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2015: a year when BRT took several large strides forward, but also made one major move backwards

When it comes to BRT, it would appear that the year 2015 has, to use a football cliché, been something of a game of two halves. There are, of course, lots of bright spots – healthily growing ridership numbers is many established schemes and, if anything, a more than usually large number of proposed schemes finally getting off the drawing board and onto the street. Just witness the number of large-scale and high-profile projects outlined in the pages of this handbook – in the West of England, in Manchester, in Glasgow. Indeed, at a cursory glance there soon won’t be many major urban conurbations in the UK that don’t either have a functioning BRT scheme or are seriously trying to promote one.

But it hasn’t been all good news, of course, with 2015 having witnessed its fair share of scheme delays. But no real change there, for has it not always been thus? The really big (bad) news, of course, has been the surprisingly premature of the ftr ‘bendy bus’ BRT service in Swansea, just a handful of years after it was opened in a blaze of publicity. “If we can’t make the ftr concept work in Swansea, then we can’t make it work anywhere,” First managers claimed not much more than five years ago. And yet now the bendy bus has departed from the streets of Swansea. So what lessons can we learn from the Swansea experiment? Maybe this year’s BRT uk conference will start to answer that question.
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- Greater Bristol Bus Network - transport planning and appraisal, business case development, bus service procurement
- Leigh-Salford-Manchester Busway - engineering design and programme management
- Luton to Dunstable Guided Busway - construction procurement and delivery

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BRT – the next ten years

Dave Haskins, NGT Project Director, West Yorkshire Combined Authority

Background
As the incoming BRT UK Chair, I have been asked to share my thoughts around what I see to be the future of Bus Rapid Transit in the UK. I will start however, by going back in time a little.

Since my early days in transport consultancy (going back some time), I was involved in a number of bus priority studies in London and Liverpool through which it was clear to me that enormous benefits to passengers could be derived. Then, at some point in the mid 90’s I stumbled upon the concept of BRT through my involvement in the Cambridge Guided Busway (some early work on behalf of local developers) and the Leeds Supertram scheme (where I was brought in to appraise an alternative bus-based option to the tram project). Invariably also, there were a number of projects I was handed where BRT/bus priority was required to be considered as a ‘poor man’s cousin’ for various proposed Light Rail schemes.

BRT had however grabbed my attention at this point, as a genuine mass-transit solution which could be introduced at significantly lower cost than light rail, and one which could potentially also be introduced on non-rail served corridors.

Moving jobs to work for West Yorkshire PTE (now the West Yorkshire Combined Authority) gave me the opportunity to get more involved these types of projects in a Promoter capacity. For the last 10 years I have led the NGT (Trolleybus) project in Leeds, which is a £250m scheme that is being jointly promoted by WYCA and Leeds City Council and which entails a ‘whole-system’ approach to public transport planning. For me, this BRT system is much more than the “R” for rapid. The “R” also signifies reliability, which it is aiming to achieve through the segregation of almost 2/3 of the route from general traffic. This project has faced (and continues to face) some significant challenges on its trajectory through to implementation. These challenges are, I am sure, largely similar to those which have been faced by many other cities—Cambridge, Sheffield, Luton, Manchester, Glasgow, Belfast, London and others.

It is in this commonality of BRT delivery challenges where BRT UK can play a key role and where we can work collectively to exchange knowledge and good-practice, and to support new (enlightened) promoting authorities. Over the last 10 years, I have been involved in BRT UK activities, working on a cross-authority basis to promote BRT as a mode and to share knowledge. I see that it is crucial that we, as an organisation, act as advocates for BRT.

To try to get a feel for how successful and widespread BRT has been, I visited the excellent website www.BRTdata.org which maintains a database which tracks the development and progress of BRT projects globally. Based on their most recent data, there are 402 mapped BRT corridors, totalling around 5,230km worldwide. Twenty years ago in 1995, the global figure was around 300km of BRT routes. So in terms of pure infrastructure provision, and based on a growth of BRT system length of approaching a factor of 20, BRT can quite easily be demonstrated as an unqualified success. According to the database, 48 cities are currently expanding their systems, while 141 more are constructing or planning new BRT projects. The future does appear to be bright. Meanwhile in the UK, the BRT database list 13 corridors with a cumulative length of 173km – roughly 3% of the global total. I posed myself the question “Is the UK pulling its weight on BRT?”

Next, in terms of formulating my thoughts around the future of BRT in the UK, I browsed on the internet using the search term “Bus Rapid Transit Future”. Looking at the pages of articles that came up, the highest ranking results revealed the following locations where BRT is in the news. – Vancouver, New York, Chicago, Rio de Janeiro, Nashville, Ontario, Birmingham (Alabama), Washington DC, Little Rock, Jacksonville, India, Denver, Kuala Lumpur, San Francisco.

Overall, this sounded to me to be quite an impressive list, however when browsing through the first 10 pages of results, I did not come across a single UK scheme which was deemed newsworthy. Why is this, and what can we do collectively to rectify it?

Issues to overcome
One of the key constraints to developing high capacity bus-based solutions in our towns and cities relates to the on-going battle for street space in Central Areas. Our towns and cities are often historic in their planning, and suffer from decisions made decades ago where road space was reallocated away from public transport towards car use (unlike many places in Europe, where public transport priority was retained). Often, local opinion and politics can take precedence over seemingly rational arguments to re-allocate limited road space back in favour of people movement. It is not just the car lobby that can dominate here. Increasingly the demands of cycle groups can also put paid to key
aspects of BRT thinking. This can relate to the demand for segregated lanes of specific widths, as well as junction capacity reductions to accommodate cyclists. It is of course possible (and desirable) to accommodate both, however this can then lead to increased land-take, which in turn can result in increased opposition and costs.

This leads on to a further issue which is often encountered is that of ‘BRT creep’, which results in a dilution of priority measures through the feasibility, planning, design (and even post-implementation) stages. I read one article recently which described the end result, not as BRT but as “SFBI5AWTIEROWBTS – Slightly Faster Buses In Some Areas Where There Is Exclusive Right Of Way Bus Transit System”. If we were planning a new Heavy (or Light) Rail, we would not be removing small sections of infrastructure, so why does this happen on BRT projects?

Funding is in many respects less of a hurdle in the development and delivery of transport schemes than it was a few years ago. The devolution of previously bid for DfT funding to LEPs through Growth Deals has removed a significant time dimension in the scheme delivery process. The challenge for BRT however is for projects to be able to be brought forward and for their advocates to be able to fight their corner for a slice of the funding pie. The challenge within this is that BRT projects by their very nature can be significantly more expensive than some other local infrastructure enhancements that are also on ‘lists’ to be prioritised. Locally it is often not difficult to make the case for 5 or 6 projects to be brought forward across a wider geographical areas than a single BRT project- especially when some of the historic delivery challenges are also part of the equation.

Finally the thorny issue of bus de-regulation. Outside London, buses are run by private companies. It is not too difficult to imagine these locally operated businesses seeing BRT as a significant opportunity to address a decline in bus use. After all, from the passenger viewpoint, a well-designed BRT system (such as Cambridgeshire Guided Busway) is clearly more attractive than a standard bus. The introduction of new market entrants to run a BRT system, or a move back towards a regulated bus industry, changes the market dynamics. How this will pan out for BRT schemes should become clearer over the next few years.

Opportunities in the UK
Over time the economy of UK has increasingly become London-driven. There are very few other developed nations which have capitals with a population eight times greater than that of the second city (London 8.5m vs Birmingham 1m). The current governments’ plans to devolve power to city regions and create a ‘northern powerhouse’ (including HS3) are recognition of this. If the future economy is not to be so London driven, it is surely to be ‘city’ driven. BRT can play a key part in transporting workers and shoppers into city centres across the UK.

This opportunity sits alongside a projected 30% increase in Public Transport use by 2050, brought about through population increases in urban areas and the lack of affordable housing within easy reach of centres. At the same time limited scope exists to increase highway infrastructure capacity. The combination of these factors should work in favour of BRT projects in that much of the housing growth is projected to take place on the fringes of urban areas – the very places which are on capacity-constrained highway corridors.

The future role of Mayors will also undoubtedly have an impact on the planning of transport infrastructure in our towns and cities. Whilst London is a shining example of how a Mayor can really help shape transport policy, the uniqueness of London in terms of its scale limits its application elsewhere in the UK. A better example perhaps would be to look at the achievements of cities such as Lyon, where the 5 year term, together with the local funding through the “Versement Transport” (local transport tax) has led to swift delivery of projects to enhance the fully integrated multi-modal network. More locally made decisions has resulted in a superb network which includes BRT, tram, Metro, Heavy Rail, tram-train and bus.

Moving onto technology and air quality issues - for the last few years I have attended a number of European transport conferences where key presentations have centred around policy levers which are leading cities to plan for future public transport networks which have a strong electric backbone. These moves are driven by issues relating to increasing air pollution levels in cities and the threat of significant local authority level fines. Even taking the risk of fines to one side, urban air pollution in developed economies has been estimated to cost 2% of national GDP. BRT can play a key role in reducing air pollution through direct impacts of switching to electric propulsion systems, together with the increased mode transfer from car. Wireless electric technologies are still not fully proven at the required BRT scale of intensity of use, but opportunities may exist in some locations for electric fleets to be introduced notwithstanding any ‘early adopter’ risks. There are already examples of this in the UK.

In conclusion, I see that there is cause for significant optimism around the future development of BRT systems in the UK. There are schemes at present that are under development/delivery including in Leeds, Cambridge, Belfast, London, Birmingham, Manchester, Bristol and Sheffield. Further schemes will not however just suddenly appear. It is incumbent on members of BRT UK and transport professionals to seek to develop projects that meet the changing needs of towns and cities. As a country, the UK has planners and engineers who are global experts and who apply their skills to overseas BRT projects rather than home-grown schemes. This needs to change.

The conditions are ripe for a growth in BRT schemes. We should take advantage of this, collectively. ■
A double celebration for me – 10 years of BRTuk and 20 years of operating BRT

Dr Bob Tebb, Chair BRTuk, 2005 – 2015

The author, who is stepping down after a decade as Chair of BRTuk at this year’s Annual Conference in Glasgow, reflects on the successes (and failures!) over that time.

Foundations
The inspiration for the BRTuk organisation came from Colin Eastman of Coventry City Council in the earliest years of this Millennium; he drew together those already active and interested in improving the quality and attractiveness of bus travel to its passengers and potential new passengers, through increasing the quality, speed, and performance of trunk urban bus services. How had this come about?

At that time, there were but a tiny handful of urban bus corridors where such a quality claim could even be considered. The earliest in the UK was, of course, the Runcorn Busway, opened in the early 1970s. Unfortunately what should have been seen as an icon for application elsewhere in New (and extant) Towns, was rather overlooked in the scramble to cater for the phenomenal rise in personal mobility through the motor car.

The robustness of the Runcorn Busway as BRT was demonstrated to BRTuk delegates during a recent technical visit; despite years of uncertainty caused by local government changes, bus industry privatisation and deregulation, and massive car growth, its performance today remains largely unaffected, and a credit to its original planners and its present partners.

I became personally inspired by the BRT concept (though we didn’t then call it that!) a far back as 1987, when a technical tour of European trolleybus systems brought me to Essen, and in particular to its articulated duobuses on the express route to Kray, running as guided buses in a motorway median. Here was a mode new to me, but comparable in quality and performance to a far more expensive rail system.

With the encouragement of my Operator employer, I developed a corridor proposal for Leeds, as well as organising and operating a short demonstration guideway; the kerb-guided-bus concept was subsequently adopted in West Yorkshire in 1992 when the local authorities included this in an integral package of proposed transport developments for the city of Leeds. A ‘horses for courses’ approach was adopted for individual corridors and areas – including heavy rail, supertram, guided bus (as part of BRT) and the highway network.

From 1987 through to the opening of the first section of guideway in Leeds in September 1995 (only 3 years after its adoption in the Leeds transport plan), the still-unnamed concept started to appeal to more and more transport...
authorities and operators; in many cases the ideas were still a little too 'advanced' for the comfort of prospective funders, but the BRT concept was slowly becoming an integral and established part of urban transit proposals.

Symptomatic of this was the holding of the first gathering of likeminded BRT folk at the University of Warwick, near Coventry; apart from Runcorn and the West Yorkshire guideways, BRT was still at that time little more than a barely-understood and unproven concept.

I have spent a fair bit of time on the things which laid the foundations for BRTuk, for without such a strong basis, I consider it unlikely that we would have seen the spectacular growth which has followed.

**Genesis**

This first successful informal gathering of minds at Warwick thus led directly to the formation of BRTuk – and to the start of a still unsolved issue – what exactly is BRT?

To me, as an Operator, it was how to make bus journeys shorter in time, more comfortable, and more attractive to potential passengers. To others, it was to make a specific impact on the urban scene, with dedicated busways, creating an aura of specialised travel opportunities – and, in the process, to raise the profile of bus transit, both specifically with BRT and in general. Both approaches are 'right' – in their own appropriate circumstances!

Note that the term 'Rapid' within the BRT initials is far less relevant than 'Reliable'!

By our third (now annual) Conference, we had BRT-specific hardware to see and experience, with the appearance there of the Wrights/FirstGroup ftstreetcar. Although, as with any pioneering venture, it had a few shortcomings, the desired aura of modern, attractive, travel was emerging.

One of the key differences between bus and BRT is dedicated infrastructure – and the quantity (or rather the proportion) of such on the route directly affects the performance variability and effectiveness or, in other words “How BRT is it?”

Whilst the earlier West Yorkshire guideway schemes certainly ticked all the BRT boxes except perhaps in terms of the proportion of the routes with dedicated infrastructure, the next scheme to fully encompass BRT was the Cambridgeshire Guided Busway; this not only featured near-continuous high-performance guideway over many kilometres, but extended the BRT concept beyond the urban area to interurban travel. It was not surprising that in 2007 the first BRTuk Conference away from Coventry was to Cambridge to, inter alia, view the initial construction works.

As interest in introducing the BRT concept grew across the UK, this provided the impetus to take the Conference 'on tour', initially to places well on with developing their own BRT schemes, and then, glory be, to ones under construction (eg Cambridgeshire) or actually in operation. Thus Belfast was the venue for 2008, where BRT plans were well-advanced, followed by Cardiff the following year.

This latter provided the springboard to visit Swansea where the fmetro scheme provided a revolutionary (and still unmatched) level of inner-city priority and segregation, with a cross-city route through traditional strong residential areas supporting the cross-city-centre segregation. Equally of note was its route which was very much on the French ‘civic spine’ principle, serving hospitals at either end, colleges, sports facilities, the civic centre, parks and recreational areas, as well as the pedestrianised city centre. No guideways were involved here – BRT does not automatically imply guidance!

It also created an interesting challenge! For promotional and BRT reasons, metro operation by the firststreetcar was desirable at political level to secure the Welsh Assembly’s agreement to funding all this high-performance infrastructure, yet the city had become a well-used high-frequency midibus network, to which the streetcar operation was less suited.

Eventually the effects of the national recession created the perhaps inevitable reversion to midibuses, though retaining the BRT infrastructure – so was it still BRT? Of course it was – the performance for passengers was unaffected!

One quirk was that the portion of segregated route on a former railway alignment had, rather than the passive gates elsewhere on the route, physical ‘bus gates’ – a ‘bus gate’ really meant a ‘bus gate’!

The following year the BRTuk Conference was held jointly with a conference–promotions company in London, as BRT schemes were seemingly having a (relatively) quiet period. This was merely ‘the lull before the storm’ as the following three years suddenly found our Conferences visiting now-open BRT corridors. This burst of
A double celebration for me – 10 years of BRTuk and 20 years of operating BRT activity ‘on the ground’ was a perfect demonstration of the short lead times for implementation of BRT.

Thus in 2011 there was a welcome return to Cambridgeshire where the length and high-performance profile of the BRT corridor was matched by the rapid growth in patronage – which at last proved that bus could be as attractive as supertram, and at far lower cost.

We then moved for the following year to an unguided busway project in South Hampshire, with the first section of the Gosport – Fareham busway; as with Cambridgeshire, this was built largely on a former railway alignment. When complete, this corridor will further enhance public transport access in an area constrained by coastal waterways.

The English Midlands brought us in 2013 to the formal opening of the Luton – Dunstable busway, again guided. Our Conference in Luton was graced by Norman Baker, immediately after he had opened the busway. Unfortunately, and despite his success in aiding bus support and development throughout the country, he was moved the very next day to a new ministerial position!

Although BRTuk had, some years earlier, crossed the Scottish border to Edinburgh on one of its many technical visits, it was not until 2014 that the BRTuk Conference was held in the city. One could argue that this was ‘too late’ as their West Edinburgh Busway had been and gone by then, in favour of supertram. Fortunately for the city, its own near-secret BRT system, the Greenways, remains in active use for its passengers.

Personally, I have no problem with supertram as but one element of the modal mix available to transport authorities, but I find it ludicrous that a busway which had grown patronage significantly and improved bus performance, was literally swept aside in favour of the less-accessible tram; surely the alignment could have been shared as the former WEB bus routes remain in operation, but once again more slowly, along the parallel roads they used before WEB was built?

Having ventured north of the border, we return this year, 2015, but to Glasgow, where the bus transit picture is healthier with the opening of the Fastlink BRT scheme linking the city with the south-western suburbs and the new city Hospital.

**Complementing BRTuk Conferences**

The above summary of our Conference venues and visits has barely touched on the other activities BRTuk has provided over the past decade.

Many technical visits have been made to such as Reading, Crawley, Luton, and Milton Keynes in Britain and to Rouen, Nantes and Eindhoven on the European mainland. These have not only featured the infrastructure of BRT (and the variety of guidance technologies available), but also demonstrated the ever-growing impetus on power train technologies for the vehicles. Hybrid and contactless recharging of in-vehicle stored-energy systems, is certainly reducing, if not eliminating, one of the perceived (though not on a per-person basis true) most unattractive features of buses – emission pollution.

**The support from BRTuk**

I would like to finish my all-too-brief review of BRTuk’s activities over the last 10 years by expressing my thanks to the Officers, Board Members, and the membership in general for supporting those activities directly and indirectly. I hope that they have gained as much information and knowledge about progressing good BRT as BRTuk has gained from their own active participation – such a 2-way process is key to success.

I trust this activity will continue to grow in scale and in value over the decade to come.
Introduction
Fastlink is the West of Scotland’s exemplar urban bus rapid transit system that sets the blueprint for the expansion and upgrade of key bus corridors across Greater Glasgow and beyond. The initial 8km Fastlink core route runs between Glasgow city centre and the Queen Elizabeth University Hospital, via Govan. Services operating on the Fastlink route originate from the local authority areas of Glasgow City and Renfrewshire. Fastlink forms one part of the regional transport strategy, with a particular focus on delivering improved connectivity by developing and enhancing the transport network to ensure efficient and sustainable access to strategic locations for people and business.

Funding
In 2011, following submission of the Fastlink final business case, the Scottish Government awarded funding of up to £40m for delivery of the Fastlink core route between Glasgow City Centre and the Queen Elizabeth University Hospital. Further funding has since been secured through the European Regional Development Fund and Section 75 developer contributions.

Scheme objectives
At the outset of the Fastlink scheme development process, six objectives were defined, consistent with both national, regional and local policy considerations:
- To reduce travel time (target 20%) and the cost of travel to existing and new developments along the Clyde corridor;
- To improve accessibility, and thereby help to reduce social exclusion, to key areas, facilities and services along the Clyde corridor such as healthcare, education, employment and tourist attractions;
- To support growth, development and regeneration along the Clyde corridor in the residential, commercial and retail sectors;
- To ensure high quality integration of new and existing public transport along the Clyde corridor;
- To improve safety, particularly for vulnerable public transport users, along the Clyde corridor; and
- To reduce the adverse environmental effects of transport along the Clyde corridor through modal shift, sustainable trip patterns and reducing the growth rate of congestion on main corridors.

These objectives were subsequently used to develop an outline system specification for the route and also form the basis for evaluating and monitoring its success. An interim monitoring report undertaken in 2015 considered progress achieved to date in terms of achieving reduced travel times by public transport to existing and new developments along the Fastlink corridor. The analysis undertaken demonstrated that, as of October 2015, a 15.6% journey time saving had been realised, from the overall target of 20%. This result aligns with recent positive operator and public feedback and follows recent upgrades and modifications to traffic signalling along the route. Further journey time savings, in line with the overall target, are anticipated following completion of further bus priority measures along the route and particularly within the city centre.

The Route
Within Glasgow’s city centre, Fastlink connects with Central Station, Queen Street Station and Buchanan Bus Station, and then runs along the Clyde side via the International Financial Services District, the Clyde
Arc Bridge, Digital Media Quarter and Govan to the Queen Elizabeth University Hospital. A map of the route is shown above.

The Fastlink route has been designed to incorporate a number of key bus priority features to encourage modal shift to public transport, including:

- Segregated Busways
- Bus Lanes
- Bus Priority Traffic Signalling
- Automatic Number Plate Recognition (ANPR) bus lane enforcement
- Junction bypasses for buses

The installation of high quality passenger facilities has also been a key focus of the scheme, including:

- High Quality Halts
- High Quality Interchanges
- Improved Safety Lighting
- Extensive CCTV coverage
- Help points located at halts
- High Access Kerbs at all halts
- Improved Signage & Travel Information
- Distinctive “Fastlink” branding
- Real Time Passenger Information available at all halts
- Cycling Facilities / Cycle Parking at Halts

An example of a typical Fastlink halt is shown below.

An example of a unique Fastlink bus priority measure, referred to as the ‘squareabout’, is located at Govan and is shown below. This example shows the aerial plan of roundabout in Govan which has been signalised and modified to include a west bound contraflow bus only link. This feature has been particularly well received from bus operators and passengers alike.

 Approximately 750,000 patients and visitors per annum – a key source of trip generation. Fastlink bus priority measures and passenger facilities at the Arrivals Square transport hub are fundamental in providing suitable access to the jobs and services located at the site by fast, frequent and high quality local bus services.

To put this in context, the uplift in services, including Fastlink routes, to the QEU Hospital has grown from approximately 14 to 86 buses per hour, during the main day Monday to Friday, to a wide spread of destinations including City Centre, Govan, Partick, Castlemilk, Drumchapel, Easterhouse, Maryhill, Paisley, Erskine and Renfrew. Further details available at; www.spt.co.uk/bus/accesshealthcare/queen-elizabeth-university-hospitals/

Worth also noting that a recent survey undertaken by NHS Greater Glasgow & Clyde found that over 65% of respondents felt that there had been an improvement in bus services since the new hospitals opened. A similar proportion also stated that it was easy to access the hospital by bus, including Fastlink Services. A map of services to the Queen Elizabeth University Hospital is shown left.

Delivering Fastlink – Project Governance

Delivery of the project is overseen by a Steering Group which is led by SPT, regularly meets and has senior level
representation from the following organisations: Glasgow City Council, Renfrewshire Council, Transport Scotland, NHS Greater Glasgow & Clyde and the Confederation of Passenger Transport (CPT). The remit of the Steering Group is to oversee delivery of the Fastlink project and associated enhancements and thereby discharge the various duties required to satisfy respective grant conditions and agreements between the organisations.

The two key delivery partners, Glasgow City Council and SPT, also meet regularly via the Fastlink Working Group to monitor progress on a 'day by day' basis and report to the Steering Group and respective corporate governance requirements within SPT and GCC. The Working Group is supplemented as required with representatives from Renfrewshire Council in terms of developing plans for an extension to the Fastlink Core Route towards Renfrew.

**Delivering Fastlink – Scheme Governance**

Operation of services on the Fastlink scheme is governed by a unique Statutory Quality Partnership (SQP) agreement which has been jointly made by SPT and GCC and came into operation on Sunday 28 June 2015. The Fastlink SQP is the fifth such agreement to be implemented in Strathclyde, designed to complement the Glasgow Streamline SQP and set leading standards in terms of high quality bus infrastructure, passenger facilities, vehicle emissions (set at Euro 6 or Low Carbon Vehicles for services operating full Fastlink route) and targeting growth/modal shift. Noting the absence of SQP's in the rest of Scotland, the Fastlink SQP sets leading standards for partnership working.

**Network Enhancement**

The Fastlink Final Business Case confirmed kick-start funding would be required for initial operations. To support this, SPT invited local bus operators to participate in a mini-competition which offered capital support for environmentally-friendly buses as part of a wider drive to establish sustainable, high-quality commercial bus services on the Fastlink corridor and associated routes to the QEUH.

Further to this, contracts have now been exchanged between SPT and
Stagecoach, funding 7 brand new Euro 6 vehicles (supplied by ADL Ltd) and committing Stagecoach to a 4 year period commencing 31 August 2015. Stagecoach operate the 7 vehicles on their frequent (every 10 minutes during main day, M - F) X19 Fastlink Service, and extended the route to QEU Hospital, Govan, City Centre, Glasgow Royal Infirmary and Easterhouse. Details of the X19 service are provided below.

**Current Status**
The current status of Fastlink route infrastructure as of October 2015 is summarised below:

- Arrivals Square to Clyde Arc Bridge-Complete & Operational
- Clyde Arc Bridge to Broomielaw-Complete & Operational
- Glasgow City Centre Completion 2017

**Next Steps**
In terms of next steps, a £3.14 million package of works has been agreed between GCC and SPT, to deliver Bus Priority Measures & improved Passenger Facilities within Glasgow City Centre. These works will deliver further journey time savings for all bus services operating in the City Centre (e.g. up to 180 buses per hour in Union Street) in alignment with the targets set out in the Final Business Case and will complement the wider regeneration works as part of City Deal. The scope of works for the Glasgow City Centre Bus Priority Measures & improved Passenger Facilities, Phase 1, will encompass the following key city centre streets:

- Union Street
- Argyle Street
- Jamaica Street
- Midland Street
- Oswald Street
- Howard Street

These works are due to be complete by 2017, with advanced design, development and consultation well underway. Phase 2 will focus on the redevelopment of Renfield Street and Hope Street to the same standards. Crucially, the City Centre improvement works unlock the opportunity for the Fastlink concept to be rolled out to other key radial bus routes within Greater Glasgow. Many of these corridors form part of the previous 'Streamline' network and would benefit from being upgraded to Fastlink standards in terms of bus priority measures and passenger facilities. A map of the streamline corridors is shown above;

Funding for further expansion of the Fastlink concept will be sought in due course by the project partners from SPT’s capital programme, developer contributions, the Glasgow and Clyde Valley City Deal Initiative and other funding sources.

Keep up to date on progress at: [http://www.spt.co.uk/corporate/about/projects/fastlink/](http://www.spt.co.uk/corporate/about/projects/fastlink/)

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West of England MetroBus

After ten years in development, construction has finally started on the West of England’s MetroBus network.

MetroBus is a £200m bus rapid transit scheme jointly promoted by three West of England councils – Bristol City Council, North Somerset Council and South Gloucestershire Council.

MetroBus will provide passengers with rapid and reliable journeys to key destinations across the sub-region. The 50km network builds on recent improvements to major bus corridors made by the Greater Bristol Bus Network scheme.

MetroBus journey times will be comparable with car and local rail journeys. The main draw for passengers is that MetroBus services will be quicker and more reliable than existing bus services, especially on longer cross-city journeys.

Forecast journey time savings start at ten minutes to an impressive 90 minutes a day for a round trip. The time savings will be achieved by a combination of new bus infrastructure, bus lanes, bus priority at signals and smart ticketing.

Bridges
As well as building new bridges, MetroBus is refurbishing a number of existing bridges. These refurbishments present a number of technical challenges and have to satisfy listed building regulations.

Ashton Avenue Swing Bridge is a Victorian bridge originally used by Brunel’s Great Western Railway. The extensive £3.2m renovation of this heritage structure began in September 2015. The bridge will have a lane for MetroBus vehicles and a separate pedestrian and cycle path.

A new bridge at Bathurst Basin will be built alongside an existing harbour bridge that will become one-way. The new bridge will take traffic travelling in the opposite direction and link two existing shared cycling and pedestrian paths.

Stops and ticketing
The MetroBus network will have 90 stops. Stops will function as a key interchanges between other modes of transport. On-street information totems called iPoints at MetroBus stops will distinguish services from the background bus network.

Each iPoint will display live bus arrival times and information about onward journeys on foot and via other bus services. Off-bus ticketing will encourage speedy boarding and reduce journey times. Passengers will be able to purchase off-bus tickets from iPoints and existing retail points, or use mobile ticketing or contactless payments.

Reconfiguration of Bristol city centre
Significant areas in the city centre are being remodelled to create more capacity for MetroBus, regular bus services, pedestrians and cyclists.

To minimise disruption construction is taking place over three separate phases. MetroBus will strengthen and protect the Frome culvert which allows the River Frome to flow beneath the city centre. A new link road will run above the culvert.

Key infrastructure:
- MetroBus services will take advantage of a number of elements of new infrastructure
- A 2.5km of guided busway
- The busway is being constructed using an innovative method of slip-formed concrete which will ensure a smooth and reliable ride
- Segregated from general traffic, the busway will shorten journey times to Bristol city centre
- Bus-only junction on the M32
- MetroBus services will avoid a highly congested junction on the M32 via a new bus-only junction
- The junction will cut an impressive 30 minutes on journeys from south to north Bristol
- MetroBus will use a new bus lane on the M32 which will be one of the few motorway bus lanes in the UK

Cycling and walking
Bristol was the UK’s first Cycling City. In recent years it’s benefited from new cycling infrastructure and a significant rise in the number of people cycling. The Greater Bristol Bus Network saw an unexpected benefit as cyclists made use of new bus lanes.

The MetroBus network includes over 7km of new cycle and walking routes which connect to existing paths and new routes funded by the government’s Cycle City Ambition funding.

Operating MetroBus
MetroBus will be operated as commercial services registered with operators. The councils are using a Quality Partnership Scheme to define the minimum operating standards for MetroBus services.

The minimum specification for the MetroBus vehicle will be a hybrid drive, twin-door vehicle. The vehicle will have at least 25 per cent less carbon emissions and fuel consumption than a standard bus.

The councils and bus operators expect to finalise the MetroBus Quality Partnership Scheme and a Voluntary Partnership Agreement in early 2016.

MetroBus extension
The first phase of construction works will be completed in spring 2016 when the new link road will be in operation and new permanent traffic flows will be introduced.

MetroBus will reduce congestion and car dependency and South Gloucestershire Council are already planning an extension to the network. Their proposed MetroBus extension will serve a new development of 5,700 houses and around 50 hectares of employment land in the north of the city.
The Department for Regional Development (DRD) has announced the opening of new bus lanes on the Falls Road as part of the BELFAST RAPID TRANSIT (BRT) scheme. The new bus lanes, located between Grosvenor Road and Whiterock Road, were introduced on 2 November.

PENNINE REACH is a BRT scheme aimed at improving public transport along the Accrington–Blackburn–Darwen corridors. The Final Approval bid is for £31.9m from the DfT, with £8m in total from the two local councils from a variety of local sources in the years 2013/14 through to 2015/16. Completion is expected in 2016.

LEEDS NEW GENERATION TRANSPORT (NGT) is a planned 14.8km cross-city trolleybus scheme jointly promoted by the West Yorkshire Combined Authority (WYCA) and Leeds City Council (LCC). The DfT awarded Programme Entry Approval in July 2012 for the £250m project, which is being taken forward through a Transport and Works Act Order. A Public Inquiry closed in October 2014. Construction could begin in 2017.

After ten years in development, construction finally started on the WEST OF ENGLAND’S METROBUS network in 2015. MetroBus is a £200 million bus rapid transit scheme jointly promoted by three West of England councils - Bristol City Council, North Somerset Council and South Gloucestershire Council. MetroBus will provide passengers with rapid and reliable journeys to key destinations across the sub-region. The 50km network builds on recent improvements to major bus corridors made by the Greater Bristol Bus Network scheme.

Residents and businesses in Slough are currently being asked for their views on plans for a 'rapid' bus service along a busy commuter road in Berkshire. The £8m scheme, known as SMART (SLOUGH MASS RAPID TRANSIT), was approved by the borough council on 15 September. The proposals will involve widening the A4 and upgrades to several junctions. The council said the aim of the scheme was to provide quicker, more frequent and reliable bus services. Another major part of the plans involves turning service roads parallel to the A4 through Slough Trading Estate into bus lanes. The council said the improved service would benefit residents, encourage greater use of public transport and support economic growth in the borough.
Hampshire County Council and Transport for South Hampshire are developing an extensive BRT network to link Gosport and Fareham with Portsmouth, Havant, Waterlooville and beyond. The initial phase, which opened in April 2012, connects FAREHAM & GOSPORT via a new, dedicated, high-specification bus route along a disused rail line between the two towns.

TYNE & WEAR features two smaller BRT schemes. Go North East operates the Centrelink service between Gateshead town centre and the Metrocentre shopping complex via a busway on the banks of the River Tyne. Meanwhile, in North Tyneside the operator’s Route19 service through the Cobalt Business Park uses a short stretch of guided busway.

BRADFORD’S Manchester Road Quality Bus Initiative includes 2.3km of dedicated guided busway and 1.2km of bus lanes. Metro, the West Yorkshire PTE, Bradford Council and bus operator First implemented the scheme.

Guided busways and extensive bus priority measures are a key feature of two corridors in LEEDS. The original A61 (Scott Hall Road) corridor scheme developed by bus operator Yorkshire Rider, Leeds City Council and Metro has four sections of guided busway totalling 1.5km. The A64 York Road/Selby Road ‘Elite’ scheme has a total of 2km of guided busway in three sections. Arriva joined First (successor to Yorkshire Rider) in funding the scheme with LCC and Metro.

RUNCORN’S Busway was opened in 1971 with seven miles of segregated roadway, later extended to 12 miles, forming a figure-of-eight around the developing new town. Housing estates were designed so that no point was more than 500m from a busway stop.

The CAMBRIDGESHIRE GUIDED BUSWAY continues to go from strength to strength with passenger numbers now hitting three million per annum. Stagecoach has increased its fleet by 55% since the busway’s opening in August 2011 and daytime frequencies are now every 7-8 minutes, with hourly extensions to Peterborough. Continued expansion is planned to coincide with 10,000 homes to be built at Northstowe.

The LUTON-DUNSTABLE BUSWAY won £89m in funding from the Department for Transport in March 2010. BAM Nuttall commenced work on the Busway and the adjacent access track in June 2010 and the improvement of about 200 on-street bus stops and other on-street priority measures was carried out by Luton and Central Bedfordshire term maintenance contractors. Real Time Passenger Information at all stops and CCTV/help points on the busway were installed by Vix. Busway services operated by Arriva, Centrebus and Grant Palmer started running on 25 September 2013 and in the first year of operation just over 1.4m passengers used these services.

A short 200m section of guided busway was opened in IPSWICH in January 1995. Operated by bus operator First, services using the guideway are branded as ‘Superoute 66’.

SWANSEA’S Firstmetro system came into operation in 2009 but in August this year First Cymru announced it was withdrawing its 10-strong fleet of ‘bendy’ buses, blaming it on ‘economic factors’ and other considerations.

Services on the East London Transit scheme between Ilford and Dagenham Dock via BARKING commenced in February 2010. The scheme uses a mixture of part-segregated busways and extensive bus priority measures. A second route via the Barking Riverside development was completed in 2013.

The KENT THAMESIDE Fastrack network is an extensive bus-based rapid transit network centred on Dartford, Gravesend and the vast Bluewater shopping centre.

Fastway links CRAWLEY with Gatwick Airport, Horley and Redhill using a combination of guided busways, extensive bus priority measures and bus lanes.

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### Portsmouth:
A planned extension to a rapid bus route designed to make travelling between Fareham and Gosport quicker has been delayed. The extension to the Bus Rapid Transit route was meant to be completed this year but has been put back as it did not secure funding. The route, which uses a traffic-free busway to avoid the A32, was due to be extended further into Gosport so that commuters could get directly to the ferry.

### Guildford:
An electronically guided bus route connecting Slyfield to Guildford’s research park has been proposed by a company in Godalming. Called the Guildford Rapid Transit system (GRT), the company behind the scheme, Listavia International Consultants Limited, said it is reevaluating the concept after plans were originally mooted around 20 years ago.

The route would use electronically guided lightweight buses running on a two lane trackway, which would pass over and under existing roads, with one third of the trackway being elevated.

The provisional route is 7.85km directly linking 23 stops, in the council’s local plan. An estimated 20,000 passenger journeys per day between the stops would be transferred off the public highways.

### Slough:
Residents and businesses in Slough are being asked for their views on plans for a ‘rapid’ bus service along a busy commuter road in Berkshire. The £8m scheme, known as SMArT (Slough Mass Rapid Transit), was approved by the borough council on 15 September. The proposals will involve widening the A4 and upgrades to several junctions.

The council said the aim of the scheme was to provide quicker, more frequent and reliable bus services. Another major part of the plans involves turning service roads parallel to the A4 through Slough Trading Estate into bus lanes.

The council said the improved service would encourage greater use of public transport in the borough.

## Birmingham Connected

Birmingham City Council has adopted a 20 year transport strategy, Birmingham Connected, which was produced by a consortium of consultants led by WSP | Parsons Brinckerhoff. The council’s goal is to create a transport system for everyone; one that puts people first and delivers better connections for citizens and businesses. Part of this aspiration is to create a mass transit network within the city and across boundaries with neighbouring authorities. This is intended to be a totally integrated network, to include rail, Metro, Bus Rapid Transit (BRT) and bus services. As in other cities, Metro (Light Rapid Transit) is considered to be the most favoured option, but Birmingham has taken a very pragmatic approach, recognising that there will be limitations to the wide scale delivery of Metro lines, and thus BRT in the form of ‘Sprint’ services is planned to be the primary, transformative public transport mode for Birmingham over the next 20 years. The Integrated Transport Authority (ITA) led Strategic Transport Plan for the West Midlands is taking forward the Sprint network both in its strategy and implementation plans. This network concept has been endorsed, in its coverage and concept, within the transport strategy, which has also adopted the approach that a completed network is more important than any individual corridor or a specific mode. Hence the proposed development of a secondary series of ‘CityLink’ bus services, which could be described as very ‘light’ BRT, relying on a series of bus priority measures, has been adopted to complement the Sprint services. Having a completed network will also enable people to make cross-city journeys by public transport; currently something regarded as extremely difficult.

As in the case of Metro, Birmingham’s Sprint services will require positive priority measures to ensure that they can consistently achieve the required standards of reliability and reduced journey times. The ‘before’ and ‘after’ illustrations below indicate how the general concept of Sprint can be implemented to produce a step-change in public transport quality, which can be introduced in a relatively quick timescale compared with Metro.

Whilst Metro remains very much the preferred ultimate choice for certain corridors, a successful Sprint service will provide a sound business case for ‘conversion’ to Metro at a later date, with the advantage that Sprint vehicles can easily be subsequently transferred to other Sprint services.

The following key principles are advocated to ensure that the necessary standards of speed, reliability and quality are achieved:

- Each Sprint corridor must have a minimum of 3km of dedicated Sprint lane;
- Camera-enforced coloured lanes, with or without segregation, should apply to at least 40% of the route;
- Vehicles must be to a minimum Euro 6 standard, working towards zero emissions in the City Centre by 2025; and
- Average speed of Sprint routes must be at least 20 kilometres per hour.

Based on a network which meets these standards, the operational viability for Sprint has been assessed for routes across the city (and into the sub-region). These routes will be operated by high specification vehicles, which will convey a powerful and integrated image of quality, reliability and comfort, and will typically be articulated vehicles. The first service is currently being planned for delivery by Centro, and will run from the City Centre to Quinton via Hagley Road, with a further route under development to serve Birmingham Airport from the city centre.

All of the public transport modes are envisaged to work together as part of an integrated network which uses technology to optimise information for the user (about journeys, both before and during) and the road network.
The barriers are coming down: BRT and LRT need to morph their modal identities

Peter Stonham, Chairman, Landor LINKS

A lot of people in public transport still sadly remain wedded to a vision comprising a number of separate modes. The one they are concerned with themselves is the important one, of course - be it bus, rail or tram for example - and the rest have their acknowledged, but inferior, little world - with even a space maybe reserved in the mobility mix for active travel on foot or by bike. But seek to join them up as a seamless boundary-less offer, and entrenched attitudes and prejudices quickly kick in. You can’t mix rubber tyres on tarmac and steel wheels on tracks, they’ll likely say, or that there’s no benefit in tramways over BRT, or that buses can never deliver the appeal of trams.

Such thinking is regrettable and damaging to the best interests of serving a changed world of travel demand, and deploying a suite of new transport modes that blend together existing ones and emerging ones in different ways to best serve a new generation of customers looking for a quality public transport option to challenge the car. Technology, as often, is driving and facilitating some radical new approaches to supplying more cost-effective, efficient and attractive travel solutions that blur the boundary between BRT and LRT.

For those bold enough to embrace it, the new paradigm of public transport is far more complicated, but far richer and more easily deployable to match the more complicated demands of an increasingly mobile society, and to be economically and environmentally sustainable.

Sure, Bus Rapid Transit systems can come close to the capacity and convenience of tramways on some corridors, but serving increasing demand for mobility within cities can be difficult once the traditional response of adding additional buses to the network has exhausted its usefulness. If all that happens is that large numbers of additional buses simply get stuck in the same old traffic jams or intrude into
sensitive historic areas or make important commercial and cultural environments less pleasant, they fail to represent an attractive option for meeting increased travel demand or shifting people to public transport, and respecting the increasing desire for a quality urban realm.

Different cities have responded to this challenge in different ways. France in particular, has pursued urban rapid transit schemes with vigour - often mixing iconic and street-friendly tramways with BRT systems of the highest quality, using dedicated road space, high quality vehicles, sometimes with smart guidance systems.

Once a bus is fitted with advanced optical guidance, innovative electric power supply, and cutting edge vehicle and stop design, very little is shared with the common concept of what a bus is anyway. Integrated smart ticketing helps to deliver these modern multi-modal solutions to urban travel where the busiest and most environmentally-friendly routes have trams, and other elements of the network have similarly branded BRT routes. The finest examples are to be found in Nantes, and Rouen.

The BRT (BHNS) schemes in these French cities are arguably two of the most impressive and clearly focused uses of the concept to provide rapid transit services matching tramway lines in their appeal, and in fact complementing them in both cases.

Both cities have extensive dedicated BRT alignments, which speed their high quality vehicles from outlying areas into the centre and mirror the image and status of the two cities’ light rail systems.

Both have achieved significant modal share on both their tram and BRT corridors, and have had to be expanded to cope.

The Rouen TEOR BRT scheme has three routes with a common city centre section where they have unchallenged priority in the street and high quality bus station infrastructure, just like the city’s trams, providing passenger
BRT and LRT need to morph their modal identities

...
unusual blend of busway, underground metro, and light rail. Opened in the early 1990s, the Downtown Seattle Transit Tunnel originally allowed buses to run on a dedicated busway some 1.3 miles long, via five underground stations which feature raised platforms. Sixteen bus routes across Seattle come together on the route through the tunnel, providing a high capacity urban transport product. Originally, the buses which used the tunnel were powered by conventional diesel engines on the open air sections of their routes, but used trolleybus-style overhead electric supply within the tunnel, for air quality reasons. That changed in 2007, after the tunnel was modified to additionally accommodate a light rail line. While trolleybuses use twin-wire power systems (for supply and return), light rail systems use a single supply wire (with the return effected through the wheels and track), and as it has it there not here possible for the two modes to share overhead wires, hybrid buses with lower emissions are used to ensure that air quality in the tunnel remains acceptable.

Re-engineering the tunnel for light rail vehicles meant lowering the tunnel floor, and this led to concerns that bus wing mirrors were now at a height where they might pose a danger to passengers waiting close to the platform edges. It is the kind of problem that might tie some regulatory bodies in knots. Seattle’s simple, elegant, solution was to fit the bus wing mirrors with small flashing lights.

Technology, imagination and a willingness to think outside the box - and the modal silos - means the best solutions for urban rapid transit can harness all the options and make the whole more than the sum of the parts.

Peter holds a degree in transport and has studied and written about the subject for more than 30 years. He is editorial director of Landor LINKS, which he founded, and has led the development of Local Transport Today and its other specialist magazines and online networks.
FWT’s ten lessons for the effective delivery of public transport information

Peter Warman, Public Transport Consultant to FWT

1. It’s never too early in a public transport project to define its associated information strategy

Whilst most transport professionals understand the need to provide good quality information to assist travellers en route, it is often neglected in the early stages of a project – being seen as something that can be tackled as the project nears completion. However, experience shows that by then most of the design and investment decisions have been made. Providing information at the key locations is then an after-thought - often heavily constrained by what has already been decided. FWT’s experience is that money is saved and the outcome is superior when the requirements of the information strategy are defined at an early stage. This includes the design and content of the information and then specifying suitable displays and locations for it to be shown.

2. Claim the ‘eye-catching locations’ to display information for the traveller

Advertising and way-finding often compete for the best sites to attract the travellers’ attention. The transport authority seldom controls the allocation of advertising space. Where possible, it is important not to let the advertising industry take priority at locations where travellers seek reassurance to aid travel key decisions and for way-finding.

3. Invest in ‘fit-for-purpose’ outdoor display units and cabinets

The size and quality of display cases must suit the quantity of relevant information. This sounds obvious, but is seldom complied with. Where display cases are provided with an inappropriate size and shape, it is because decisions were made with little understanding of what information content will be required – it is like giving priority to making the frame before ‘painting the picture.’

Take control before any contract is signed or money spent. Ensure cases are moisture proof, tolerant of temperature changes, secure, have minimum vulnerability to vandals. The cheapest purchase will transfer to years of ongoing higher costs of maintenance. Ensure cases are quick and easy to use when updating contents. Standardize the display cases across an area for more cost-effective content revisions.

FWT has been providing information to help travellers use public transport services for over forty years. With hundreds of clients in the UK, mainland Europe and the USA, there are proven lessons that successful commissioning authorities follow to get the presentation of information right from the start of any new public transport project.

Peter Warman has worked as a Consultant with FWT for 22 years. At last year’s BRT UK Annual Conference (2014) he gave an illustrated presentation on some important principles for the effective delivery of public transport information. This has been adapted here for publication in the 2016 BRT Yearbook.
**Make public transport services look like the obvious choice**

When travellers are unfamiliar with a given locality, they learn, possibly sub-consciously, of their travel options by observing what the locals do. Parking control, good design of street layouts and building proximity, influence travellers' choices. Greater use of public transport facilities is encouraged where service provision is prominent, good information is provided and ease of access is given priority.

**Promote the route corridor and its key destinations within its core network of frequent services**

For those who have become more dependent on web-based journey planners, there is a tendency to have much less awareness of the transport network, seeing their journey in isolation of what else is available. Cities that can promote a core, high-frequency network of routes and services retain a higher spatial awareness amongst its population. Urban areas remain navigable where on-street information is provided in the context of its local network.

**Attention span to determine if information is relevant with traditional media is no more than 8 seconds; with new media this time span is reduced still further**

Target your information to what is of high importance; too much information may not make the choices easier. Addressing the issue of short attention spans is dependent on design and content. Judgements will be made by travellers in only a few seconds. Good design must address the questions on the mind of the traveller. Good information in the wrong place is money wasted, as are inaccurate content and low salient distractions. Ensuring relevant content in a known local context is all-important.

**New media seldom replace old – they just co-exist, playing to their strengths. The challenge is to ensure data consistency and correctness across all of the media used**

In any information project, all types of people need catering for and strategists should not assume all users will be the same as they are. As well as having different personalities, cognitive abilities, media habits, travel experiences, and speaking different languages, any traveller can fall into any one of three broad categories:

- **New Media Confident**
  - Routinely relies on using the internet, mobile phone, social media and GPS navigation;

- **Traditional Media Confident**
  - Enjoys using learned abilities to read A-Z Maps, interpret public transport timetables and follow wayfinding street signage;

- **Travel Companion Reliant**
  - Relies on ‘asking a friend’ or ‘others on hand’ at each stage in the journey process, trusting that someone will be there to help and knows better than them.
Selective perceptions rather than reality influence our travel choices. As we repeat a journey and become more familiar with it, our information dependence changes. Many things determine the perceived journey quality, not just information. However, poor or lack of information (design and/or content) may lead to a degraded travel experience, further leading to the decision to try alternative travel choices, if possible, the next time the journey is attempted. Focusing on good information can draw travellers in and promote a virtuous circle of increasing take-up.

Always judge the effectiveness of public transport information design in the context that it will be used

Attractiveness is important, but functionality is more so. Psychological testing of different designs, in context, proves that user ‘preference’ and user ‘performance’ have no correlation. Be clear what you are testing. If clearing a busy platform is important, the design that is understood the best and the quickest should be the target.

Familiarity with a poor design may make it ‘preferred’ in consumer testing; the better (at the time) unfamiliar one, will become ‘preferred’ in due course.

Recalling journey experience is selective – we tend to remember just the ‘highs’, ‘lows’ and ‘outcomes’. Such memories become part of an on-going iterative process influencing future travel choices

Be clear when selecting a design, are we concerned about what ‘looks the best’ or the one which travellers are shown to make the fewest mistakes when using it on a real journey.

Public Transport Information is an integral part of the service both for management and passengers – not an optional extra. No point in providing information on Day One if its quality and content cannot be maintained over time

A restaurant without a menu on display at its entrance and at its tables does not attract new customers...maybe just a few regulars, if the food is good. The same lesson is relevant to public transport. With no route and service information on display at the entry points to the system, few people will have confidence to use the system.

Inaccurate or complex information downgrades the experience too. Where a web site or electronic screen provides ‘real time information,’ travellers are quick to judge if the operator can be trusted to deliver what is promised. Providing accurate ‘real time’ information is best achieved when the operational culture of the transport management relies of the same real time systems and databases that feed the information to passengers.

Experience suggests that when the information is of critical importance to the management of a service, the underlying systems and data is well maintained.
**Introduction & Background**

It is estimated that there are over 25,000 public service vehicles (psv’s) in operation throughout Nairobi, which account for approximately 80% of Nairobi’s traffic within the Central Business District. Of the psv’s there are around 16,000 Matatus which operate under free market condition, with little regulation or control and has resulted in a decline in customer satisfaction and poor maintenance standards.

The majority of the destination for the Matatus is the Central Business District (CBD) of Nairobi, which causes severe congestion in and around the highway network on the approach and surrounding the CBD. The sheer volumes of Matatus trying to access the CBD on a daily basis creates a serious congestion issue which contributes to poor journey time reliability, significant journey time delay, queuing traffic and poor air quality in Nairobi.

The pressure on the existing road network is expected to get significantly worse with a projected population increase in Nairobi from 3.3 million people in 2010 to an anticipated projection of 5.8 million people by 2025. Nairobi and specifically the CBD is known as the commercial centre for East Africa and is a key hub of commercial activity and government employment. It is important that the CBD is not blighted by the congestion and the problems associated with it and is supported by a transport system to fit its needs and aspirations for growth.

With congestion continuing to increase and declining public satisfaction in standards there is an urgent need for change and an improvement on the current situation. If Nairobi is to meet public expectations and accommodate the growth in population, whilst keeping Nairobi as the commercial centre for East Africa changes must happen.

In order to identify improvements to the situation a series of studies have been undertaken to determine what solutions would be best suited to address the issues facing Nairobi. The results revealed that BRT would be the key component to reducing congestion on the highway network in and around the CBD and providing a transport infrastructure to help keep Nairobi as a commercial centre for East Africa and allow growth in a sustainable manner.

**Project Scope**

In order to address the above The Transportation Consultancy (ttc) has been appointed as part of an International Consortium to undertake a feasibility and detailed design study for a Bus Rapid Transit (BRT) system in Nairobi. “ttc’s” role within the consortium is to provide passenger demand and revenue forecasts for the BRT scheme and assist with the general specification for the system. The study will provide focus on the proposed corridors 3 East and West and 4 West.

**BRT Corridor 3 East & West, Corridor 4 West**

The two corridors of focus for the study are described below;

- **Line 3 (East & West)** is known as the ‘Chui Line’ and is over 20km in length and is proposed to run on an east to west alignment from the Eastern Nairobi district of...
Nairobi looks to BRT

Njiru, through the Central Business District before heading west towards the Western districts of Nairobi, terminating at the Show Ground and the University.

- Line 4 West is known as the ‘Kifaru Line’ is approximately 8km in length and starts on the western side of the CBD before routing through the CBD and terminating at Landhies Road.

Figure 1 (appended) displays the extent of the Nairobi Proposed BRT Network, where by Line 3 and Line 4 are represented by the Green and Red colours lines.

The basis of the feasibility study will be to develop a Public Transport VISUM Model to determine the effect on all modes of transport of the re-allocation of highway space on the Nairobi Highway Network, as well as the development of the passenger demand and revenue forecasts. The model will be based on traffic surveys undertaken along the proposed corridors in the Autumn of 2015.

Service patterns will be identified together with stations along the route will be and detail design provided for the bus lanes and stations. The buses will have dedicated bus ways along each route with priority over ‘normal’ traffic at key intersections and therefore intelligent transport systems (ITS) will be specified.

It is proposed that BRT system will operate to full BRT specifications as set out by the Institute for Transportation and Development Policy (ITDP) and will revolutionise public transport in Nairobi.

Project Timescales

The timescale for the feasibility study is for approximately 6 months, with the project running until March 2017.
Manchester thinks big when it comes to BRT

Anthony Murden, Programme Manager, Transport for Greater Manchester

Transport for Greater Manchester (TfGM) is currently making one of the largest investments in Greater Manchester’s bus network for decades. Over 25 miles of the bus network are being created or enhanced as part of a £122 million ‘bus priority package’ to improve bus connections on three key corridors into the city centre, with the ultimate aim of supporting and encouraging economic growth across the region.

This major transport scheme represents a major commitment to ensuring that bus passengers across the conurbation on the affected routes, enjoy quicker and more reliable bus journeys for decades to come.

Significant progress has been made this year across the scheme. The route that connects Middleton to Manchester city centre, Rochdale Road (A664), is now complete and includes a range of measures to assist buses, cyclists and pedestrians as well as wider junction changes that also complement general traffic.

Work to connect the towns of Leigh, Atherton and Tyldesley with the guided busway have also been completed and include significant investment in the shape of an improved market square in Tyldesley and a £1 million facelift of Leigh Bus Station.

Other key routes are due for completion soon, most notably the East Lancashire Road (A580) and the bus priority measures in the heart of Manchester city centre. Works on the A580 and within the city centre include significant sections of bus priority, improved and new traffic signal junctions and enhanced pedestrian and cycling infrastructure.

Alongside the transformation of the Oxford Road corridor in the city centre, the Leigh to Ellenbrook guided busway is undoubtedly the flagship element of the bus priority package. Due to begin operating passenger services in early 2016, following a period of testing and commissioning, Greater Manchester’s first guided busway will provide important public transport connections between Leigh, Atherton and Tyldesley to Salford and Manchester – home of many key employment, healthcare, education, retail and leisure destinations.

Construction of the 4.5 miles guided busway is nearing completion meaning that the next stage in its delivery is the testing of the track and completion of finishing works to ensure we guarantee a first-class passenger experience when the service becomes operational. Exceptionally smooth ride quality is an essential quality for this service and as such TfGM imposed a high specification for the construction of the track. A gauge width tolerance of +/- 1mm was achieved through a combination of onsite concrete slip-forming and precision grinding.

Earlier this year, TfGM announced that the operator chosen to run the bus priority service will be First. They have committed to running this premium service at their normal network prices – meaning exceptional value for money for passengers. The buses used will be brand new, high quality, double decker, low carbon emission vehicles that will be replaced every five years.

This year has also seen additional bus priority work taking place in Manchester city centre. The works in Manchester city centre have included making a former one-way route into the city, Princess Street, two-way giving alternative routing options for all users into the city. In the New Year work will be completed in the city centre with a key section of Portland Street being made; bus, taxi and cycle only.

The other flagship element of Greater
Manchester’s bus priority package is the transformation of the Oxford Road corridor. A key route into Manchester city centre, Oxford Road is not only an important route from suburbs in the south into the heart of the city but it is also one of the busiest bus routes in Europe, with over 100 buses per hour on the busiest sections. It is also one of the largest areas of employment in Greater Manchester, making it a very popular destination and one which is continuing to experience significant growth.

Once complete, Oxford Road will signal the final piece of the jigsaw and will enable full bus priority measures across all 25 miles of the bus priority package. Standout elements of the transformation include the introduction of Greater Manchester’s first ever ‘Dutch-style’ cycle lanes and vastly improved public spaces.

In October 2015, TfGM created a trial bus stop platform complete with a usable ‘Dutch-style’ cycle bypass for use by members of the public so that we could carry out a two-week evaluation of the facility. Situated at one of the busiest points on Oxford Road – opposite Whitworth Park – the feedback received was extremely positive, especially from cyclists. The results taken from this evaluation have proved extremely valuable in enabling us to come up with a definitive design that will be replicated at each of the 13 proposed stops along the corridor.

Work to revolutionise bus travel along the Oxford Road corridor will be completed by the end of 2016.

When all the work across these key routes has been completed thousands of bus passengers in Greater Manchester will benefit from higher quality, more reliable services with much reduced journey times giving an overall improved travel experience and encouraging economic growth across
### Consultants, suppliers and specialists to the bus rapid transit industry

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