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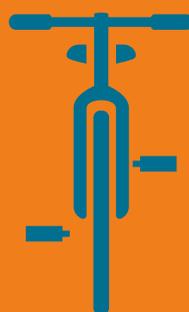
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# SMALL BUT MIGHTY TRANSPORT SCHEMES

DELIVERING  
BIG VALUE  
FOR MONEY



**pteg** represents the six strategic transport bodies which between them serve more than eleven million people in Greater Manchester (Transport for Greater Manchester), Merseyside (Merseytravel), South Yorkshire (South Yorkshire Passenger Transport Executive), Tyne and Wear (Nexus), the West Midlands (Centro) and West Yorkshire (West Yorkshire Combined Authority). **pteg** is also a wider professional network for Britain's largest urban transport authorities.





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# SMALL BUT MIGHTY TRANSPORT SCHEMES DELIVERING BIG VALUE FOR MONEY

## Introduction

It is now widely accepted that transport networks have a positive impact on economic and social outcomes. Transport schemes in congested urban areas have been found to offer an average economic and social return of £4 for every £1 spent<sup>1</sup>.

Transport infrastructure promotes economic growth by enabling firms and workers to concentrate in dense urban areas, where their close interaction helps boost productivity<sup>2</sup>. Investing in transport also helps to promote growth by tackling unemployment. Some 77% of jobseekers in British cities outside London do not have regular access to a car, van or motorbike and therefore rely on public transport to access work<sup>3</sup>.

More broadly, analysis of Government policy priorities demonstrates that public spending on bus networks is key to achieving 46 policy goals of half of all Government departments – from health to education and from business, innovation and skills to energy and climate change<sup>4</sup>.

But although few would disagree that transport plays a key role in the success of our city regions, there is a great deal more discussion about the specific measures which should be prioritised. Many people tend to equate transport investment with big, high profile schemes, and it is often assumed that these are the projects that deliver the greatest economic gains. But while it is true that many large-scale investments can be transformational, research shows that smaller transport schemes are often at least as cost effective as larger ones and contribute towards many of the same goals.

The purpose of this report is to help policy makers understand how smaller schemes can help improve local transport networks. There is a vast evidence base on the value for money of small schemes, including the 2006 Eddington Transport Study, commissioned by the then Government to examine the long-term links between transport and the UK's economic productivity, growth and stability<sup>5</sup> and the 2011 Jacobs report on the 'Value for money and appraisal of small schemes'<sup>6</sup>.



The Jacobs report is based on over 150 separate pieces of evidence collected from **pteg** members and concludes that the schemes sampled deliver, on average, £3.5 of economic benefits for every £1 of public spending. This corroborates the Eddington findings and confirms that small schemes are well placed to compete with larger projects in achieving value for money.

In this report, we wanted to move away from statistical analysis of large numbers of abstract projects and instead to concentrate on ten in-depth case studies. We feel that this evidence is helpful in understanding how and why small schemes can be particularly effective in achieving a range of economic and social goals. In our view, this boils down to the four key factors below, which are well illustrated by the **case studies** in this report.

**1. Responsiveness.** Smaller schemes are easier to implement and can therefore be used to respond swiftly to emerging problems and opportunities. For example, Centro, together with employers and local authorities in Wolverhampton and Staffordshire, have been able to quickly devise and implement a package of accessibility improvements along the main transport corridor linking the **i54 Business Park** to the surrounding urban area, in response to the significant jobs growth at the site (case study 1). The West Midlands ITA has since developed a longer term transport investment strategy covering the area, but this initial package of improvements has played a key role in helping the local workforce make the most of the new opportunities.

The **South Yorkshire JobConnectors** programme of enhanced bus links to key employment sites provides another good example of local authorities' ability to quickly respond to local economic changes through relatively small tweaks to the routeing and funding of local bus services (case study 2).

**2. Targeting.** Smaller schemes can be more effectively targeted at key bottlenecks and focus on quick wins. Larger projects, in contrast, tend to address problems across wider areas in a more strategic way. A mix of spending on large and small schemes is necessary to address the range of challenges facing local transport networks. And, often, different schemes complement each other, together achieving more than the sum of their parts.

**Transport for Greater Manchester's 'Local Link'** scheme provides a great example of targeted bus service provision (case study 3). This initiative fills in 'missing connections' in existing public transport networks, ensuring that workers in deprived neighbourhoods can reach previously inaccessible places of employment. This is a great example of how conventional solutions, which aim to provide an average level of service across a large area, may not be enough to address very specific local problems.

**The Salford QuaysLink** is another good example where small scale interventions can be used to fill in gaps in the conventional transport network and, in that way, boost the benefits that can be obtained from larger investments in regeneration and new major transport links (case study 4).

**3. Local knowledge.** Smaller transport schemes tend to be prioritised and implemented by local authorities, through their considerable knowledge of the local economy and of local transport networks. This can be much more difficult to achieve in the case of large projects, especially when there is a significant degree of scrutiny from central government departments who tend to place more emphasis on standard national appraisal tools.

In the **West Yorkshire Traffic Light Priority scheme**, officers at the West Yorkshire PTE (now the West Yorkshire Combined Authority), and at Leeds City Council's Urban Traffic Control Unit went through a painstaking process to first identify and then prioritise signalised junctions which could be re-programmed so as to speed up buses while minimising any negative effects on other transport users (case study 5). A bespoke appraisal tool was developed which enabled them to select 240 sets of lights for improvement, with those with a better business case being addressed earlier on in the programme.

**The Nottingham Derby Road Quality Bus Corridor** provides another example where local knowledge (in this case, in partnership with bus operators) was key in defining the most effective set of interventions which should be implemented using a relatively tight budget (case study 6).



**4. Proof of concept and scalability.** Small schemes provide a low cost, low risk opportunity to test out novel ideas before proceeding to a larger scale roll-out. This can help scheme promoters understand key success factors and the evidence can be used to shape future schemes by scaling up what works and cutting back on what doesn't.

The **Ucycle** scheme in Nottingham is a good example of this proof of concept approach (case study 7). Having started in 2009, with a couple of relatively small scale trials at the city's two main university campuses, the scheme has more recently been extended to three other higher education institutions and its scope has been broadened to encompass improvements to key cycle routes.

The **West Midlands WorkWise** (case study 8) and **Merseyside's TravelWise** (case study 9) schemes are examples of ideas which began small and have since been taken up by many authorities in other parts of the country seeking to emulate the original concepts.

Finally, the **Greater Bristol Bus Network** illustrates how relatively small scale, targeted interventions can be expanded into much larger strategic schemes (case study 10).

**It seems clear that UK public finances will continue to face severe pressures over the next few years. However, it is important that, in devising future spending priorities, Ministers and civil servants do not lose sight of smaller, but no less effective, local transport schemes.**

**In order to reap the benefits which these types of project can bring it is vital that local authorities are adequately resourced and have the freedom to employ their knowledge and skills in the most effective way.**



# CASE STUDY 1: i54 BUSINESS PARK, WEST MIDLANDS

## Express bus shuttle opens up job opportunities at high-tech business park

In the past two years, the new i54 business park in South Staffordshire has become one of the Black Country's prime enterprise hubs.

The development of the site, three miles from Wolverhampton, has been instrumental in safeguarding hundreds of jobs and attracting inward investment worth £600m from high-tech companies.

The business park provided a convenient option for aerospace company MOOG to remain in the region when the lease on its previous site expired, and it was selected by Jaguar Land Rover as the site for its new engine manufacturing centre. A number of other large and prestigious employers have also moved in. Extensions to the business park and development areas in the surrounding Enterprise Zone will potentially provide work for up to 4,000 people.

From the outset, public transport access formed an integral part of the planning for the business park. In Wolverhampton, the employment rate is well below the national average and a third of households do not own a car. Convenient bus links to the site were considered essential to enable the city's residents to benefit from the new job opportunities, and to assist employers in recruiting. In addition, it was necessary to make commuting to i54 by public transport as competitive as possible to minimise the additional traffic generated on already congested local roads.

As a result, Wolverhampton City Council, local authorities in Staffordshire, Centro (West Midlands Passenger Transport Executive) and employers formed a steering group to help deliver attractive alternatives to car travel. The partners worked with bus operator National Express to ensure bus services to i54 from Wolverhampton residential areas were progressively introduced as the number of new jobs increased. More than twenty buses per hour now serve the park.

### Objectives

- Provide high quality transport as part of the strategy to make the new i54 business park an attractive location for employers.
- Offer new and enhanced opportunities for people without a car to take jobs at the business park and surrounding Enterprise Zone.
- Help address Wolverhampton's below average employment rate.
- Ease traffic bottlenecks on the Stafford Road corridor and improve traffic flow for all road users.
- Encourage a shift from car to bus and other sustainable travel modes.
- Improve road safety through providing better crossing facilities.



A new direct service between Wolverhampton city centre and the i54 business park was introduced in January 2014, by extending existing Service 25. In October 2014, a dedicated express shuttle bus operation was launched (Service 54), connecting Wolverhampton city centre, including its main rail and Midland Metro stations, to i54 using new branded vehicles with onboard wi-fi. It forms part of a wider project to encourage mode shift to bus, rail, cycling and walking on the Stafford Road – a major highway linking the business park and Enterprise Zone to the city centre.

The integrated public transport and traffic management scheme includes bus priority at traffic signals, with vehicle detection technology to allow buses through the lights before they turn red. New bus shelters on the route have real time information screens, and screens have also been fitted in offices and factories at the business park. The bus timetable co-ordinates with shift patterns at i54, as well as train arrival and departure times at nearby Bilbrook Station.

The bus corridor enhancements also include refurbishment of an existing park and ride site, and are complemented by improved cycling infrastructure and pedestrian crossings on the route.

Further measures have been designed to improve general traffic flow. They include variable message signs linked to new CCTV traffic cameras to enable real time monitoring of traffic conditions.

The entire Stafford Road corridor project is low cost. The Department for Transport provided £1m, complementing EU funding of £150m. Local authorities have committed £400k of developer contributions for the dedicated bus service and further bus links which will be developed to reflect commuting patterns as employment in the Enterprise Zone rises.

## Impact

The new Service 54 express bus takes just seventeen minutes to reach i54 from Wolverhampton city centre. Journeys are up to eight minutes faster than the service it replaced (which had itself been rerouted to reduce journeys to the park by fifteen minutes). Trips are also more reliable because Service 54 is a simple shuttle operation. Other employment sites in the Enterprise Zone have benefited too. Journey times to Pendleford Business Park have been halved from thirty-five to seventeen minutes.

Integration of the bus timetable with train arrivals at Bilbrook station makes travel to work more convenient for people commuting to the business park from further afield. The holistic traffic management technologies provided through the project enable congestion to be addressed in real time by adjusting variable message signs to take account of actual conditions on the road.

Service 25 had already been successful at persuading car users to try public transport. Eight per cent of former car users said that they had substituted car trips for bus trips as the result of the new service.

Patronage on Service 54 has continued to grow strongly, and three months after its launch was 30% up on the service it replaced. It is anticipated that Service 54 will be operated on a full commercial basis without the need for local authority subsidy within one to two years. Surveys towards the end of 2015 will show how far the increasing patronage on the new service has achieved further mode shift.

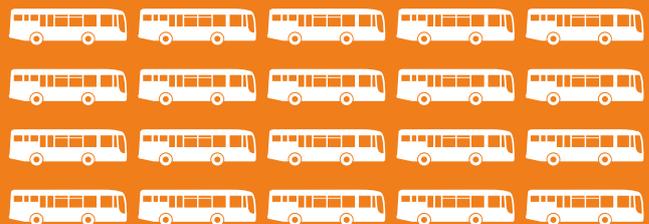
Wolverhampton and Staffordshire councils are continuing their work to ensure communities and businesses benefit from the opportunities i54 presents. This work includes recruitment and apprenticeship programmes and continued marketing of the small number of plots remaining at the business park. The new bus service is a key component in these promotional activities and plans to create new development sites in and around the Enterprise Zone. Current studies based on employee postcodes are now informing the development of further new bus links to the park from nearby towns in Staffordshire.

### **Benefit:cost analysis**

An appraisal carried out when building the business case for the Stafford Road project showed a high benefit to cost ratio of 3.7 to 1 including asset maintenance and replacement over 30 years. The methodology was deliberately conservative in its assumptions.

# 20+

**More than 20 buses per hour now serve the park.**





“

OUR STAFF HAVE RECEIVED INVALUABLE TRAVEL GUIDANCE AND SUPPORT FROM THE i54 TRAVEL PLANNING GROUP DURING AND SINCE OUR RELOCATION TO THE BUSINESS PARK. THE NEW 54 SERVICE WILL BRING UNDOUBTED FURTHER BENEFITS TO ISP STAFF, PROVIDING THEM WITH A QUICK AND CONVENIENT PUBLIC TRANSPORT OPTION.

”

Andrew Christie, Manufacturing Standards Manager  
at International Security Printers.

# CASE STUDY 2: JOBCONNECTORS, SOUTH YORKSHIRE

## **'Jobconnector' buses assist regeneration of South Yorkshire coalfields**

Since the decline of mining in the 1980s, major regeneration projects have shifted the economy of the South Yorkshire coalfields towards manufacturing and logistics with positive impacts on employment levels.

Many initiatives focus on the towns and villages between Wakefield, Barnsley, Rotherham and Doncaster which were severely affected by pit closures. The dispersed geography of the region, low incomes and low car ownership has presented particular challenges. Targeted public transport improvements have been introduced, and continue to be developed, to provide people with the means to find work, and to help businesses retain staff and expand.

Current initiatives include South Yorkshire Passenger Transport Executive's (SYPTTE) work with bus operators and businesses to develop a network of 'Jobconnector' services linking former mining areas to key employment sites. More frequent services, along with earlier and later departures, have been introduced to match working patterns in the wholesale, retail and manufacturing sectors. The intention is that, after initial 'pump prime' funding, from SYPTTE and the Department for Transport's Local Sustainable Transport Fund, service enhancements will be operated commercially.

The Jobconnector project began in 2011 in the Dearne Valley at a time when new employment was being created by business relocation and expansion, including the opening of online retailer ASOS's new global distribution centre in Grimethorpe. At first, ASOS experienced difficulty in recruiting sufficient staff to cater for rapid growth. Teaming up with Jobcentre Plus, ASOS sought to draw candidates from a jobseeker market of largely semi-skilled people aged 19-25 from the local area.

### **Objectives**

- Improve access to employment and training by increasing the coverage and frequency of bus services in areas of social deprivation.
- Enable employers to reach a wider labour market.
- Reduce road congestion and CO<sub>2</sub> emissions through mode shift.
- Promote sustainable commuting.



They found that limited access to the site by public transport was a key issue that prevented people taking jobs. Initial survey data showed that more than 75% of candidates did not drive or have access to vehicles and up to 92 candidates per week were unable to accept or apply for a role at ASOS. To help address this barrier, SYPTE and local bus operators made Jobconnector enhancements to existing bus routes, altering bus routes stopping at the site and adjusting and expanding timetables to meet key shift times at ASOS.

The initial work has informed expansion of the Jobconnector network in the Dearne Valley. Improvements include doubling the frequency of the X19 Barnsley-Doncaster-Robin Hood Airport service, providing a more practical travel to work option on this key corridor. In total, the catchment area of the X19 and the ASOS services contains 45,500 jobs.

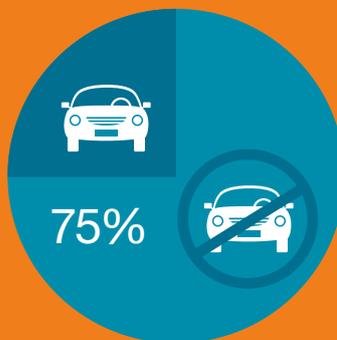
A second stage focused on the Don Valley, covering three key strategic manufacturing and retail employment corridors between Sheffield and Rotherham. The catchment of this 'A1 Jobconnector' service contains 77,000 jobs.

As well as providing access to employment for people without an alternative means of travel, the bus service improvements are designed to encourage mode shift from car commuting to reduce road congestion and CO<sub>2</sub> emissions.

Marketing includes SYPTE's Bus Boost programme which offers incentives to try the services, such as personalised travel planning, free tickets for a trial period and subsequent discounts.

A further successful LSTF bid has enabled SYPTE to continue expanding Jobconnector services in the Dearne Valley with a new hourly express service between Barnsley and Doncaster in lieu of a direct rail link. The new route, which began in January 2015, serves the southern Dearne Valley and complements the X19.

The Jobconnector services built on an earlier Access to Opportunities project, funded by the EU, which enabled SYPTE to enhance frequencies and add early morning/late evening buses on three routes in the southern Dearne Valley.



**75% of candidates did not drive, or have access to vehicles, and up to 92 candidates per week were unable to accept or apply for a role at ASOS.**

## Impact

The enhanced Jobconnector routes serving the ASOS distribution centre now carry over 16,000 passengers per month to and from this site alone. ASOS employs 3,000 people, up from 1,000 when the site opened.

On the X19 Barnsley-Doncaster-Robin Hood Airport service, patronage rose 62% from October 2012 to April 2014, following the increase in frequency from hourly to half hourly. In 2013/14, commuting and travel to training and education accounted for 39% of the 470,000 passenger journeys, compared to 18% in 2012/13. The surveys also show that 7% of commuters would have travelled to work by car in the absence of the service.

Patronage on the A1 Jobconnector service in the Don Valley area increased by 42% between 2012/13 and 2013/14 to 455,347 journeys per year. Over 75% of passengers are commuters. SYPTE estimates that the enhancements to the services saved 21.7 tonnes of CO<sub>2</sub> in 2013/14. The A1 service, which had been funded by SYPTE for over a decade, was substantially replaced by commercial operation in autumn 2014.

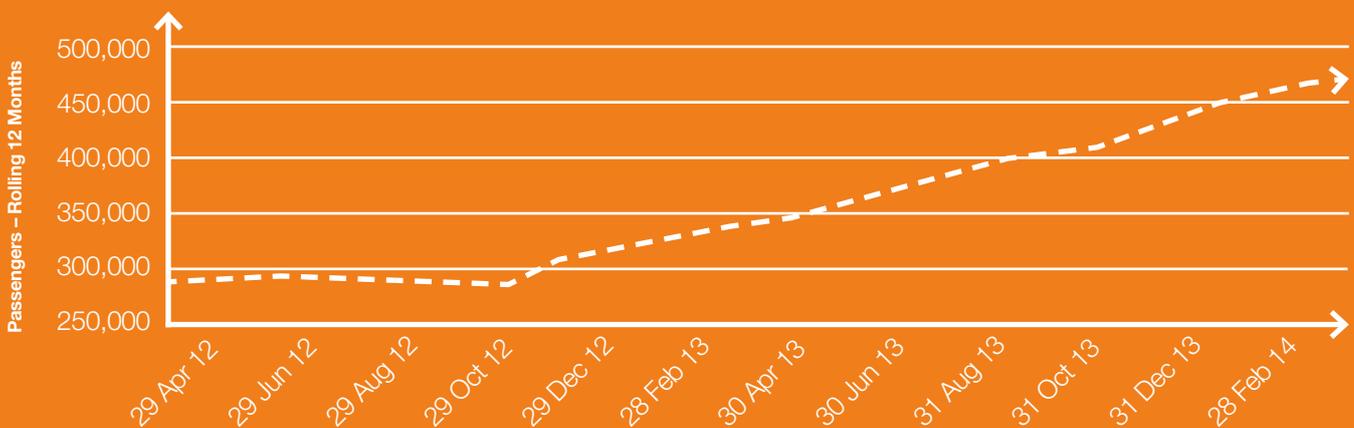
In 2012, evaluation of the three routes in the Dearne Valley where additional early morning and evening services were provided through the EU Access to Opportunities funding recorded patronage of 320,000 per year against a target of 210,000. The proportion of commuters has stayed consistent at around 36% as patronage has increased indicating more people using the services to travel to work. After the end of EU funding, SYPTE continued to provide funding for some services.

The Busboost programme has seen almost 7,000 employees from companies across South Yorkshire trial commuting by bus rather than car – 35% indicated they would continue to use the bus.

On all Jobconnector and EU-funded services, the proportion of bus commuters is significantly higher than for the whole of South Yorkshire where 24% of people travel to work by bus.

# +62%

**Patronage on the X19 Jobconnector rose 62% following an increase in service frequency to half hourly.**



# CASE STUDY 3: LOCAL LINK, GREATER MANCHESTER

## Enhanced community transport opens up new opportunities for jobseekers

Limited early morning and late night public transport can present significant issues for businesses and employees working shift patterns. In areas of low car ownership and social deprivation in particular, it can constrain opportunities to find work and cause problems for companies in recruiting staff.

As a result, Transport for Greater Manchester has worked with 'Local Link' community transport operators to provide door-to-door travel to work at times when public transport is unavailable or restricted. These demand responsive services are operated with mini buses, and passengers book places in advance.

As well as offering local residents direct journeys to their workplace, the services can be a convenient means for people travelling from further afield to make the final leg of their journeys. They also fill missing connections between existing public transport links.

Recent initiatives have included a project funded through the Department for Transport's Local Sustainable Transport Fund (LSTF) to enhance four community transport services running from high deprivation neighbourhoods to business parks and other employment areas. It was designed to open up job opportunities, help companies grow by widening their labour market, and attract new businesses.

The principal element of the project involved increasing capacity and providing additional early morning, late night and weekend services. In addition, the project covers upgrades to the technology for booking journeys, scheduling and dispatch.

### Objectives

- Address barriers to accessing employment in areas with high levels of deprivation, particularly for low-income shift workers.
- Increase labour markets for growing businesses, especially those that operate shift work patterns.
- Improve passenger information and community transport booking service to ensure users are aware of the full range of journey options, including interchange with mainstream public transport.
- Overcome difficulties experienced by community transport operators in recruiting appropriately trained drivers to deliver new and expanded services.
- Help provide unemployed people with training, professional qualifications and work experience through the Train, Learn, Drive, Earn programme.

A further Train, Learn, Drive, Earn (TLDE) programme offers unemployed people in deprived areas training to become community transport drivers or support staff.

The total cost of the LSTF funded project from 2012/13 to 2014/15 is £1.82m, with the TLDE element accounting for £263,000 of that. Transport for Greater Manchester has committed local funding to extend the project into 2016.



## Impact

An evaluation of the project in October 2013 found that all four enhanced services had achieved large increases in patronage, with particularly significant growth in the number of people using them to travel to work (see charts opposite). Work trips increased by more than half on all four services and nearly doubled on two of the services.

Further qualitative research will help identify the specific impacts on individuals, in terms of the opportunities opened up as a result of the enhanced services. An initial survey has been undertaken on the Airport City service and results are currently being analysed.

At present, three community transport operators are partners in the TLDE scheme, and are training around twenty unemployed people. There is a waiting list of around eighty candidates.



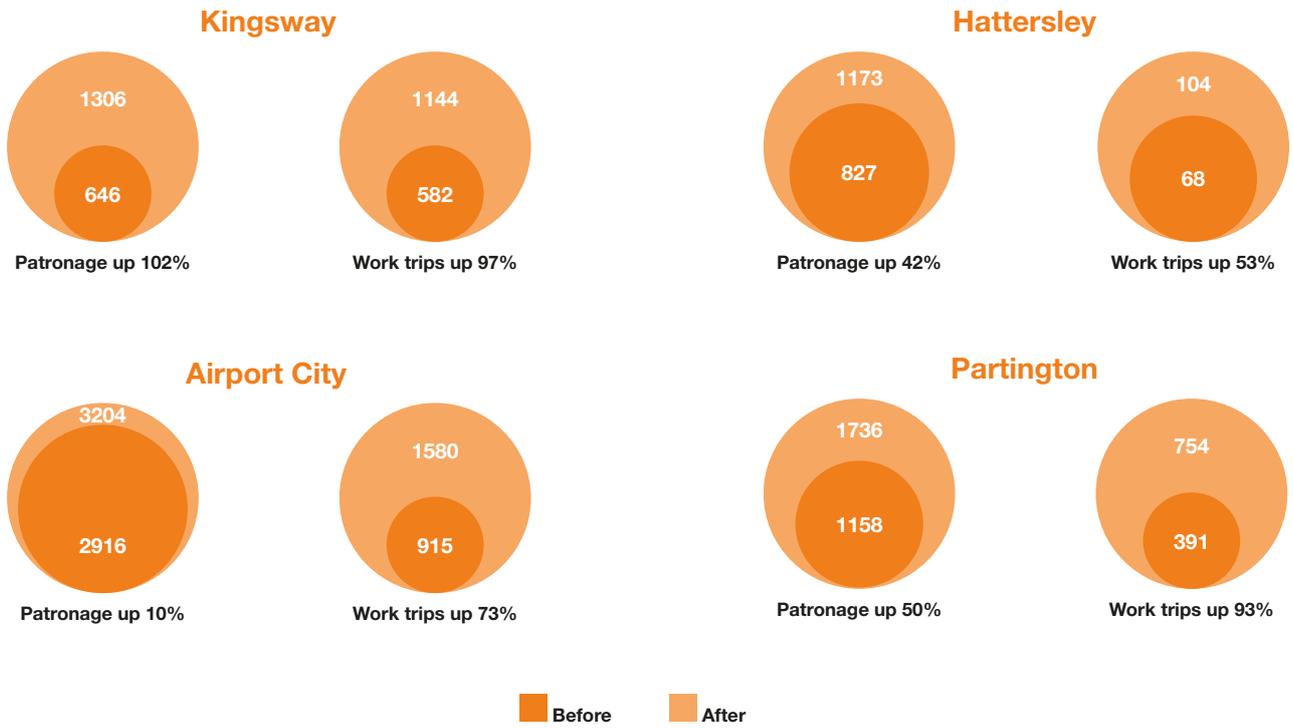
**FOUR BUS SERVICES CONNECTING DEPRIVED NEIGHBOURHOODS TO EMPLOYMENT AREAS WERE ENHANCED TO OPEN UP JOB OPPORTUNITIES, HELP COMPANIES GROW AND ATTRACT INWARD INVESTMENT.**



## Benefit:cost analysis

An appraisal of the scheme proposals in the LSTF bid showed a benefit to cost ratio of 2.2 to 1. This appraisal took into account all costs with additional costs added for optimism bias and on-going maintenance and operations over a twenty year period. The exercise excluded additional overall wider economic benefits and highway reliability improvements. The benefit to cost ratio therefore represents a conservative estimate.

## Monthly patronage and work trips before and after bus service enhancements (by area)



# CASE STUDY 4: SALFORD QUAYSLINK, GREATER MANCHESTER

## Creation of MediaCity bus link aids regeneration of Salford Quays

The opening of MediaCityUK in 2011 was a key step in the regeneration of Salford's docklands, creating a purpose-built site for creative and digital businesses. The BBC and Salford University were among the first organisations to move in. However, as a completely new development, there were minimal existing public transport links to the site.

A new Metrolink spur was built to serve MediaCity, but Salford's major rail and bus interchanges are some distance away. As a result, further public transport options were required to provide access to the new leisure and employment opportunities at MediaCity, particularly from a number of low income residential areas with high levels of social deprivation.

In preparation for the opening of MediaCity, Transport for Greater Manchester, Salford City Council and Salford University developed plans and obtained funding for a bus link connecting MediaCity to housing areas, Salford Crescent station and Salford Shopping Centre – a major bus hub. Their high-frequency Salford QuaysLink service was introduced in July 2011. The route provided interchange with other public transport services at a large number of locations, maximising access to MediaCity from within Salford and other areas of Manchester.

Initially, the QuaysLink service was run by a local bus company under a gross cost contract with four new low-carbon hybrid single-deck vehicles obtained through a bid to the Department for Transport's Green Bus Fund. The remainder of the funding, including vehicle maintenance and operating expenditure, was provided by the partners from their own resources.

### Objectives

- Improve public transport access from major rail and bus hubs to employment opportunities and facilities at MediaCity.
- Address social exclusion in areas of deprivation close to MediaCity.
- Use new high quality hybrid vehicles to help promote patronage growth and reduce carbon emissions compared to a diesel alternative.
- Prove viability of the service so that it could be taken over by a commercial operator and established permanently.



THE INTENTION WAS THAT INITIAL PUBLIC FUNDING WOULD DEMONSTRATE THE POTENTIAL OF THE ROUTE AND ATTRACT A COMMERCIAL OPERATOR.



The university's contribution was in exchange for free student travel between campuses. The intention was that the initial public funding would demonstrate the potential of the route and attract a commercial operator. Patronage grew strongly from the start, and 14 months after it began, the service was taken over by Stagecoach, providing a permanent and enhanced link.

The cost of operating the Salford QuaysLink service for 14 months was approximately £0.5m, including the university's contribution for free student travel.

### Impact

Patronage growth on the Quayslink service exceeded the targets set during its development. The number of passengers carried in the first month was 9,500. A year later in July 2012, the service carried 42,000 people. An early survey showed 40% of passengers were travelling for work purposes, demonstrating the success of the service in providing access to employment.

This proportion is likely to have reduced as it was before the university term started, however, the actual number of work trips rose in line with the overall increase in patronage.

The patronage growth demonstrated that the new bus link offered a viable commercial proposition. Stagecoach took over the route in September 2012 by extending one of its existing services from the city centre, so TfGM and the City Council no longer needed to provide financial support. A student fares/ticketing arrangement was negotiated with Stagecoach by the university.

The route continues to develop, with double-deck buses, offering greater capacity for passengers, earlier start times and improved frequencies. It now offers a wider direct service beyond the Salford Crescent terminus of the original link, effectively extending the route to south Manchester via the city centre, hospital and university precinct.

### Patronage growth on Salford Quays Link one year on from service launch



### Benefit:cost analysis

Appraisal of the QuaysLink service concept was carried out for a bid to the DfT's Kickstart fund in 2009, but public spending cuts led to Kickstart being withdrawn, hence the requirement for local funding to cover the initial operating costs. The Kickstart appraisal showed a high benefit to cost ratio of 5.2 to 1.

# CASE STUDY 5: TRAFFIC LIGHT PRIORITY, WEST YORKSHIRE

## Innovative technology enables extension of West Yorkshire bus priority

In many towns and cities, the scope for building bus lanes is restricted by narrow streets and the cost of widening roads. The effectiveness of bus lanes in reducing journey times and improving bus service reliability can also be limited if buses are caught at red lights.

Traffic light priority is increasingly being used to overcome these issues. It is especially effective at junctions with high levels of road congestion and in areas where multiple traffic signals are bunched together.

In West Yorkshire, targeted traffic light priority has been introduced in town and city centres, including Leeds, Bradford, Doncaster and Wakefield, to complement the existing network of bus lanes. Between 2010 and 2013, the system was installed at 240 sets of lights, replacing technology that was approaching life expiry and extending the system to more roads.

This innovative approach made use of GPS technology, which had been installed on buses to provide West Yorkshire Passenger Transport Executive's (WYPTE, now West Yorkshire Combined Authority) *younextbus* real time information service. The system was adapted to detect buses as they approach traffic lights. Traffic control software then adjusts the timing of the lights to allow buses to pass before they change from green to red. The system is tailored to conditions at each junction to prevent buses falling behind schedule and to help late running buses make up lost time.

Any impact on general traffic flow can be compensated for by adjusting the light settings when the bus has passed through.

### Objectives

- Improved bus punctuality and journey times.
- Better access to employment in city centres.
- Support modal shift from car to bus, and hence less congested roads and better air quality.
- Reduced carbon emissions from buses.
- Improved road safety.



## EXPLORING GPS ALTERNATIVES LED TO COSTS BEING REDUCED BY OVER 60%.



The GPS system is significantly cheaper than alternatives based on roadside detectors that were available when WYPTE drew up its plans for a new generation traffic light priority system in 2008. Originally the programme was costed at £3.5m using this conventional technology, but public sector spending cuts during the recession meant the Department for Transport was unable to provide funding. As a result, WYPTE explored the GPS alternative which was developed by engineers at West Yorkshire's district councils.

This led to costs being reduced by over 60% to £1.25m. The system is also more effective than roadside detectors because it can detect buses further away from traffic lights.

In 2012, the system was extended to provide priority for fire engines, enabling the fire service to reach emergency situations more quickly. Although the fire service is permitted to pass through red lights, road conditions at junctions inevitably meant fire engines often had to slow down to pass through them safely and were sometimes caught in traffic queues.

### Impact

The wider area covered by traffic light priority, along with the enhanced capabilities of the GPS system (compared to roadside detectors), means bus journeys are faster and more reliable.

WYPTE's monitoring of a selection of traffic light priority sites shows significant benefits. For example, on two roads in Leeds where several junctions have traffic light priority, bus journey times fell by over 40 seconds in the morning peak on these small sections of their route. At the vast majority of junctions the journey time savings were greater than forecast.

In addition, bus service reliability improved dramatically in some cases. On one road in Bradford with a single traffic light priority site, the proportion of buses severely delayed at this junction fell from 29% to 4%.

On a road in Leeds where traffic light priority covers several junctions, the proportion of severely delayed buses fell from 14% to 2%. WYCA estimates that over sixty million bus passengers travel on routes equipped with traffic light priority technology each year.

In addition, traffic light priority is thought to have reduced carbon emissions. Estimates by FirstGroup during the development of the scheme suggest operational efficiency resulting from revised traffic light priorities saves up to 3kg of CO<sub>2</sub> per bus each day.

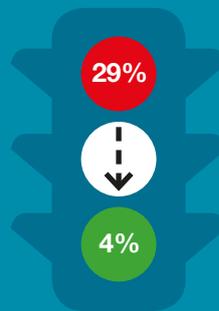
When the system was extended to include fire engines, a pilot project showed an average 14% reduction in journey times across all junctions, and reductions as high as 63% in some cases.

Following the pilot, West Yorkshire Fire and Rescue Service said: *“This technology will allow firefighters having to negotiate some of the busier junctions to reach emergencies quicker, saving lives and property.”*



## Benefit:cost analysis

WYPTE estimates from its analysis of monitoring data that the scheme will deliver economic benefits of £10m over the life of the assets with a high benefit to cost ratio of 8 to 1. The benefits valued are faster, more reliable bus journeys, reduced road congestion due to modal shift, and increased revenue from additional bus trips.



**Buses severely delayed**

**Fell to...**

**Following the installation of traffic light priority at a Bradford junction**



**REVISED TRAFFIC LIGHT PRIORITY SAVES UP TO 3KG OF CO<sub>2</sub> PER BUS, PER DAY.**



# CASE STUDY 6: DERBY ROAD QUALITY BUS CORRIDOR, NOTTINGHAM

## Better bus services from bus lanes and new vehicles

In Nottingham, the city council has continually improved facilities for passengers on Quality Bus Partnership Corridors. The aim is to capitalise on the city's bus lanes and operators' investment in new vehicles by providing a complete package that further increases patronage and encourages modal shift.

In 2007, a series of enhancements were made on the Derby Road corridor which connects Nottingham city centre to the University of Nottingham Main Campus, the Queens Medical Centre and the suburb of Beeston on the city boundary.

Building on previous improvements, the council installed high-quality bus shelters with real time LED information displays, CCTV monitoring and new timetable cases, as well as a number of infohubs (information kiosks).

Bus lanes were operational from first service to last, and new enforcement measures were introduced. Operators invested in route rebranding, smartcard systems and onboard CCTV. In addition, operators and the city council jointly funded on-vehicle real time information systems and worked together to provide multi-operator tickets.

With 25,000 people living within 400 metres of the Derby Road corridor, around half of whom were students, there was high potential for the improvements to attract additional users. A further 15,000 lived within 800 metres of the corridor.

Specific marketing programmes included promotion of the council's Citycard travelcard, smart ticketing and personalised travel planning. Citycard was also integrated into the university's staff and student cards, and off-bus ticketing was heavily promoted at the university.

## Objectives

- Raise service quality on a key route connecting the city centre with major destinations and areas of high population.
- Increase patronage and mode shift through a comprehensive package of soft measures, complementing investment in vehicles and the creation of bus lanes.
- Tap into the significant student population on the route through targeted marketing.
- Inform future programmes to upgrade Quality Bus Corridors.

The city council's and operators' investment in these 'soft' measures to improve customer experience and perceptions of the service are summarised on the right. The costs amounted to £460k and £621k respectively, complementing operators' £8m investment in new vehicles. The bus lanes were created largely through reallocating road space.

## Impact

In the last three months of 2007, patronage on Nottingham City Transport services on the Derby Road corridor rose by up to 19% compared to the same period in 2006. At that time, the company was experiencing a small decline in patronage overall. On Trent Barton services using the corridor, patronage rose 8%.

The increase in passenger numbers demonstrates the potential for a holistic approach to route upgrades consisting of relatively low-cost investments in soft measures alongside bus priority and new vehicles to achieve high levels of growth. Further factors also contributed to more people using the service. Operators made a number of enhancements to the timetable – for example a new service to the university – and parking charges in the city centre also had an impact.

Focus groups indicated that some modal shift from cars to buses had taken place. Participants viewed car restraint, real time information and bus lanes as key features in determining travel choices.

The experience has informed subsequent transport programmes in the city.

## 'Soft measures' implemented on the Derby Road Corridor



### Information provision and marketing

- Real-time information
- Personalised journey planning
- 'Infohubs' information terminal



### Ticketing and fare structure

- 'Citycard' developments
- 'Kangaroo' multi-operator tickets



### Roadside infrastructure

- 24-hour bus lanes and enforcement
- High quality bus shelters
- Timetable cases



### Safety and security throughout journey

- CCTV on board buses and at stops



### In-vehicle experience

- Investment in new low-floor vehicles



### Network changes and development

- Rebranding and renumbering of NCT 'Orange Line' services



**PATRONAGE GROWTH DEMONSTRATES THE POTENTIAL OF RELATIVELY LOW COST SOFT MEASURES ALONGSIDE BUS PRIORITY AND NEW VEHICLES.**





# CASE STUDY 7: UCYCLE, NOTTINGHAM

## New facilities and promotions encourage large rise in cycling among Nottingham students

Nottingham has the lowest carbon emissions of any of the UK core cities, due in part to its progressive expansion of targeted initiatives to encourage more trips by cycling and walking. One of the key components of the city's active travel work is the Ucycle programme. It has succeeded in significantly increasing cycling and reducing car travel among Nottingham's large number of students who swell the city's population by an additional 60,000 people aged 18 to 25 during term time.

The benefits of Ucycle for students and higher education staff include easy, pleasant and low cost travel to campuses, plus the well-documented health benefits that cycling delivers. In addition, Ucycle benefits the city as a whole through its contribution to lower levels of road congestion and cleaner air.

The initial phase of the Ucycle programme, which is operated for the city council by sustainable travel charity Sustrans, began in 2009. Initially, it focused on encouraging cycling among students in the University of Nottingham, Nottingham Trent University and Nottingham University Hospitals NHS Trust through promotional events including information road shows and cycle training sessions, and offering low cost cycle hire.

The work provided a strong foundation for Nottingham to seek funding to expand the programme. The council's bid to the Department for Transport's Local Sustainable Transport Fund (LSTF) enabled Ucycle to be extended to a further three higher education colleges in 2012, and provided resources for additional activities and infrastructure.

### Objectives

- Raise cycling levels among students and staff and encourage mode shift in order to contribute to lower levels of congestion and carbon emissions.
- Promote active travel to young adults at a time when they become responsible for their travel behaviour for the first time.
- Address transport barriers and provide an affordable travel option for students no longer eligible for travel support due to the changes in Education Maintenance Allowance.
- Improve public health.
- Share best practice and encourage adoption among a wider range of partners.



Ucycle now has a number of strands which include funding and impetus for cycle priority on routes to universities and colleges, and new cycle stands on campuses. Another element involves high quality services for cyclists including cycle hire from as little as £49 per year, free cycle training to build confidence among new cyclists, on-site 'Dr Bike' cycle maintenance services, and maintenance classes for staff and students. In addition, marketing has been stepped up including through social media platforms. Universities and colleges have supported the programme through measures such as regular organised cycle rides, establishing Ucycle Forums to discuss activities and events, setting up websites to promote Ucycle's services and creating volunteer groups to publicise the benefits of cycling and sustainable travel.

Ucycle project officers administer the scheme at all participating locations, offering expertise and support on all cycling related issues.

The LSTF provided a Ucycle budget of £937k, which included £200k for infrastructure works. Partner institutions provided match funding of £175k per year which includes £135k for capital works.

Ucycle is complemented by initiatives taken forward by the city council and partner organisations to reduce reliance on cars for example by limiting parking and providing incentives to staff to cycle or walk to work.

# In 2013/13



## Impact

Ucycle demonstrates how providing high quality and attractive facilities for cyclists in conjunction with powerful marketing and engagement campaigns can lead to large increases in cycling. There have been high levels of engagement at participating institutions.

Since the LSTF funded Phase 2 began in January 2012, over 9,000 people have taken part in Ucycle events and activities across the higher education institutions involved. For example, in 2012/13, 179 events were held, with 4,200 participants actively engaged. In the same year, more than 400 Ucycle bikes were loaned to staff and students.

Improvements to facilities for cyclists include provision of over 750 extra cycle parking spaces for use by staff, students and visitors since 2011.

Regular monitoring of the number of bikes parked shows a significant increase in cycling and at participating institutions. For example, since 2012, the number of cycles parked at the University of Nottingham has risen by more than 13%. In addition, the university's 2013 travel survey showed a 10% reduction in travelling to the campus by car and that 14% of staff and students cycle to campus.

The impact of Ucycle has contributed to containing road congestion in Nottingham and lower CO<sub>2</sub> emissions. Car journey times per mile in the city have remained at 2010 base levels, and emissions are falling year on year.



## Benefit:cost analysis

Analysis will be carried out as part of the evaluation of Nottingham's three year LSTF programme. The work is being supported by the Sustrans Research and Monitoring Unit.

Previous Sustrans evaluations have shown that increasing cycling can produce substantial economic benefits as a result of reduced congestion and carbon emissions, increased physical activity and improved access to employment, local facilities and public transport. For example, the Cycling in the City Regions report found that investment in cycling is highly cost effective delivering a benefit to cost ratio of 3 to 17.

A Sustrans evidence review for Bristol City Council, cited in the report, concluded that small scale and targeted cycling and walking interventions can deliver higher benefit to cost ratios, averaging 19:1.



**UCYCLE COMPLEMENTS MEASURES TO LIMIT PARKING AND PROVIDE STAFF INCENTIVES TO CYCLE OR WALK TO WORK.** ”



# CASE STUDY 8: WORKWISE, WEST MIDLANDS

## Travel support helps over 20,000 West Midlands jobseekers into work

Historically, unemployment in the West Midlands has been above the national average. Changing economic and social trends have also created challenges following the shift from industrial to service sector employment in the 1990s. Communities are no longer able to rely on jobs for life at large nearby sites and people need to look for work throughout the conurbation.

As a result, in areas with low incomes and low levels of car ownership in particular, travel became a significant barrier to finding work. West Midlands Passenger Transport Executive (Centro) and Jobcentre Plus have found that in some cases people are unaware of public transport services to employment sites. In others, people may view the cost of travelling to interviews or commuting while waiting up to two months for their first wage packet as unaffordable. For example, one in four people nationally say their job search activity is inhibited by the cost of travel to interviews<sup>8</sup>.

In 2003, Centro intervened to address these issues directly through its WorkWise scheme based around offering individual jobseekers advice on public transport, personalised travel planning and free public transport tickets to attend interviews for the initial period of employment.

### Objectives

- Help unemployed people find, start and stay in work.
- Encourage unemployed people into sustainable travel habits with positive impacts on road congestion and air quality.
- Reduce the financial barriers to starting a new job.
- Support the local economy and social inclusion by broadening the labour market and removing transport barriers to employment.

“ WHEN YOU START A NEW JOB THE COST OF EVERYTHING STARTS TO ADD UP, PARTICULARLY PAYING FOR LUNCH AND TRAVEL EVEN BEFORE YOU GET YOUR FIRST PAY CHEQUE. IT WOULD HAVE BEEN A REAL CHALLENGE FOR ME TO GET BACK INTO WORK WITHOUT THE EXTRA SUPPORT FROM THE WORKWISE SCHEME. ”

Sophia Shoukat, WorkWise participant

At first, the scheme focused on areas with high levels of deprivation in Birmingham and Solihull with considerable success. All targets were exceeded including the number of people using the free tickets to attend job interviews and travel to new jobs, and the number of people assisted who remained in work.

As a result, WorkWise was rolled out to further areas, and by 2010 covered six of the seven West Midlands districts with funding from a variety of UK government and European sources.

A successful application to the Department for Transport's Local Sustainable Transport Fund (LSTF) provided £2.4m to expand WorkWise across the region between 2012 and 2015.

All eligible jobseekers in the West Midlands can now receive up to eight weeks' free travel when starting a new job, as well as free travel passes to interviews and travel planning advice.

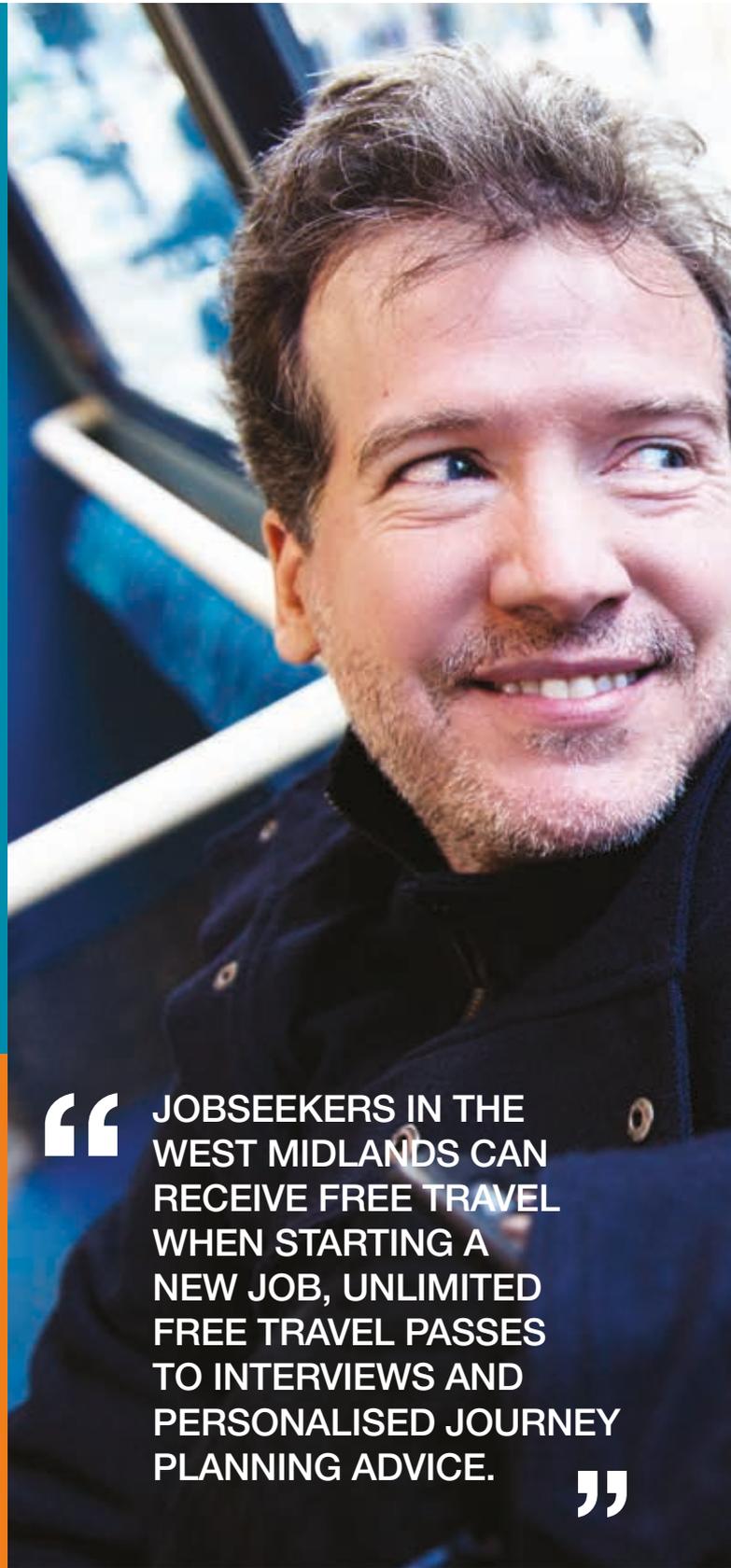
Applications for assistance are made through Jobcentre Plus. The service is run by Centro's WorkWise team and by Sandwell Council.

WorkWise also offers travel training to Jobcentre advisers. The LSTF provided £2.4m for WorkWise from 2012-2015. A further successful LSTF business case has funded the scheme to continue into 2016.



**20,000 People**

WorkWise has helped over 20,000 people to access work.



“ **JOBSEEKERS IN THE WEST MIDLANDS CAN RECEIVE FREE TRAVEL WHEN STARTING A NEW JOB, UNLIMITED FREE TRAVEL PASSES TO INTERVIEWS AND PERSONALISED JOURNEY PLANNING ADVICE.** ”



## Impact

The WorkWise team has built a strong partnership with Jobcentre Plus and employment support agencies. Since the WorkWise programme started, it has helped over 20,000 people to access work across the West Midlands.

Follow-up surveys consistently show that over 70% of people who find jobs with assistance from WorkWise are still employed. Around half the people WorkWise helps into employment would not have been able to take their job without this support.

WorkWise has also been successful in encouraging travel to work by public transport, walking and cycling. Nine out of ten WorkWise participants continue to use sustainable transport modes after six months in their new jobs. This undoubtedly has benefits in reducing road congestion and CO<sub>2</sub> emissions by demonstrating to people starting employment that it is not necessary to own a car to get to work.

In addition, Centro's surveys show that over 90% of people who use the service believe WorkWise support had made a "significant impact on their life".

An evaluation of the WorkWise scheme in North Solihull in 2012 showed that, over three years, the scheme saved £172,000 in Jobseekers Allowance payments after taking into account the cost of issuing the free travel passes.

## Benefit:cost analysis

An appraisal of the WorkWise project in 2010 showed that it had a benefit to cost ratio of 10.5 to 1, taking into account the economic and transport impacts. This extremely high benefit to cost ratio was achieved despite the appraisal methodology applying a negative congestion rating to the transport impact due to 10% of WorkWise participants using cars to travel to work after six months, compared to no travel to work if they remained unemployed.

# CASE STUDY 9: TRAVELWISE, MERSEYSIDE

## Merseyside gets TravelWise with targeted travel planning and promotions

On Merseyside, the five local authorities and Merseytravel jointly promote walking, cycling, car sharing and public transport under a single TravelWise banner.

The TravelWise campaign has led many people to reconsider whether single occupancy car journeys should be their default travel choice, with benefits for public health, air quality and congestion on the region's road network. It has also helped embed initiatives such as Bikeability child cycle training and support for businesses in Merseytravel's core transport programmes.

In 2012, the Department for Transport's Local Sustainable Transport Fund (LSTF) provided the opportunity to re-evaluate TravelWise and extend it to encompass a targeted approach, focusing on areas with high levels of unemployment and social exclusion.

Key aspects included working with local communities to broaden travel horizons; work with employers to promote alternatives to car commuting; providing greater opportunities for unemployed people to find jobs; increasing participation in education; and removing barriers to travel for people without a car.

Building on existing relationships with the region's businesses, Merseytravel created an Employers' Network to help companies inform staff of the potential cost savings and convenience of commuting on foot, by bike, public transport or car sharing. Employees who drive to work were offered a free weekly travel pass to trial commuting by bus. Events such as pedometer challenges and workplace cycle training were set up to help promote cycling and walking.

### Objectives

- Raise awareness of public transport, walking, cycling and car sharing as a cost effective option for travelling to work and education in targeted areas.
- Increase the travel horizons of unemployed people by giving them the confidence and support necessary to travel to work by sustainable transport.
- Support business growth and address social exclusion by removing barriers to travel.
- Reduce single occupancy car commuting, and hence carbon emissions.
- Improve attendance at targeted schools.



Refinements to Merseytravel's partnership with Jobcentre Plus included offering jobseekers and the newly-employed free public transport tickets for a month to meet the cost of travelling to interviews, training and jobs. A new programme – Jobs in the Transport Sector – provided unemployed people with the option to gain qualifications to work in the transport industry.

In addition, a large personalised travel planning programme, with over 11,000 participants, focused on quality bus routes where Merseytravel worked with operators to improve services. The intention was to highlight the opportunities to access employment by public transport.

At the same time, Merseytravel core sustainable travel projects included work with community groups to understand local barriers to travel in greater detail, offer advice and make travel easier.

Actions included raising awareness of the free bus pass for people aged over 60, providing cycle training and responding to issues raised such as the location of bus stops or anti-social behaviour on the transport network.

A further initiative addressed research which showed some young people were not attending school, college or apprenticeships because of the cost of travel, or because they were unaware of the transport options. A programme was developed and delivered with the education sector to address these issues by offering information about cheaper travel options, journey planning advice, and free public transport tickets and bicycle use.

The Travelwise initiatives were designed to complement Merseytravel's wider 2012-2015 LSTF programme, which also provided funding to improve cycling infrastructure, bus services and walking routes to employment sites, as well as expansion of the Liverpool city centre cycle hire scheme into the largest outside London.

“

**TRAVELWISE HAS LED MANY PEOPLE TO RECONSIDER WHETHER SINGLE OCCUPANCY CAR JOURNEYS SHOULD BE THEIR DEFAULT TRAVEL CHOICE.**

”

## Impact

The targeted TravelWise initiatives funded through Merseytravel's LSTF programme and its core projects have helped change the way people travel and provided benefits to many sections of the community.

Surveys show the incentives offered to employees to consider alternatives to car commuting, along with ongoing workplace travel planning programmes, have created new commuting patterns. For example, at Shop Direct's Speke HQ, single occupancy car commuting fell to 63% in 2013 compared to 68.5% in 2009, and bus commuting doubled over the same period.

The travel planning programme on Quality Bus Corridors has led to 10% of the people involved continuing to use the bus on these routes rather than travel by car.

Engagement with schools has reduced pupils' absence. At Broadgreen International School, 98% of students who received free travel and advice improved their attendance to above average.

Over 70% of the jobseekers and apprentices who received free travel are still in employment or training. The Jobs in the Transport Sector programme has helped over 270 people gain employment and 400 gain qualifications.

226 companies with over 150,000 staff have signed up to become members of Merseytravel's Employers Network.

This programme will have a lasting effect on Merseyside. Merseytravel will continue to implement highly-targeted projects with a core commitment to continue many initiatives following the end of the LSTF funding in March 2015. The impact of the LSTF programme has also provided the basis for discussions with LEPs and other organisations for ongoing support.

“

**226 COMPANIES WITH  
OVER 150,000 STAFF  
HAVE SIGNED UP TO  
MERSEYTRAVEL'S  
EMPLOYERS  
NETWORK. ”**





# CASE STUDY 10: GREATER BRISTOL BUS NETWORK

## Bus priority the catalyst for more pleasant and prosperous streets in Bristol

In 2006, traffic congestion in Bristol, and on the roads connecting the city to the surrounding area, had become a significant and growing concern to businesses, shopkeepers and residents.

A review by Bristol City Council, Bath & North East Somerset Council, North Somerset Council and South Gloucestershire Council found that congestion was costing the local economy hundreds of millions of pounds each year, and would constrain inward investment. In addition, the councils explicitly recognised that public health and quality of life were being affected by traffic-clogged roads.

Bus services were viewed as a key part of the remedy, but it was clear that incremental upgrades would not be sufficient. In reality, buses had become part of the problem. Road conditions meant bus service reliability was poor. As in many other cities, patronage was falling. The range of issues that congestion and street design were causing also meant initiatives to improve bus services would need to consider a much wider context.

In effect, the subsequent plan to create a new Greater Bristol Bus Network (GBBN) was the catalyst for the councils to remodel the city's core transport arteries. Ten routes were selected to become bus Showcase corridors based on traffic levels, commuting patterns and access to hospitals and education. Faster, more reliable bus services and better passenger experience were the core aspects of the programme. However, its principal aims also included improving journeys for all road users and creating more pleasant, useful and safer streets.

### Objectives

- Increase bus patronage by delivering ten bus Showcase routes.
- Promote mode shift from cars to buses, walking and cycling.
- Lower traffic congestion and more convenient journeys for all road users.
- Minimise transport constraints on economic growth and inward investment.
- Reduce carbon emissions and air pollution.
- Improve road safety.
- Develop better transport connections to workplaces, new housing and employment sites, hospitals, schools and deprived areas.



**WHITELADIES ROAD BEFORE GBBN IMPROVEMENTS**



**WHITELADIES ROAD AFTER GBBN IMPROVEMENTS**

The works, which took place over four years from 2008, provided new bus lanes, priority for buses at traffic signals, and a package of customer service enhancements. Over 300 new real time information systems were installed along with higher quality shelters and timetable displays at more than 1,000 bus stops. The streetworks included redesigning junctions and widening roads to improve traffic flows for all road users as well as buses. Better walking and cycling routes were incorporated into the Showcase corridors in line with the city's overall active travel programme.

In certain areas, street design had previously been a major factor in people choosing to make short trips by car rather than walking or cycling.

The programme also provided opportunities to renew public realm; install better paving and road crossings; remove street clutter; and plant hundreds of new trees. A further strand involved improving parking and loading arrangements to help create more coherent, liveable and vibrant streets which would benefit pedestrians, shoppers and traders.

The holistic approach was designed to speed up journeys (or reduce forecast increases in travel times) for all road users, and shift as many trips as possible from cars to buses, walking and cycling. In total, the ten Showcase corridors are used by over 70 bus services providing improved journeys across the Bristol bus network.

The £69m investment by the local authorities (the majority of which came from Department for Transport grant funding) was complemented by a partnership with FirstGroup. The bus operator spent over £22m on more than 120 new buses, revised fares to provide better value tickets and increased frequencies on a number of routes. The strategy also maximised funding from developer contributions which amounted to £15m of the local authorities' spend.

“

**DELIVERY OF TEN RELATIVELY SMALL CORRIDOR SCHEMES AS AN OVERALL PROGRAMME IS CONSIDERED TO HAVE HAD A MULTIPLIER EFFECT.**

”

## Impact

The GBBN shows how skilful design of bus priority, and the streetworks involved, can achieve a wide range of objectives. In addition, delivery of the ten relatively small corridor schemes as an overall programme is considered to have had a multiplier effect, providing greater consistency in service quality across the city, and helping to make bus travel a more natural choice. This has contributed to very high levels of patronage growth which, in turn, has helped maximise the wider benefits achieved.

Between 2008/09 and 2013/14, patronage on the main FirstGroup services using the ten corridors rose 17.6% against the backdrop of a weak UK economy and a decline in bus patronage nationally. The partners had targeted an 11% rise by 2015/16.

The highest patronage increase was 52% on the Portishead-Bristol corridor delivered by faster bus journeys, doubling service frequencies, simplified routes, new buses with wi-fi and leather seats, and rebranding to an 'Express Yourself' livery.

The reliability of bus services on the ten corridors has improved significantly. In 2013, 91.7% of bus services started on time compared to 78.6% in 2008; 80% of buses kept on time during their journey compared to 73.6% in 2008.

Specific route surveys provide strong indications of mode shift. For example, a survey in March 2013 showed 44% of passengers on the new X18 commuter service previously made their journey by car. Additional fares revenue means council support is no longer required for a number of services which were previously subsidised.

Surveys in 2013 showed that across the ten corridors, average travel speeds, for all traffic, have increased, indicating congestion is falling. The causes include better traffic flows from remodelled junctions and lower traffic volumes. Mode shift is considered to be a factor in the lower traffic volumes although the economic downturn from 2008-12 will have played a part.

Air quality has improved, with the average level of nitrogen dioxide falling compared to 2011 and the project baseline. In 2012 Nitrogen dioxide concentrations were 43µg/m<sup>3</sup> against 48µg/m<sup>3</sup> in 2004. The councils' modelling anticipated that without the GBBN, 46µg/m<sup>3</sup> would have been expected.

GBBN has successfully complemented projects to improve cycling infrastructure in Bristol. Cycle commuting rose from 12.2% in 2009 to 15.6% in 2013. Roads are safer on the ten corridors. Comparison of accidents from 2009-11 with 2011-2013 shows a 2% fall in deaths and serious injuries and a 10% fall in slight injuries.

# 44%

of passengers on the new X18 commuter bus previously made their journey by car.



## Benefit:cost analysis

Analysis provided to the DfT for grant approval showed a high benefit to cost ratio of 3.5:1 with bus user and road decongestion benefits the main factors. All targets have been achieved suggesting the value of the scheme has been realised. Wider lifestyle benefits not captured by appraisal methodology were also delivered.

### Footnotes

<sup>1</sup> Eddington, R (2006) *The Eddington Transport Study: Main Report: Volume 3.*

<sup>2</sup> **pteg** (2014) *Transport Works for Growth and Jobs.*

<sup>3</sup> Institute of Transport Studies (2013) *Buses and the Economy II: Survey of Bus Use amongst the Unemployed.*

<sup>4</sup> **pteg** (2014) *Making the Connections: the Cross-Sector Benefits of Supporting Bus Services.*

<sup>5</sup> Eddington, R (2006) *The Eddington Transport Study.*

<sup>6</sup> Jacobs (2011) *Value for Money and Appraisal of Small Scale Public Transport Schemes.*

<sup>7</sup> Sustrans (2011) *Cycling in the City Regions: Delivering a Step Change* <http://www.pteg.net/resources/types/reports/cycling-city-regions-delivering-step-change>

<sup>8</sup> Social Exclusion Unit (2003) *Making the Connections: Final Report on Transport and Social Exclusion.*

