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Bus Back Better

Support Package 4 – Building a strong case
Webinar 2

25 January 2023



Today's presenters



Nick Richardson
Subject Matter Expert



Gwyn Ephraim
Subject Matter Expert



Patrick Noonan
Principal Transport
Planner



Anna Whittle
Transport Planner

Bus Back Better Support Programme



Project Outputs

Improved delivery of BSIPs and EPs, and support to LTAs who have not received government funding in the current round. This will include:

- Enhanced evidence base through research papers on prioritised knowledge gaps.
- Knowledge sharing within and between STBs and their constituent members and between the public and private sectors.
- Better resourced LTAs through prioritised third-party support, provided in targeted areas.

Project Outcomes

These outputs will seek results in outcomes aligned to the National Bus Strategy including:

- Increased patronage.
- Enhanced accessibility and social inclusion.
- Reduced carbon emissions and improved public health.
- More commercially sustainable bus networks.

Bus Back Better Support Programme



- Support Package 1: Fares and Ticketing
- Support Package 2: Data Analysis, Monitoring and Evaluation
- Support Package 3: Low Cost and Quick Win Solutions
- **Support Package 4: Building a Strong Case**
- Support Package 5: Infrastructure and Road Space
- Support Package 6: Demand Responsive Transport
- Support Package 7: Rural Hubs and Integration
- Support Package 8: Funding Mechanisms
- Support Package 9: Collaborative Working
- Support Package 10: Marketing
- Support Package 11: Alternative Fuels and Low Emission Vehicles

Contents

1. Purpose and objectives of this Support Package
2. Structure of this Support Package
3. Reliable information for decision-makers
4. Presenting a business case for road space reallocation



Purpose and objectives



Provide relevant specialist advice to local transport authorities to enable them to prosecute an effective case to local politicians and communities that **difficult trade-offs to reallocate road space** and provide bus priority lanes and infrastructure **will benefit the wider community with more reliable and more frequent buses.**



Support Package Objectives

This support package will provide you with:



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1

A clear understanding of the importance of road-space reallocation in improving bus service reliability and journey times and how these drive increases in patronage.

2

The latest information demonstrating the benefits of improved bus services for regional communities. This will also form a useful resource in applying for funding into the future

3

An understanding of typical key stakeholders and key players in local communities and how to address their concerns effectively

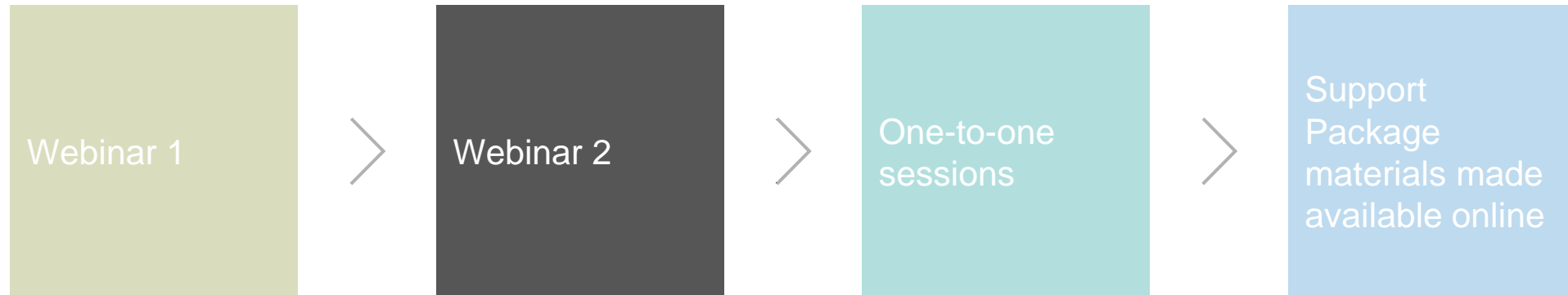
4

Greater skills in influencing and negotiating with stakeholders

5

A suite of materials that can be used to communicate and demonstrate benefits of reallocating road space to bus services.

Support Package Structure



Webinar 1

1.

There are multiple grounds to embrace better bus services.

For individuals, for society, for the environment and for the economy.

2.

Buses are flexible and affordable.

Looking forward, transport planning will require a shift in thinking about how people move around.

3.

This is government policy at all levels.

It is better to embrace it than to resist it.

4.

It should be reflected across all types of planning.

There are opportunities for change everywhere.

Support Package structure

Webinar 1

Identifying the proven benefits of better bus services



Understanding the policy framework driving better bus services



Webinar 2

Resolving existing challenges and realities of delivering better bus services



Delivering on core challenges and achieving better bus services

One-to-one support will be available following Webinar 2

A limited number of one hour long one-to-one sessions will be available for you to speak with our experts regarding a specific issue with road space reallocation in a local community.



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Reliable information for decision-makers



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Reliable information for decision-makers

Overview



Key Decision makers

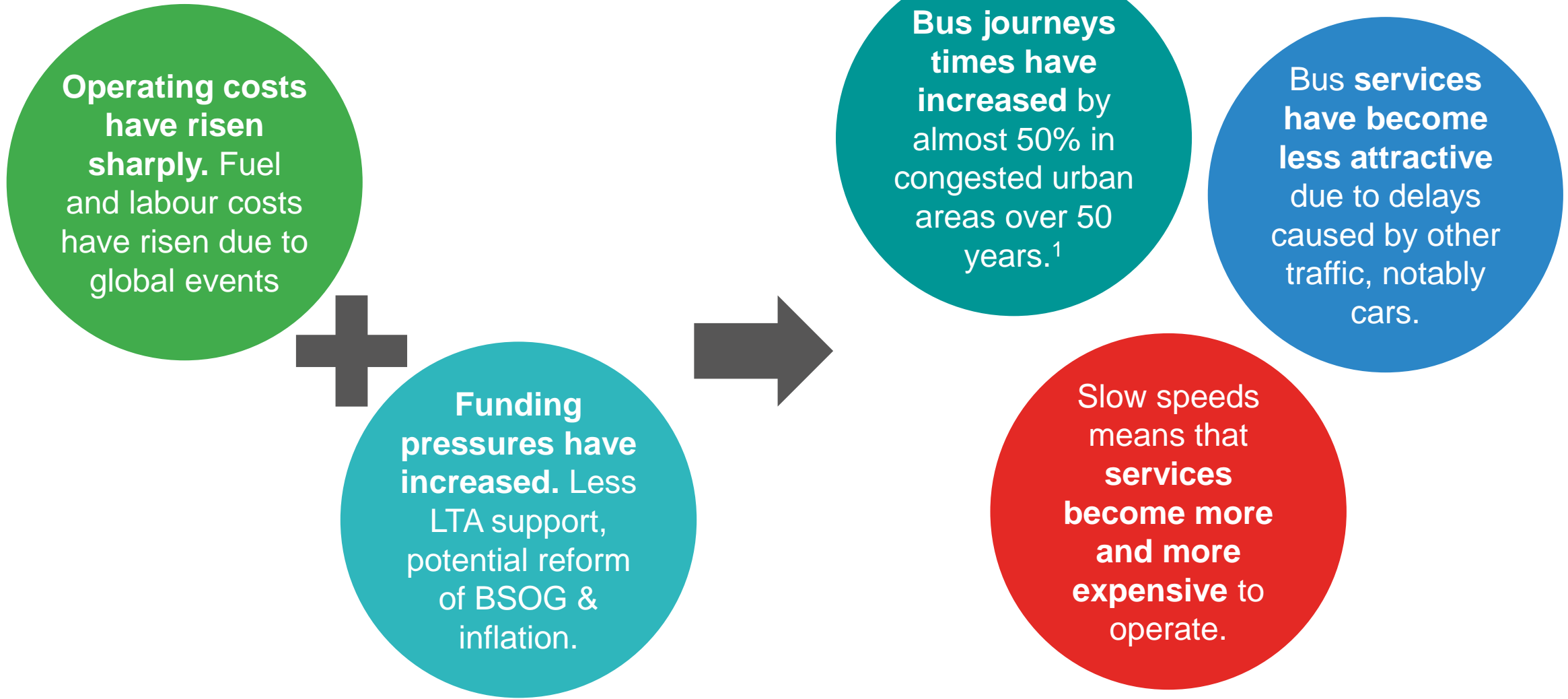
- **Unitary authorities:**
 - the Leader of the authority, Executive Member of Transport (or equivalent), Cabinet and local members.
- **Enhanced Partnerships:**
 - the EP Board is influential in deciding the initiatives that should be promoted, taking advice from the Bus Forum or equivalent.
- **Two tier authorities:**
 - the LTA as highway authority (county level) and local planning authority (district level)
- **Mayoral Combined and Combined authorities:**
 - Aligning the above decisions makers across more than one organisation

Stakeholders

- **Passengers**
- **Local residents**
- **Business organisations**
- **Advocacy groups – e.g. disabled and special needs.**
- **Bicycle riders and cycling advocacy groups**
- **Motorists and parking**
- **Haulage and freight operators**
- **Delivery and servicing vehicles**
- **Taxis, on-demand and other private hire vehicles**

Reliable Information for decision makers

The state of bus services in 2023



Reliable information for decision-makers

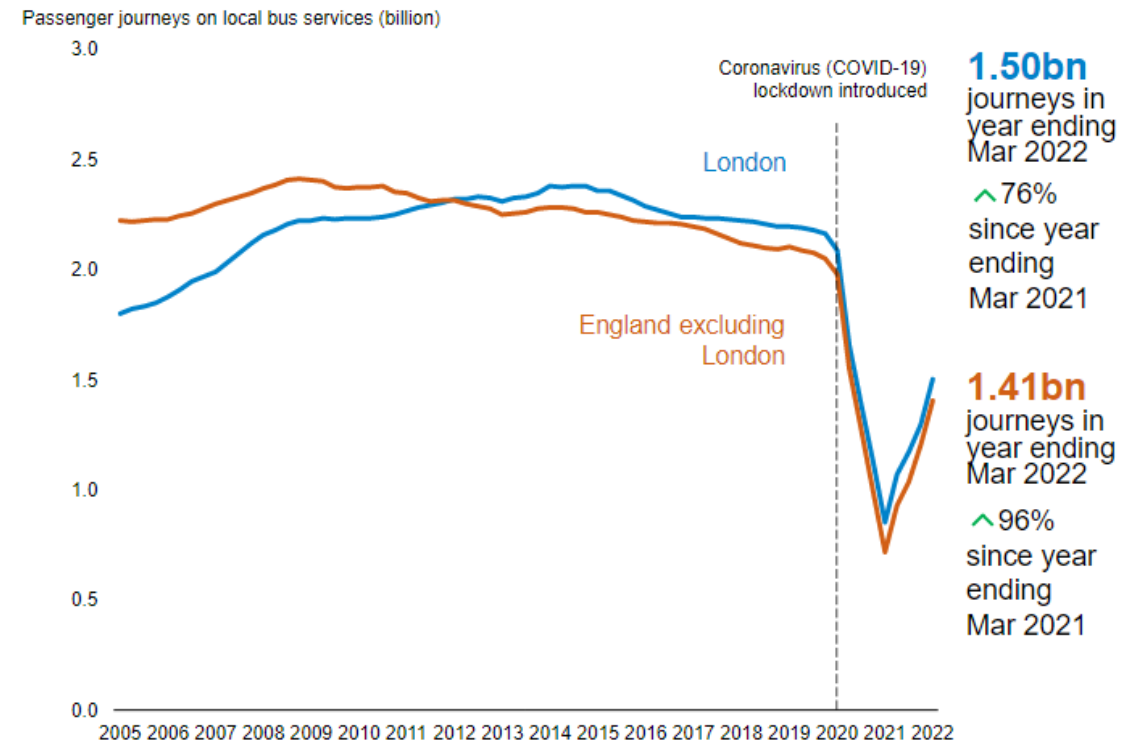
Long term trends in bus patronage

Bus patronage has been in decline for years, even before the Covid-19 pandemic.

Impacting factors:

- **1970s:** increased popularity and affordability of cars.¹³
- **2000s:** elderly bus passes were introduced resulting in small increase.¹⁴
- **Since 2002**, a 23% reduction in trips per head outside of London.¹⁵
- **Fare increases** and **cuts in financially supported services.**
- **Patronage trends are not uniform** due to success of local initiatives in different areas.
 - Patronage on the Cambridgeshire busway increased 4% in 2018-2019, despite overall decline across Cambridgeshire.¹⁶

Trends in local bus journeys.¹⁷



17-Department for Transport. (2022) *Quarterly bus statistics, England: April to June 2022*. Available from: [Quarterly bus statistics, England: April to June 2022 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/106444/quarterly-bus-statistics-england-april-to-june-2022.pdf)

13, 14, 15-Urban Transport Group. (2019) *What's driving bus patronage change?* Available from: [Urban Transport Group - What's driving bus patronage change FINAL_0.pdf](https://www.urbantransportgroup.com/wp-content/uploads/2019/06/What-s-driving-bus-patronage-change-FINAL-0.pdf)

16-Cambridgeshire & Peterborough combined authority. (2021) *Bus service Improvement plan for Cambridgeshire and Peterborough*. Available from: [CPCA-BSIP-Final-291021 \(cambridgeshirepeterborough-ca.gov.uk\)](https://www.cambridgeshirepeterborough-ca.gov.uk/wp-content/uploads/2021/06/CPCA-BSIP-Final-291021.pdf)

Reliable information for decision-makers

Short term trends in bus patronage



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Covid-19 marked a significant change in bus patronage.

- **2022:** 55% increase in bus journeys compared to 2021, but 2022 bus passenger journeys remain 27% lower than pre-covid.¹⁸
- **Solution:** focus on improving bus services by making them more reliable, affordable, faster and greener.
 - Increase journeys of existing passengers.
 - Attracting new passengers.

Local bus passenger journeys

1.57 billion journeys
in England in
2020/21

↓ **61%**
since 2019/20

↓ **63%**
since 2018/19

Reliable information for decision-makers

Advances in data science, collection and analysis



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- An increasing number of platforms which track, monitor and automatically report network performance, including Bus Open Data Service (BODS) data
- Specific platforms offering bus network operators precise insights to quickly adapt and operate their networks for efficiency and growth.
 - DfT's Analyse Bus Open Data (ABOD)
 - Cityswift
 - Optibus
- Metrics can be continuously measured and include monitoring punctuality, reliability, speeds, pinch-points, headways, layover time, boardings and ticket sales.

The image displays two overlapping screenshots of bus analytics dashboards. The top screenshot is for CitySwift, featuring a navigation bar with 'Products', 'Solutions', 'Customers', and 'About', along with a search icon, a 'Login' button, and a 'Request a demo' button. The main content area includes the heading 'Explore. Your network, as you've never seen before' and a sub-heading 'CitySwift breaks down the data silos across your entire bus network. Reveal the insights hidden in your data to deliver a service that delights passengers.' It also shows a 'Stop % On-Time' widget at 78% and a 'Passenger Demand' widget. The bottom screenshot is for Optibus, with a 'Request a demo' button and the heading 'Optibus On-Time Analytics'. It includes a 'Got Transit Data? Get Insights & Make it Better' section and a detailed data table with columns for 'Stop Distance' and 'On-Time Performance'.

Reliable information for decision-makers

Trends in operating and service speeds

As buses get slower, demand declines.



- Bus journey times have increased up to 50% in some urban areas leading to reduced patronage.²⁰
- Operators have tried to address this through:
 - Maintaining **the same frequency with more buses** leading to higher operating costs.²¹
 - Maintaining **the same number of bus vehicle journeys leading to lower frequency** and therefore fewer passengers and reduced income.²²
- There is a direct correlation between operating speeds and patronage: a 10% decrease in speed reduces patronage by 10%.²³
- Road space reallocation (to bus) is a key way to prioritise buses and reduce journey times.²⁴

20, 21, 22, 23-David Begg, Greener Journeys (2016) *The impact of congestion on bus passengers*. Available from: [Prof-David-Begg-The-Impact-of-Congestion-on-Bus-Passengers-Digital-FINAL.pdf](#) (greener-vision.com)

24-Newcastle Chronicle. (2017) *Technology allowing buses to 'talk' to traffic lights could be a godsend for bus passengers*. Available from: [Technology allowing buses to 'talk' to traffic lights could be a godsend for bus passengers - Chronicle Live](#)

Reliable information for decision-makers

Advances in passenger information technology



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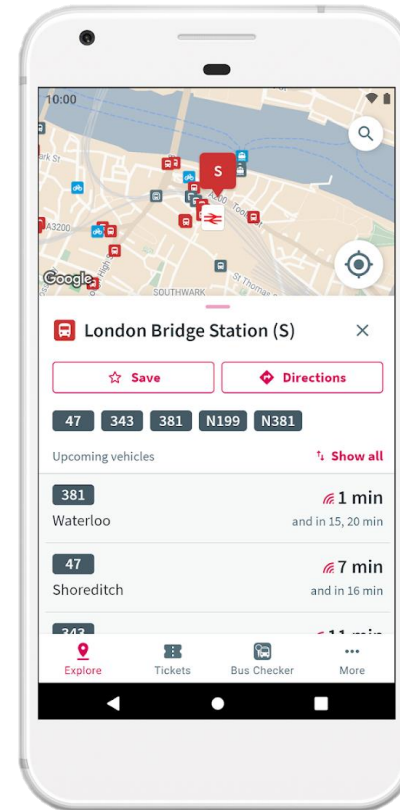
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Pre-journey information

Live bus information is now available via phone apps and websites, including **bus location** and **real-time departures**, **bus capacity estimates** and **journey planning using real-time information**.

In-journey information

Many modern buses have **next stop information announcements and displays, countdown times for departure** on the outside and inside of the buses, and **maps with the stops, distance and time between them** within the buses.⁹

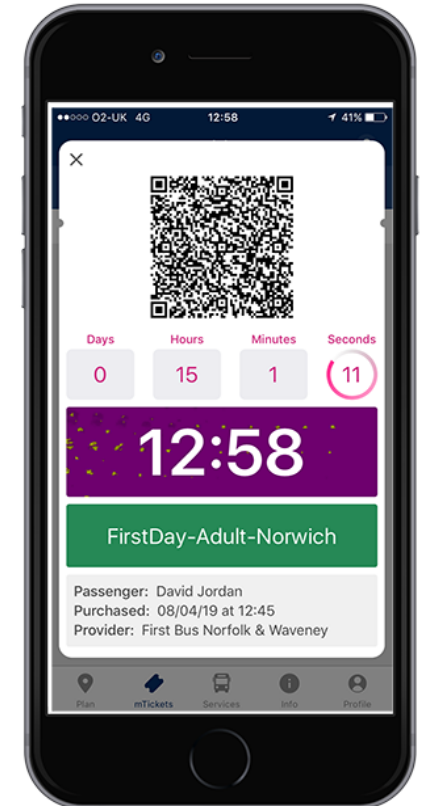
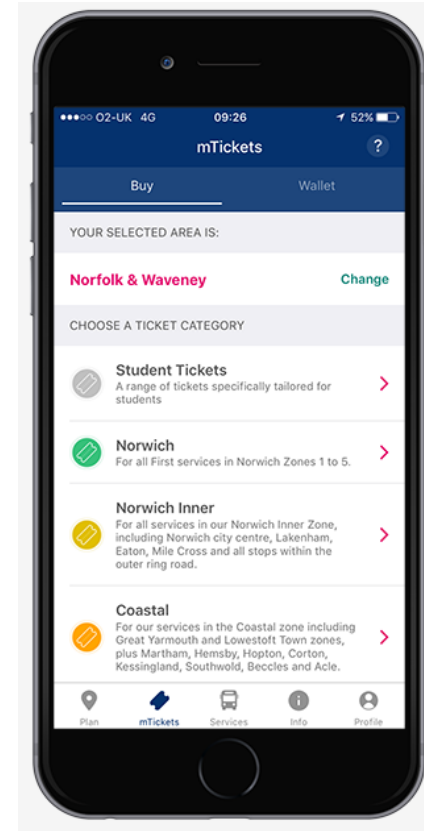


Reliable information for decision-makers

Advances in fare collection arrangements and technology

Mobile ticketing and cashless fares

- **Next generation of ticketing:** paperless and mobile tickets, contactless payments and tap on/off payments are now commonplace.
- **Capped fares** are increasing in popularity.
- Buses also offer **timed tickets**
 - **Reading Buses** offers a 60 minute ticket, enabling unlimited travel within this period.¹⁰
- **Collaboration between operators** to introduce multi-operator tickets.
 - The **M Ticket** offered by Transdev works on any bus in West Yorkshire.¹¹



Mobile tickets at First Bus. ¹²

¹⁰-Reading buses. (2023) *Buy tickets online & travel instantly*. Available from: [Fares and tickets - Reading Buses \(reading-buses.co.uk\)](https://www.reading-buses.co.uk/fares-and-tickets)

¹¹-Transdev. (2023) *Fares and tickets*. Available from: [If you use more than one bus company or travel by rail in West Yorkshire, MCard makes travel simple and great value - Transdev \(transdevbus.co.uk\)](https://www.transdevbus.co.uk/fares-and-tickets)

¹²-First Bus Norfolk and Suffolk. (2023) *mTickets*. Available from: [mTickets | First Bus](https://www.firstbus.co.uk/mtickets)

Reliable information for decision-makers

Funding and Costs

Funding is reducing for buses and operating costs are increasing.

- **2/3 of the operating costs are staff related.**
- **Fuel costs have been rising.**
- **Electric bus fleets are impacted by increasing energy prices.**
- **BSOG reform will also impact funding available to most operators who have majority diesel fleets.**
- **Concession fare reimbursement for operators could be reduced in future.**
- **Increasing revenue through farebox will require attracting more customers with better bus services.**



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Reliable information for decision-makers

Impact of advances in bus technology

Bus technology has advanced considerably in recent years and perceptions of them as noisy, highly pollutive and disruptive vehicles are incorrect.

- **Between 1990 and 2019 bus emissions decreased by 42%.²**
- **Diesel buses now produce less nitrous oxides than a diesel car.³**
- **Zero emission buses are increasingly popular due to lower operating costs compared to diesel buses.⁴**
- **Advancements in bus technology also enable them to meet Low emission zone standards which is Euro VI.⁵**
- **Better on board amenities such as CCTV on buses, wi-fi, and luggage hold areas are appealing to customers.**

Presenting a strong case for road space reallocation



Reliable information for decision-makers

Presenting a strong case for road space reallocation



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Buses technology has advanced in all other areas, improving passenger experience and ease of access.

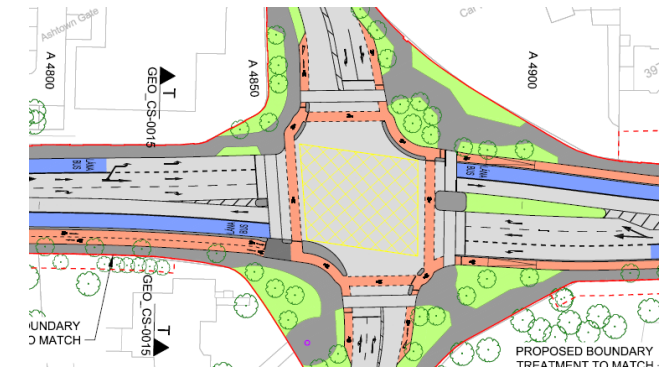
Journey time and punctuality is a key roadblock to increasing patronage.

This is most easily done through road space reallocation.

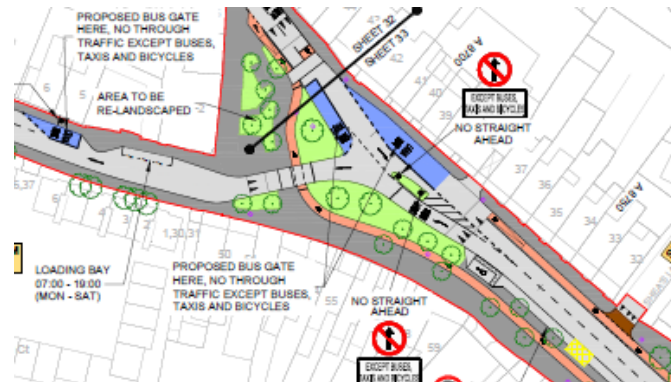
Presenting a business case for road space reallocation

Best practice features

- Planning of infrastructure as part of a network planning process
- Where segregation and off-street corridor infrastructure is not feasible, roadspace should be allocated to public transport in preference to general traffic
- Applying ITS techniques to give public transport priority over other movements
- General traffic management to reduce delays to buses due to traffic e.g. banned turns for traffic, removing roundabouts.



Junctions



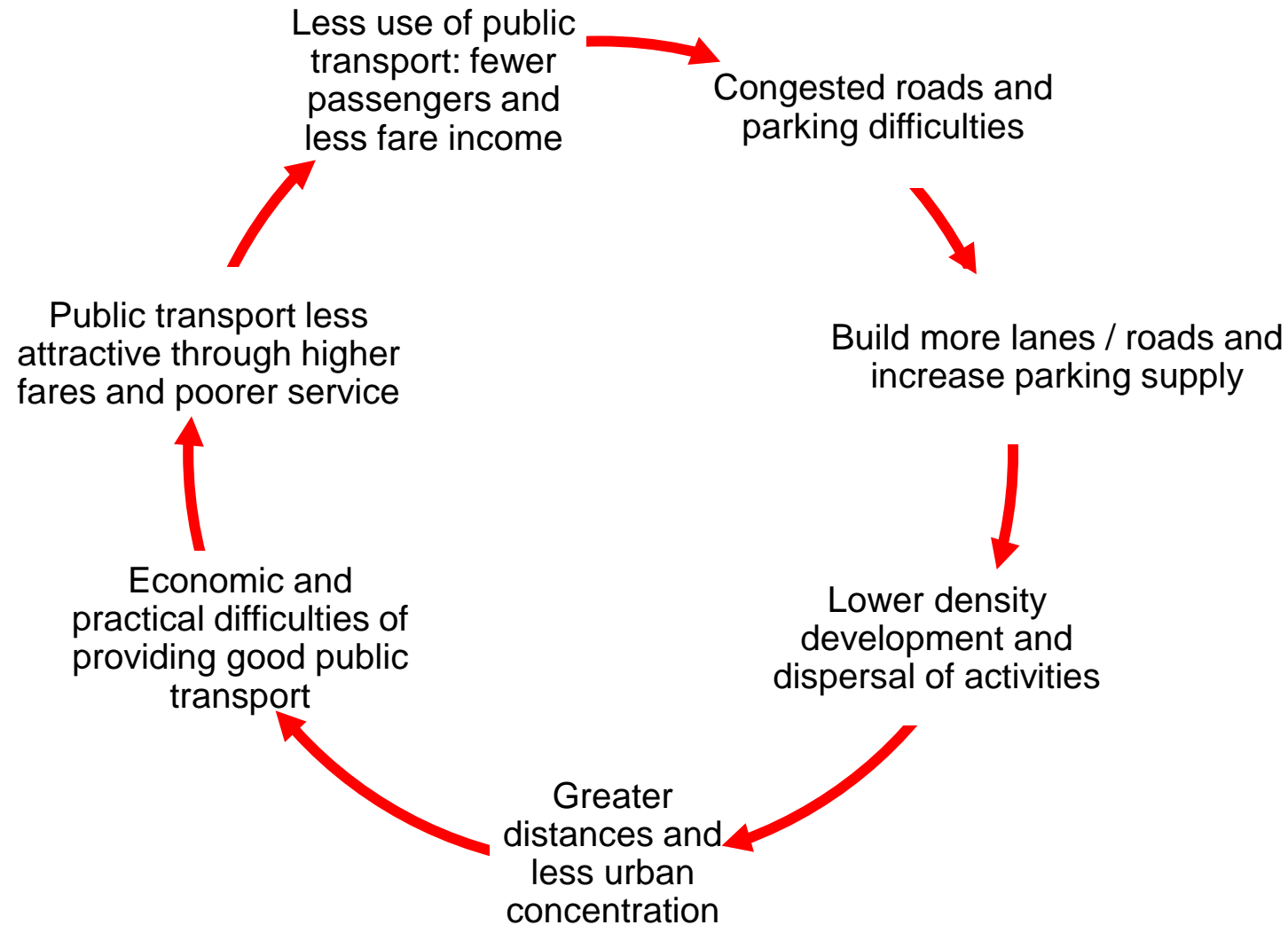
Traffic management

Presenting a business case for road space reallocation

Avoid the Vicious Circle

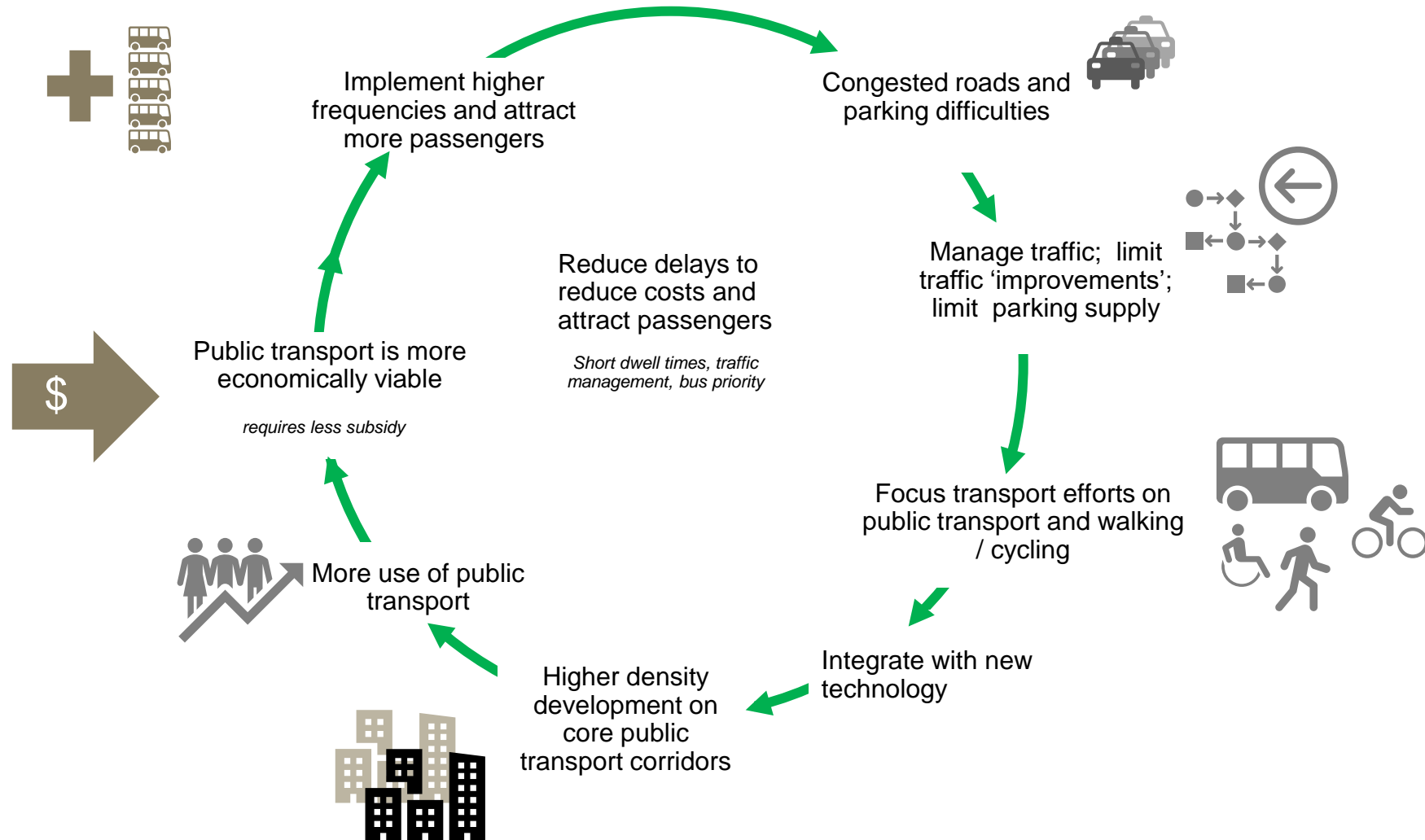


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Presenting a business case for road space reallocation

Create the Virtuous Circle



Presenting a business case for road space reallocation

Benefits of road space reallocation



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Road space allocation involves converting road-space which was previously used for general traffic for use by buses

(and other permitted vehicles).

1

Improved journey times, punctuality and reliability.

2

Reduced costs for bus operators.

3

Opportunity for urban renewal and uplift.

Presenting a business case for road space reallocation

Benefits of road space reallocation



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**Improved
journey times,
punctuality
and reliability**

- Road space allocation can reduce congestion-related delay which in turn reduces bus journey times and improves punctuality.
- Often this will involve taking out on-street parking and / or removing a traffic lane.
- Reduced journey times and improved punctuality will be important to increase patronage over time.

Presenting a business case for road space reallocation

Benefits of road space reallocation



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**Reduced costs
for bus
operators**

- **Delays to buses cost money: additional fuel costs, staff hours and additional services to maintain the desired frequency.**
- **Operators can operate their services efficiently and with more certainty.**
- **Reduced costs can help operators increase bus frequency of a bus service, resulting in increased patronage.**

Presenting a business case for road space reallocation

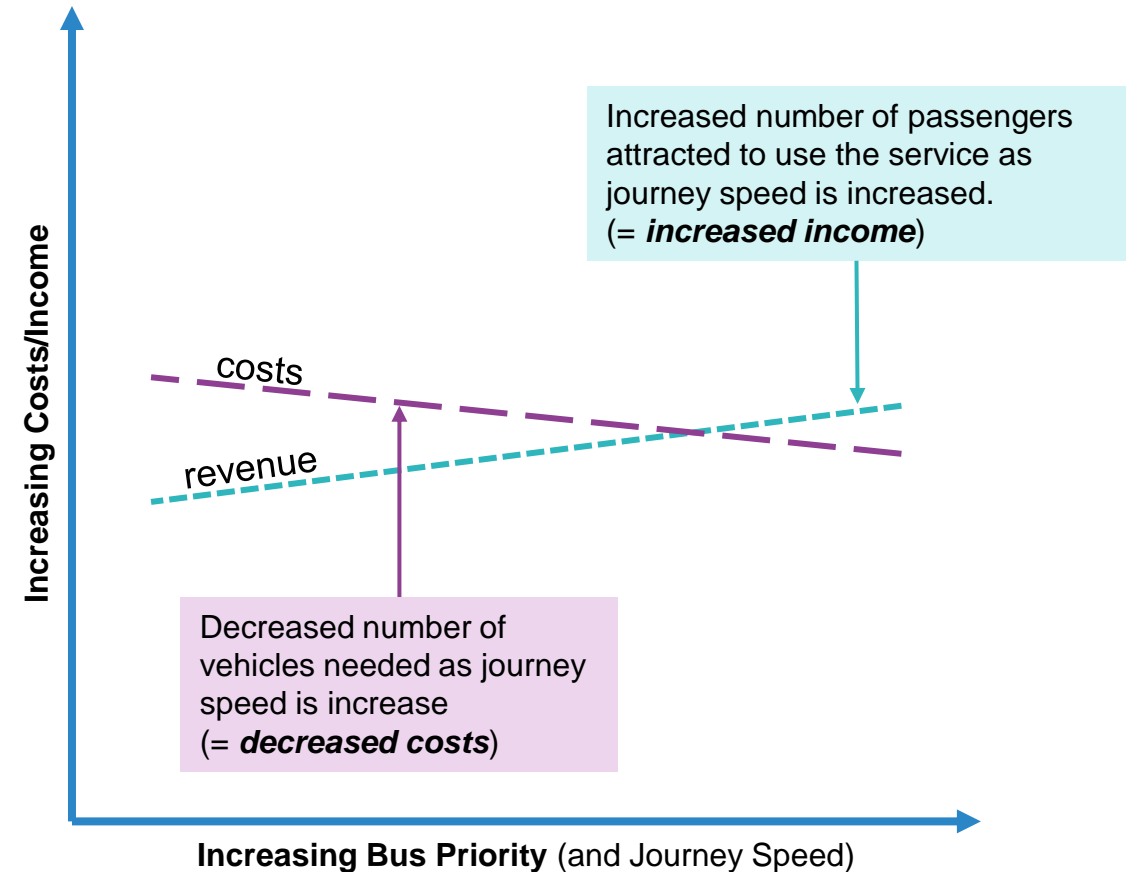
Interdependencies between speed, income and costs

Speed and Costs / Income

- High quality service to passengers (maximise income)
Efficient in use of vehicle / staff resources (minimise costs)

Operating speed (including stops) is influenced by:

- Ticketing and boarding regime (dwell time)
- Average stop distance
- Delays at junctions
- Extent of bus priority / lanes



Presenting a business case for road space reallocation

Benefits of road space reallocation



Opportunity for urban renewal and uplift

- The development of bus priority measures can also be combined with improvements to public spaces such as enhancing public spaces.
- It can benefit those who do not have access to a car as it improves bus as a travel mode.
- It can make an area more attractive and liveable.
- Gives priority to efficient modes

Presenting a business case for road space reallocation

Benefits of road space reallocation

Bus Priority measures can include arrangements at junctions such traffic signal priority, bus priority all the way up until junction and jump lanes.²⁵



25--D'Souza, C and Hounsell, N. (2009) *London's Bus priority at traffic signals in a worldwide context*. Available from: [Microsoft PowerPoint - London's Bus Priority at Traffic Signals in a Worldwide Context \(polisnetwork.eu\)](#)
26-Cambridgeshire County Council. (2019) *Drivers will soon be fined on this Cambridge street as bus lane cameras go live*. Available from: [Drivers will soon be fined on this Cambridge street as bus lane cameras go live - Cambridgeshire Live \(cambridge-news.co.uk\)](#)
27-Campion, A. (2022) *Bus lane rules: What you need to know*. Available from: [Bus lane rules: What you need to know - Confused.com](#)

Presenting a business case for road space reallocation

Benefits of road space reallocation

**Bus Priority measures
can include bus gates.²⁶**



25--D'Souza, C and Hounsell, N. (2009) *London's Bus priority at traffic signals in a worldwide context*. Available from: Microsoft PowerPoint - London's Bus Priority at Traffic Signals in a Worldwide Context (polisnetwork.eu)
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Presenting a business case for road space reallocation

Benefits of road space reallocation

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27-Campion, A. (2022) *Bus lane rules: What you need to know*. Available from: [Bus lane rules: What you need to know - Confused.com](http://www.confused.com)

Presenting a business case for road space reallocation

Addressing concerns and issues of road space reallocation



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Issue or impact

Finding space for bus lanes and junction re-arrangements

Addressed by

Pavement marking to identify all the space within the highway boundary to see where additional bus space can be identified.

Temporary TRO's can be used to "test" impacts of road space reallocation.



Presenting a business case for road space reallocation

Addressing concerns and issues of road space reallocation



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Issue or impact

Stakeholders

Traffic regulation orders can be challenged during the consultation period for a bus priority initiative and could also lead to public enquiry.

Addressed by

Communicating the vision for public transport is helpful – and better to adopt a multi-modal corridor approach (bus, cycle, pedestrians, cars, HGVs etc).

Stakeholder engagement and political buy-in are important during planning stage.

Need to communicate with public (especially local residents and businesses) before a bus lane is implemented.

Temporary TRO's can be used to "test" impacts of road space reallocation.

Presenting a business case for road space reallocation

Addressing concerns and issues of road space reallocation



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Issue or impact

Dealing with spatial constraints such as trees, footways, bicycle lanes: Ensuring that the road is safe for cyclists and that pedestrians still have space.

Addressed by

Combine bus priority measures with cycling and walking initiatives as part of road space reallocation.



Presenting a business case for road space reallocation

Addressing concerns and issues of road space reallocation



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Issue or impact

Enforcement

The bus priority initiatives (lanes, gates, etc.) could be ignored by general traffic and vehicles continue to use the lane.

Addressed by

Measures should be designed to be reasonably self-enforcing.

Periodic target enforcement teams at key locations during peak hours.

Enforce the bus priority infrastructure with cameras.



Presenting a business case for road space reallocation

Addressing concerns and issues of road space reallocation

Issue or impact

Congestion

Perceptions that bus priority can impact road capacity.

Space for bus lanes and congestion issues

Bus lanes need to be focused where buses are delayed – often at busy junctions.

Addressed by

Consider the wider road and street network such that traffic redistribution is part of the solution to address congestion concerns (with reduced road capacity).

Investigate wider traffic improvement initiatives to ensure pinch points are not congested.

Case study: Hammersmith Bridge

Hammersmith Bridge was closed to vehicles due to concerns over structural capacity of the bridge. There was an initial increase in congestion in adjacent areas, however over time people switched modes to bus, bicycle or walking to Hammersmith station. There was a reduction of around 9500 car journeys a day as a result of the prioritisation.³⁰



Presenting a business case for road space reallocation

Addressing concerns and issues of road space reallocation



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Issue or impact

Removal of kerbside parking

Concerns around customer parking, service vehicles and business operations.

Addressed by

Removing on street parking can be ameliorated by sourcing alternative locations for local parking, including time-based restrictions.

Work with businesses to enable them to understand that most of business will come from pedestrians and buses rather than from cars and passing trade.

Studies (EY, 2021 and Ward, 2006) have identified that reducing kerbside parking will not have a negative impact on trade, and that bus passengers contribute significantly to local trade.²⁸ Shop owners in Waltham forest perceived that 63% of customers came by car however in reality this was only 20%.²⁹

Presenting a business case for road space reallocation

Core elements of a persuasive business case



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In order to count and assess the benefits of bus priority, appraisal and assessment processes need to be considered:

- Monitoring the punctuality and journey times of the buses on the bus lane which can be gathered and analysed using BODS or other data services.
- Monitor the impact of any traffic displacement on nearby corridors.
- Monitor patronage on the bus route itself to see if the measures are effective in attracting new customers.
- Monitor and adjust bus priority interventions to ensure they are working as intended and as effectively as they could be.
- Monitoring economic impacts through linear surveys and studies for businesses along bus routes is also important to either identify unlikely negative impacts or demonstration misconceptions.

Case studies

Crawley Fastway

- A BRT network linking Gatwick airport, Crawley and Horley.
- Consists of 1.5km of guided bus lanes and 5.8km of regular bus lanes, constructed between 2002 and 2006.
- In addition to bus lanes, the project included new bus shelters, real time passenger information, and a fleet of specially adapted low floor buses.³¹
- The service supports 3 different bus routes.³²
- The project was initially projected at £27m however it rose to £38m.³³
- Once the system had become more established, bus use began to increase by 25%.³⁴
- The service has also gained a score of 90% customer satisfaction.³⁵



Case studies

Gateshead bus priority

- An initiative by Gateshead Council to develop more sustainable travel options into the city centre and support economic growth, social inclusion and the environment.³⁶
- All the corridors were experiencing high volumes of traffic and congestion and were typically through residential areas with high volumes of pedestrians.³⁷
- Lanes are 24 hour lanes but are not continuous due to spatial constraints along corridor.
- Gateshead has found that the costs of implementing bus lanes have increased as more complex locations are addressed.³⁸
- There was not an agreement with operators, however lots of the operators on the route have also upgraded the fleets on these routes with new bus lanes.
- The project has been successful and in 2014 a survey suggested that 80-90% of users believe that 'bus lanes have benefited journey times'.³⁹



Case studies

Swansea City Centre bus lanes

- Successful as a bus priority scheme
- Less successful in respect of interaction with pedestrians
- Lack of political support and understanding of the benefits



One-to-one support will be available following Webinar 2

A limited number of one hour long one-to-one sessions will be available for you to speak with our experts regarding a specific issue with road space reallocation in a local community.



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References



- 1-David Begg, Greener Journeys (2016) *The impact of congestion on bus passengers*. Available from: [Prof-David-Begg-The-Impact-of-Congestion-on-Bus-Passengers-Digital-FINAL.pdf \(greener-vision.com\)](#)
- 2-3-Department for Transport. (2022) *Zero emission buses: local authority toolkit*. Available from: [Zero emission buses: local authority toolkit - GOV.UK \(www.gov.uk\)](#)
- 4-Passenger Transport. (2017). 'A diesel bus emits less Nox than a diesel car'. Available from: ['A diesel bus emits less NOx than a diesel car' \(passengertransport.co.uk\)](#)
- 5-Transport For London. (2023) *Your vehicle and LEZ*. Available from: [Your vehicle and LEZ - Transport for London \(tfl.gov.uk\)](#)
- 6-8-Newport Bus. (2019) *Our fleet of Yutong electric bus*. Available from: [Our fleet of Yutong electric buses - Newport Bus](#)
- 9-Transdev. (2021) *Technology and Innovation*. Available from: [Technology and innovation - Transdev \(transdevbus.co.uk\)](#)
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- 17-Department for Transport. (2022) *Quarterly bus statistics, England: April to June 2022*. Available from: [Quarterly bus statistics, England: April to June 2022 - GOV.UK \(www.gov.uk\)](#)
- 18-Department for Transport. (2022) *Quarterly bus statistics, England: April to June 2022*. Available from: [Quarterly bus statistics, England: April to June 2022 - GOV.UK \(www.gov.uk\)](#)
- 19-Department for Transport. (2021) *Annual bus statistics: England 2020/2021*. Available from: [Annual Bus Statistics: England 2020/21 \(publishing.service.gov.uk\)](#)
- 20,21,22,23-David Begg, Greener Journeys (2016) *The impact of congestion on bus passengers*. Available from: [Prof-David-Begg-The-Impact-of-Congestion-on-Bus-Passengers-Digital-FINAL.pdf \(greener-vision.com\)](#)
- 24-Newcastle Chronicle. (2017) *Technology allowing buses to 'talk' to traffic lights could be a godsend for bus passengers*. Available from: [Technology allowing buses to 'talk' to traffic lights could be a godsend for bus passengers - Chronicle Live](#)
- 25-D'Souza, C and Hounsell, N. (2009) *London's Bus priority at traffic signals in a worldwide context*. Available from: [Microsoft PowerPoint - London's Bus Priority at Traffic Signals in a Worldwide Context \(polisnetwork.eu\)](#)
- 26-Cambridgeshire County Council. (2019) *Drivers will soon be fined on this Cambridge street as bus lane cameras go live*. Available from: [Drivers will soon be fined on this Cambridge street as bus lane cameras go live - Cambridgeshire Live \(cambridge-news.co.uk\)](#)
- 27-Campion, A. (2022) *Bus lane rules: What you need to know*. Available from: [Bus lane rules: What you need to know - Confused.com](#)
- 28-Ward, S. (2006) *Bus priorities and their effects on local trade*. Available from: [Microsoft Word - UT06 Sections.doc \(witpress.com\)](#) and EY. (2021) *The economic impact of the core bus corridors*. Available from: [Appendix A10.2 The Economic Impact of the Core Bus Corridors \(blanchardstownscheme.ie\)](#)
- 29- London Borough of Waltham Forest. (2022). *Early engagement perception on surveys and results*. Available from: [Early engagement perception surveys and results - Enjoy Waltham Forest](#)
- 30-Keep Hammersmith Bridge car-free. (2023) *Displaced traffic*. Available from: [Displaced traffic \(hammersmithbridge.org.uk\)](#)
- 31-32-UK transport wiki. (2023) *Crawley fast way*. Available from: [Crawley Fastway | UK Transport Wiki | Fandom](#)
- 33-35-KPMG. (2015) *An economic evaluation of local bus infrastructure schemes: a report for greener journeys*. Available from: [fdocuments.net](#)
- 36-39-Transport Scotland. (2023) *Bus Priority Case studies*. Available from: [bus-priority-case-studies.pdf \(transport.gov.scot\)](#)
- 40-Newcastle Chronicle. (2017) *Where will Gateshead's new bus lane cameras be? Everything you need to know*. Available from: [Revealed: Where will Gateshead's new bus lane cameras be? Everything you need to know - Chronicle Live](#)

Thank you

25 January 2023

