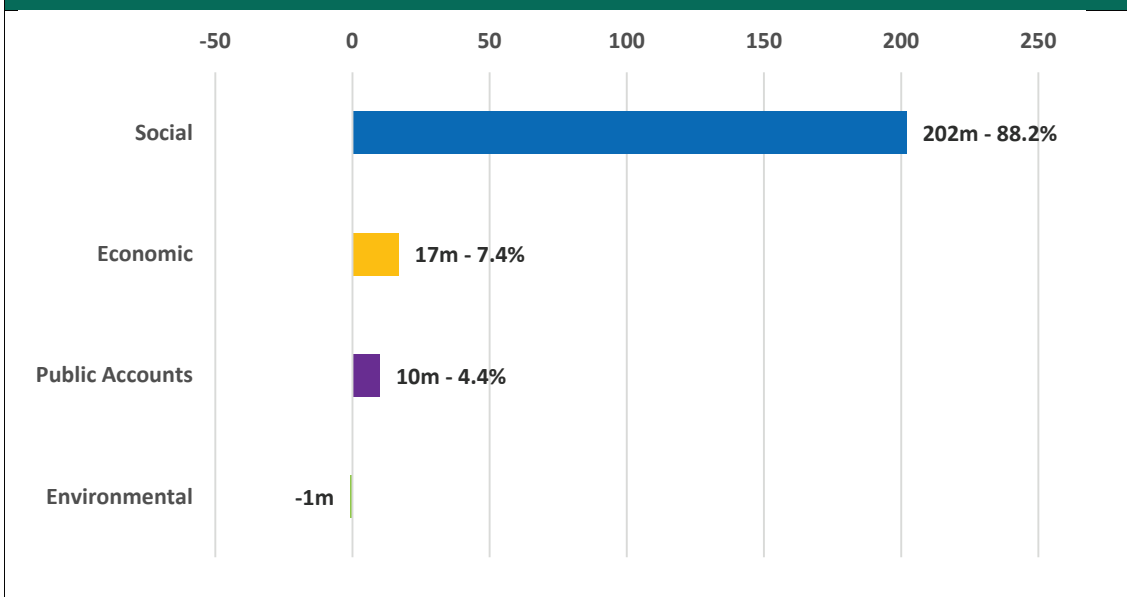
Aggregate BCR for BBA Major Bus Schemes

Figure 3.11- Aggregate BCR: BBA



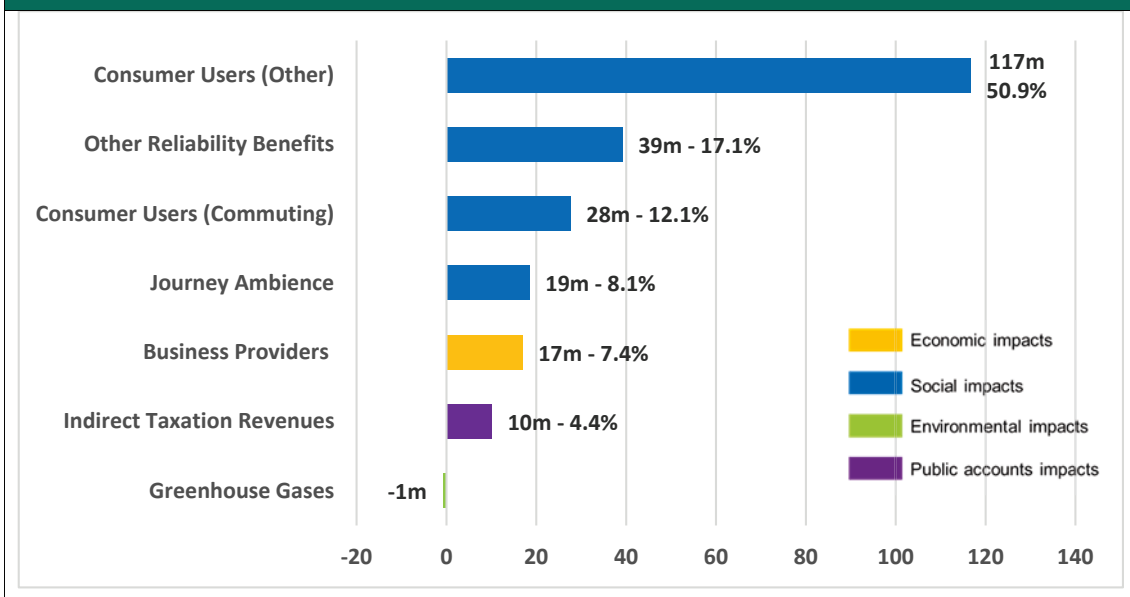
3.17 Figure 3.11 shows the aggregate BCR for the 9 BBA major bus-related schemes in terms of total PVC and PVB. For every £1 invested in these schemes, £1.80 will be realised in benefits - this represents medium value for money.

Figure 3.12 - Aggregate PVB subcategories by impact type (£m)



3.18 Figure 3.12 displays the aggregate PVB breakdown in terms of economic, environmental, social and public accounts impacts. Social impacts form the greatest proportion of aggregate PVB net benefits at 88%, whereas environmental impacts represent a net disbenefit of -£1m.

Figure 3.13 - Aggregate PVB subcategories (£m)



3.19 Figure 3.13 breaks down the aggregate PVB into its constituent subcategories¹¹. Benefits to consumer users for non-commuting purposes provide the greatest proportion of benefits at total of 51%. Business provider benefits reflect increased revenues to bus operators; this represents 7% of total benefits¹².

¹¹ BBA scheme PVB appraisal subcategories are different to those of the LM Fund and LSTF - they have been re-categorised here for ease of comparison between the funds

¹² Business user benefits are not calculated as business journeys (journeys conducted during working hours for business purposes) constitute an insignificant proportion of total bus journeys: 1.7% for the average person. Please note that commuter benefits are calculated. Source: NTS0409 - <https://www.gov.uk/government/statistical-data-sets/nts04-purpose-of-trips>

4. Conclusion

- 4.1** This report finds that the 33 major bus-related schemes that qualified for funding in the last 5 years have a combined Benefit-Cost Ratio of 4.2. Every £1 invested in these schemes will yield roughly £4 in benefits. This represents very high value for money under Departmental guidelines.
- 4.2** The high BCR figure reflects the importance and effectiveness of major bus-related schemes in improving both bus infrastructure and services, as well as the wider transport network.
- 4.3** Benefits are concentrated around time and money savings (reduced journey times and lower fuel costs) for business and consumer users (commuting and leisure/other) - resulting from more efficient bus services.

5. Annexes

Annex A - Explanation of Value for Money terms and categories

This annex provides brief explanations of various VfM terms and categories. Relevant references are provided, but for a more in-depth understanding of the Department's economic appraisal process, please consult WebTAG (<https://www.gov.uk/transport-analysis-guidance-webtag>) - the Department's transport appraisal guidance.

Value for Money (VfM)¹³

A VfM assessment is undertaken as part of the 'economic case' for a scheme (the other four cases are strategic, commercial, financial and management¹⁴). The initial VfM category is identified based upon the BCR of the scheme, using monetised impacts in line with WebTAG guidance. The VfM categories of a scheme are as follows:

- Poor VfM if the BCR is less than 1.0
- Low VfM if the BCR is between 1.0 and 1.5
- Medium VfM if the BCR is between 1.5 and 2.0
- High VfM if the BCR is between 2.0 and 4.0
- Very high VfM if the BCR is greater than 4.0

However, appraisals produced following WebTAG guidance do not necessarily monetise all costs and benefits of a transport intervention. The VfM assessment should take account of both quantitative and qualitative assessments of impacts. *Please note this report only analyses monetised costs and benefits.*

Present Value of Benefits

PVB is the present-day value of all benefits accrued as the result of the scheme. Benefits accrued in the future are converted to present-day values by using a discount rate¹⁵ - this allows us to compare benefits and costs that occur in different time periods.

¹³ For more information on VfM appraisal, please see https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255126/value-for-money-external.pdf

¹⁴ See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf for more information on the other four cases and how all five cases form the 'Transport Business Case'

¹⁵ A discount rate of 3.5% for the first 30 years of a scheme's appraisal is used in line with HM Treasury Green Book guidance. The discount rate decreases after the 30 year mark. More information here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

The tables 5.1 to 5.4 outline the various monetised PVB subcategories by impact type. Please note that some subcategories can be negative i.e. disbenefits.

Table 5.1 - Economic impacts

Impact subcategory	Definition
Business users and providers	Users: Assessment of the extent to which journeys can be made within a reasonable time and at reasonable cost, focusing on improvement in end to end journey times and money costs (e.g. a change in fuel costs) Providers: Calculation of changes in revenue to transport providers(e.g. a change in bus fare revenue)
Business reliability	An assessment of impact of the scheme on business reliability (variance and predictability of journey times) e.g. via changes in congestion levels and subsequently, average speeds
Wider impacts	Wider economic impacts such as changes in agglomeration impacts

Table 5.2 - Environmental impacts

Impact subcategory	Definition
Noise	Assessment of noise impact of scheme using all relevant and available baseline environmental conditions data. Desktop and GIS based identification of likelihood and potential severity of impact
Local air quality	Assessment of local air quality impact using all relevant and available baseline environmental and conditions data, followed by Desktop and GIS based identification of likelihood and potential severity of impact
Greenhouse gases	Estimated change in carbon emissions
Landscape	Assessment of impact on the surrounding landscape using all relevant and available baseline data to establish the characteristic and locally distinctive features of an area. Desktop and GIS based identification of likelihood and potential severity of impact

Table 5.3 - Social impacts

Impact subcategory	Definition
Journey ambience	Assessment of changes to the end to end journey experience of transport users (considering traveller care; travellers' views; and traveller stress)

Health and physical fitness	Assessment of the health benefits results from additional walking and cycling journeys (e.g. walking to a bus stop)
Absenteeism	Assessment of the benefits of reduced absenteeism resulting from improvements in health and physical fitness
Accidents	Assessment of improvements in road safety resulting from the scheme utilising road incident data and indicative forecasts of changes in traffic levels and speeds at hotspots
Consumer users (commuting)	Assessment of the impact on commuters in terms of travel times, costs and reliability.
Consumer users (other)	Assessment of the impact on leisure trips in terms of travel times, costs and reliability
Option values	Assessment of the impact of the option on communities in terms of the option value associated with service additions/withdrawals
Other reliability benefits	Assessment of reliability (journey time variance and predictability) benefits for non-business users e.g. via changes in congestion levels and subsequently, average speeds

Table 5.4 - Public Accounts Impacts

Impact subcategory	Definition
Indirect tax revenues	Estimate of indirect tax and revenue impacts on public sector based on indicative changes in traffic/passenger volume and fares, charge and tax rates per kilometre or trip.

Present Value of Costs

PVC is the present-day value of all costs accrued as the result of the scheme. Costs accrued in the future are converted to present-day values by using a discount rate - this allows us to compare benefits and costs that occur in different time periods. In this analysis, PVC represents the initial and ongoing capital investment costs of the schemes.

Annex B - Tables of major bus-related schemes

The tables below provide summaries of bus-related schemes according to fund type.

Table 5.5 - Local Majors Fund

Scheme name	Summary
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Access York Park & Ride	Two new park and ride sites for York
Ashton Vale to Temple Meads BRT (Bristol)	Bus Rapid Transit scheme (including guided bus) from the Ashton Gate area to the city centre, including feeder services from further afield
Manchester Cross City Bus	Highway changes and bus enhancements to facilitate new cross Manchester city centre bus services
North Fringe to Hengrove Package BRT (Bristol)	Bus Rapid Transit scheme from the north of the city (inc Bristol Parkway) via the city centre to Hengrove in the South
Pennine Reach (East Lancashire Rapid Transit)	Bus enhancements in Blackburn and East Lancashire including bus priority measures
Rochdale Interchange	Replacement bus station for Rochdale adjacent to the existing, allowing for the redevelopment of the town centre and complementing the arrival of Metrolink in 2014
South Yorkshire Bus Rapid Transit Phase 1	New bus rapid transit from Sheffield along the Lower Don Valley toward Rotherham including a new road link under the M1 (the Tinsley link)
South Bristol Link BRT	New link road in South Bristol improving connections between a number of major routes and the City Centre. Would also be used by Bus Rapid Transit services
Tipner Interchange/Park & Ride	New interchange on M275 opening up development area, park and ride site and bus priority measures
Bath Transportation Package	Park and ride site expansions and bus priority measures plus improvements to local bus stops
Hucknall Town Centre Improvements	New inner relief road allowing pedestrianisation of High Street plus 'bus only' link and enhanced pedestrian and cycle facilities.
Ipswich Town Centre	Changes to the town centre bus interchanges; expansion and improvement of other bus facilities; an Urban Traffic Management and Control system; a Real Time Passenger Information system

Table 5.6 - Local Sustainable Transport Fund

LTA/Co-ordinating authority	Scheme summary (only bus interventions summarised)
South Yorkshire	Park and ride extensions/enhancements, bus corridor improvements, an employment shuttle bus linking isolated workplaces, bus priority technology, bus shelters and bus stops
Manchester	Real time information at bus stops and interchanges, bus corridor improvements, bus priority technology

Hertfordshire	Real time information at bus stops and interchanges, new buses, new/extended bus lanes, bus corridor improvements, improved public transport interchanges, bus priority technology
Nottingham	Integrated multi-operator smartcard platform, hybrid and low emission technologies for buses, bus shelters and bus stops
Bristol	Real time information at bus stops and interchanges, new/extended bus lanes, bus corridor improvements
Merseyside	Real time information at bus stops and interchanges, bus corridor improvements, bus priority technology
Reading	Smartcard platform integration, enhanced park and ride facilities, rebranding the ReadiBus fleet, new/extended bus lanes, bus corridor improvements, bus priority technology
Surrey	Implementation of bus quality partnerships, real time information at bus stops and interchanges, bus corridor improvements, improved public transport interchanges, bus priority technology, bus shelters and bus stops, off-bus ticket machines
South East Dorset (Bournemouth)	New bus route, real time information at bus stops and interchanges, bus corridor improvements, improved public transport interchanges, bus gate provision, bus priority technology, bus shelters and bus stops
Telford & Wrekin	Improved park and ride infrastructure, bus corridor improvements, bus shelters and bus stops
Birmingham (Centro)	Real time information at bus stops and interchanges, park and ride extensions and enhancements, new/extended bus lanes, bus corridor improvements, improved public transport interchanges, bus gate provision, bus priority technology, bus shelters and bus stops
South Hampshire	Interchange improvements, improved real time information, development of a smartcard ticketing system, marketing, bus corridor improvements, bus priority technology, bus shelters and bus stops, off-bus ticket machines

Table 5.7 - Better Bus Areas Fund¹⁶

Better Bus Area	Summary
Nottingham (BBA Round 1)	Extending existing statutory bus quality partnership, bus priority lanes, installation of shelters, bus stop lighting, CCTV, real time displays and promotion

¹⁶ Major schemes are defined as requiring a Departmental contribution of £4.975m or more to accommodate a number of BBA schemes that were just under the usual £5m threshold

Tyne and Wear (BBA Round 1)	Provision of Intelligent Transport Systems (ITS) on 19 key bus corridors, at six congestion hotspots and at 3 bus interchanges; signalisation of two key stand-alone junctions; conversion of a road to allow two-way bus traffic; interchanges improvements (including CCTV; new shelters and waiting areas); bus stop improvements (including raised kerbs; in-shelter CCTV); marketing, promotion and market research
Greater Manchester (BBA Round 1)	Bus priority measures, public transport interchange improvements, supporting bus services, marketing
Bristol (BBA Round 1)	Bus priority measures, replacement bus shelters, real time passenger information, Wi-Fi on buses, traffic enforcement measures
West Midlands (BBA Round 1)	New bus station, improved bus services, highway measures to segregate buses, new bus stops, smart ticketing, new accessible Euro V buses
West Yorkshire (BBA Round 1)	Smartcard ticketing enhancement and expansion
South Yorkshire (BBA Round 1)	Smart ticketing, infrastructure investments and better traffic management through the use of automated management tools
Sheffield (BBA Round 2)	Various infrastructure projects that improve bus services, improvements to the urban traffic control centre, audio-visual and real time information, bus service support
Nottingham (BBA round 2)	Bus priority measures, signal priority, expansion of real time information and smart ticketing