

Giving a bus digital priority

How does Traffic Signal Bus Priority work?

[read on](#)



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Using this interactive Guidance

This contents page is *interactive* so simply click on the page you would like to go to on the left of this text.

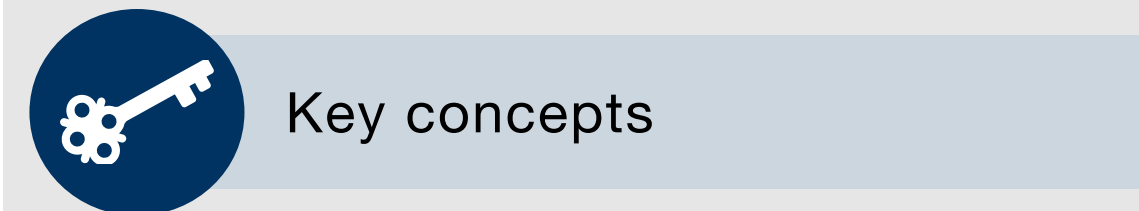
You can use the tools shown below to move interactively through our report and return to this page.

Page navigation



Use clickable navigation at top of each page on the right-hand side to move forwards and backwards through the Guidance.

Section navigation



Clickable navigation at the top of the page to take you to individuals sections of the Guidance.

In-page diagram navigation

Live traffic signal priority diagram navigator



Click each numbered step beneath each diagram in each user section to step through the parts of the TSBP system overview diagram most relevant to that user type.

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Design

Designed and produced by [DEFT153](#).

Key Concept 1:

When does Bus Priority matter?

When buses routinely get stuck in traffic this can:



Negatively impact policy efforts to promote public transport



Lead to increased journey times, leading to reduced reliability and increased passenger dissatisfaction.



Add to congestion, causing frustration to other drivers



Increase CO2 emissions and reduce air quality



Increase burdens on bus operators – because of greater delays, additional fuel costs and lower driver wellbeing

Giving a bus priority involves either:

- **Physical measures:** adapting the physical road layout in various ways.
- **Digital technology measures:** adjusting traffic signals to increase the amount of ‘green lights’ buses are given.

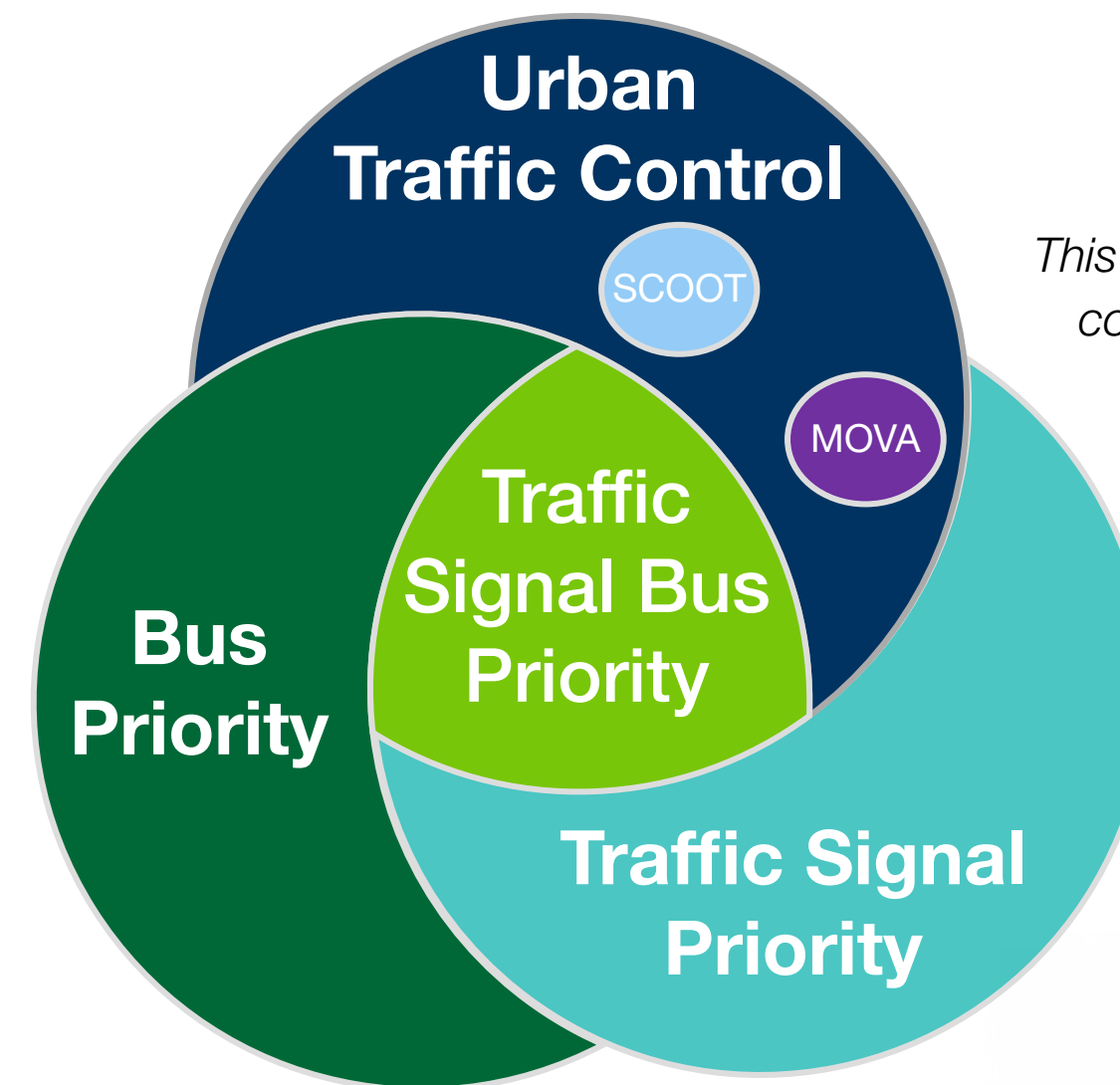
This guidance is focused on digital technology measures, collectively known as **Traffic Signal Bus Priority**.

Traffic Signal Bus Priority is relatively inexpensive and quick to implement

subject to:

- The prevailing condition of signalling systems in the area where the measures are to be implemented.
- The willingness and capability of the area’s bus operators to implement required changes to their electronic systems.

The [next three pages](#) provide a deeper dive into bus priority measures.



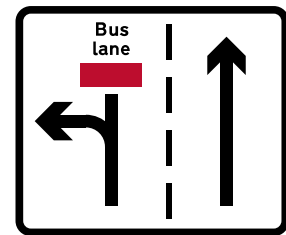
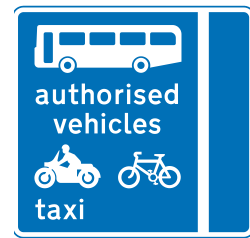
This diagram shows how Traffic Signal Bus Priority sits at the centre of a complex interrelationship between:

- Local Authority signal management systems, known as **Urban Traffic Control (UTC)**;
- All types of **Bus Priority** measures; and
- **Traffic Signal Priority** measures, which might also extend the green signal for other road users, such as emergency vehicles.



Key Concept 1:

A deeper dive into physical bus priority measures



Physical measures to implement bus priority can deliver a superior and guaranteed level of priority over that enjoyed by other road users. However these involve:

- Significant adjustments to the public highway – requiring civil engineering, a lengthy design change process, disruptions during implementation and robust safety processes.
- Enduring changes that are time-consuming and expensive to reverse.
- Robust enforcement measures supported by local authorities and government agencies.

Therefore, it is particularly important to ensure that such measures are implemented on a strong policy mandate with robust modelling, public consultation, reliable measurement and pre- and post-assessments.

Key Concept 1:

A deeper dive into digital bus priority measures

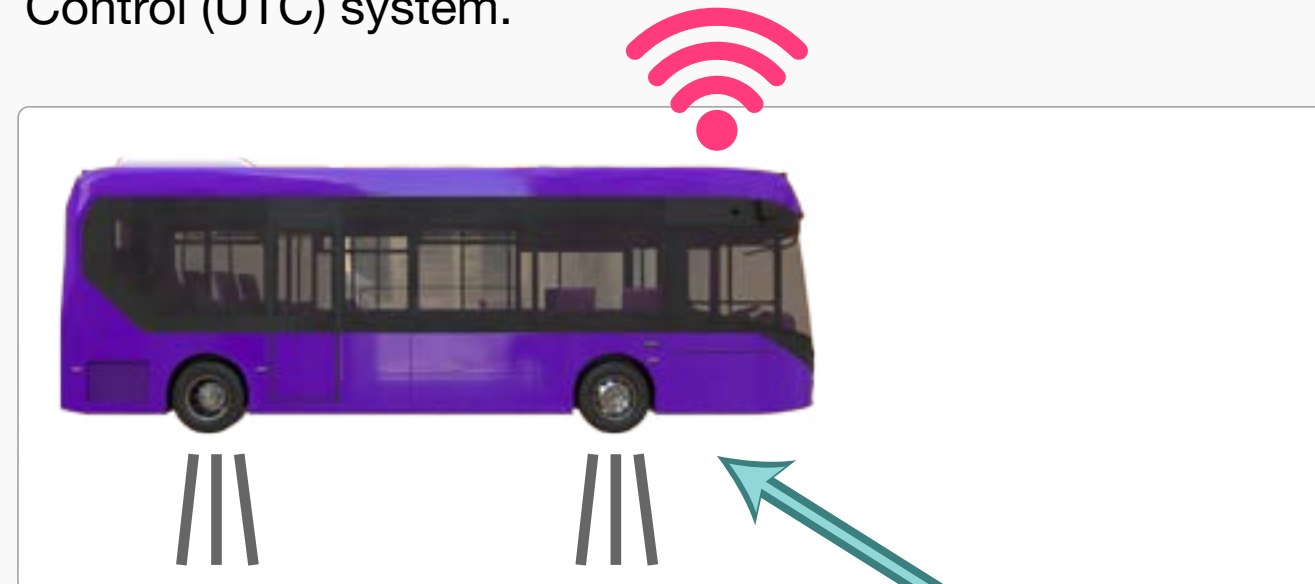
Traffic Signal Bus Priority use a range of well-established technologies which work as follows...

STEP 1: Detection

EITHER

A good practice approach:

Software – typically installed in the bus's Electronic Ticketing Machine – transmits the bus's location wirelessly to a central local highways Urban Traffic Control (UTC) system.



OR

Various deprecated approaches, including:

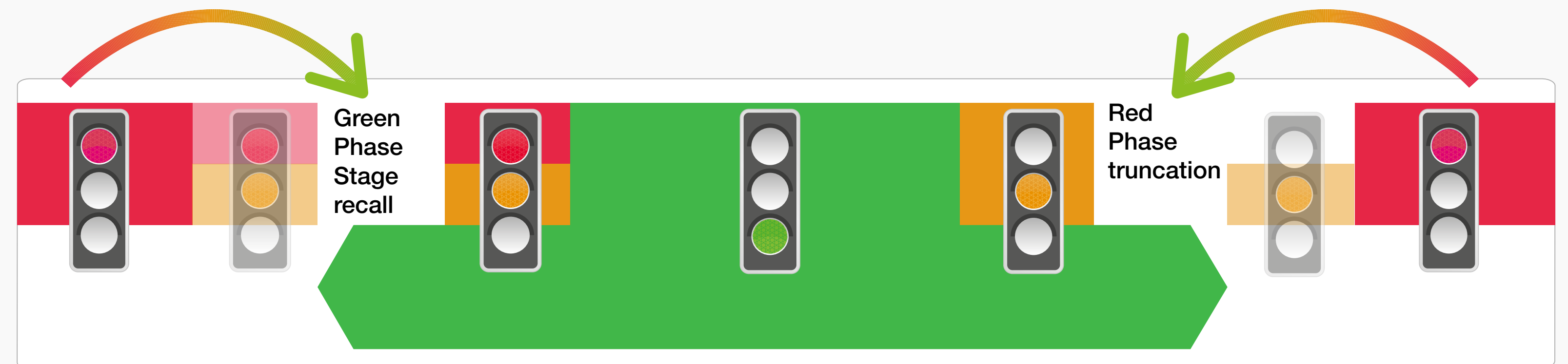
Induction loops embedded in the road surface connected to local traffic signals detect a bus and activate bus priority at the local signals.

Selective Vehicle Detection (SVD) involving a mix of Global Navigation Satellite System (GNSS) e.g. GPS detection and dedicated hardware and software.

The modern approach to Traffic Signal Bus Priority (TSBP) involves detecting a bus on a route using standard Real Time Information (RTI) protocols, typically via a bus's Electronic Ticket Machine (ETM), and tracking the bus using an authority's Urban Traffic

STEP 2: Signal control response

Depending on the time and signal phase when a bus is detected...



What appears to be a **Green Phase Extension** is really a **Stage Recall** i.e. the bus is approaching the junction with the signals on Red so a Stage Recall is triggered, this truncates the non-priority stages running so the priority stage can start early thereby giving the bus green as it approaches the junction.

Stage Extensions are where the current green stage is extended, usually to a preset maximum (typically 3-5 secs). Generally speaking, green extensions are preferred as this has a minimal impact on the junction cycle time as opposed to the recovery time needed following a Stage Recall – which could be 2-3 cycles of the junction.

Control (UTC) systems. This avoids the installation of a dedicated bus priority device on each vehicle and on traffic signal controllers.

Deprecated systems involve relying on bus detection using, for example, induction loops embedded in the road surface or Selective Vehicle Detection (SVD). All such systems link to signal

controllers to achieve traffic light priority. Whilst many legacy systems still exist, no single system dominates the market, in the UK, and all have gradually been replaced by bus detection using Real Time Information (RTI) systems.

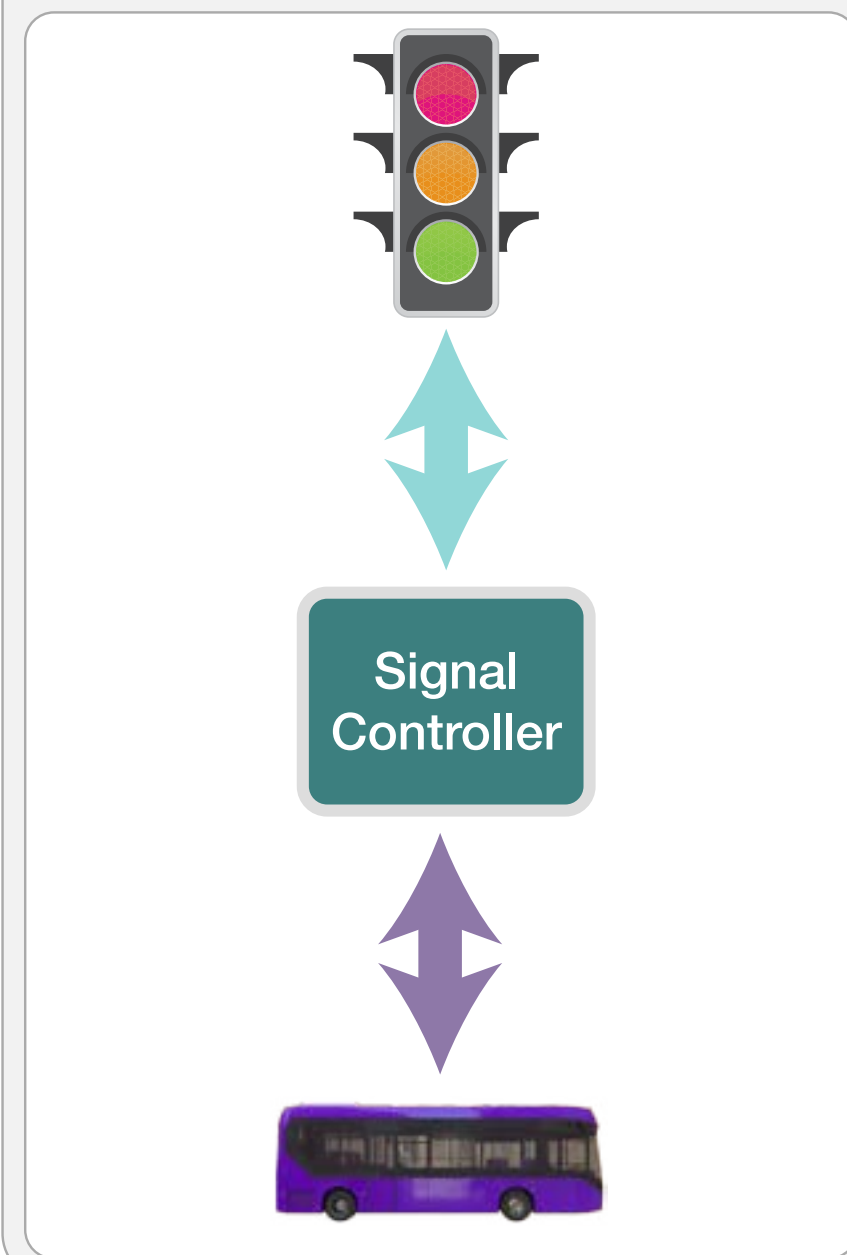
Key Concept 1:

Traffic Signal Bus Priority deployment options

Traffic Signal Bus Priority deployment options divide into three main types depending upon available infrastructure...

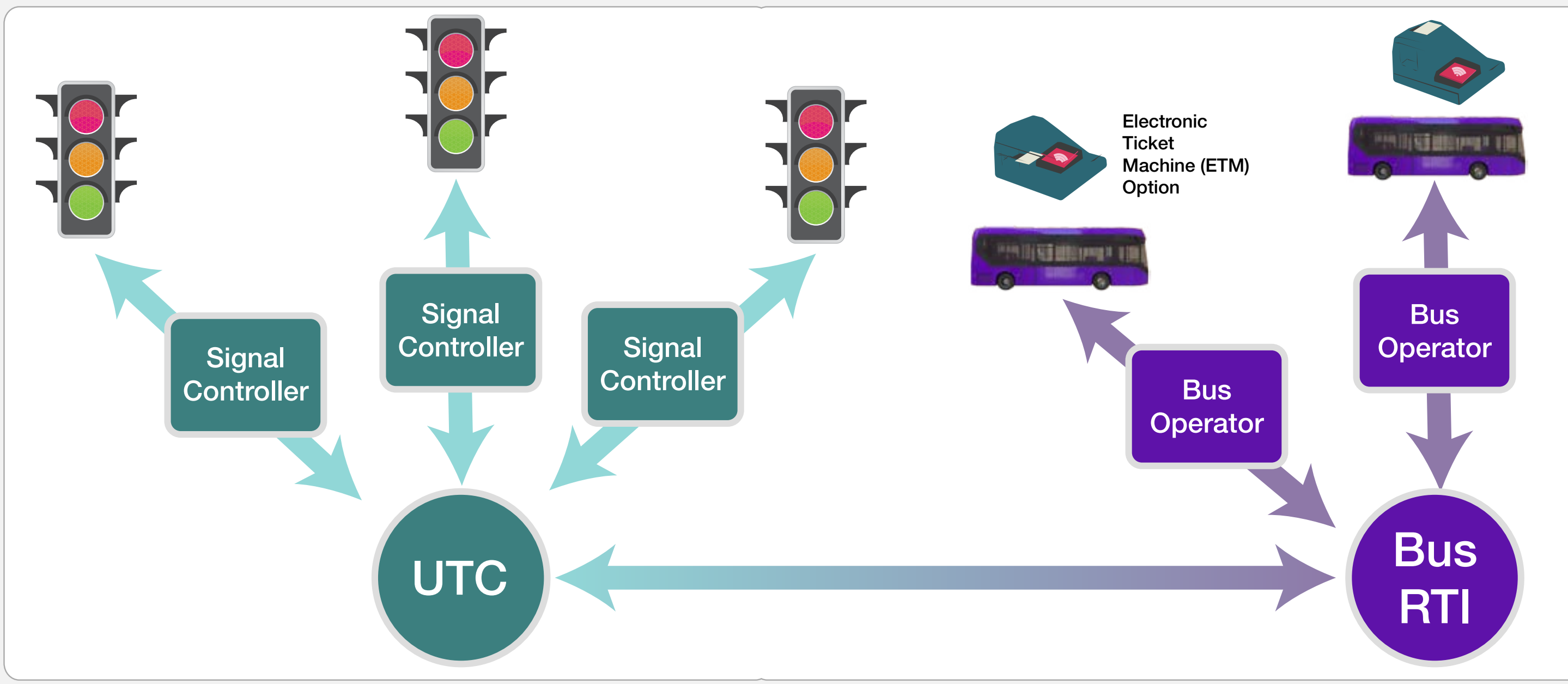
OPTION 1: Local priority

Bus requests priority locally at individual traffic signals by its presence
Requires either: induction loops connected to controller, or roadside receiver and device in bus.



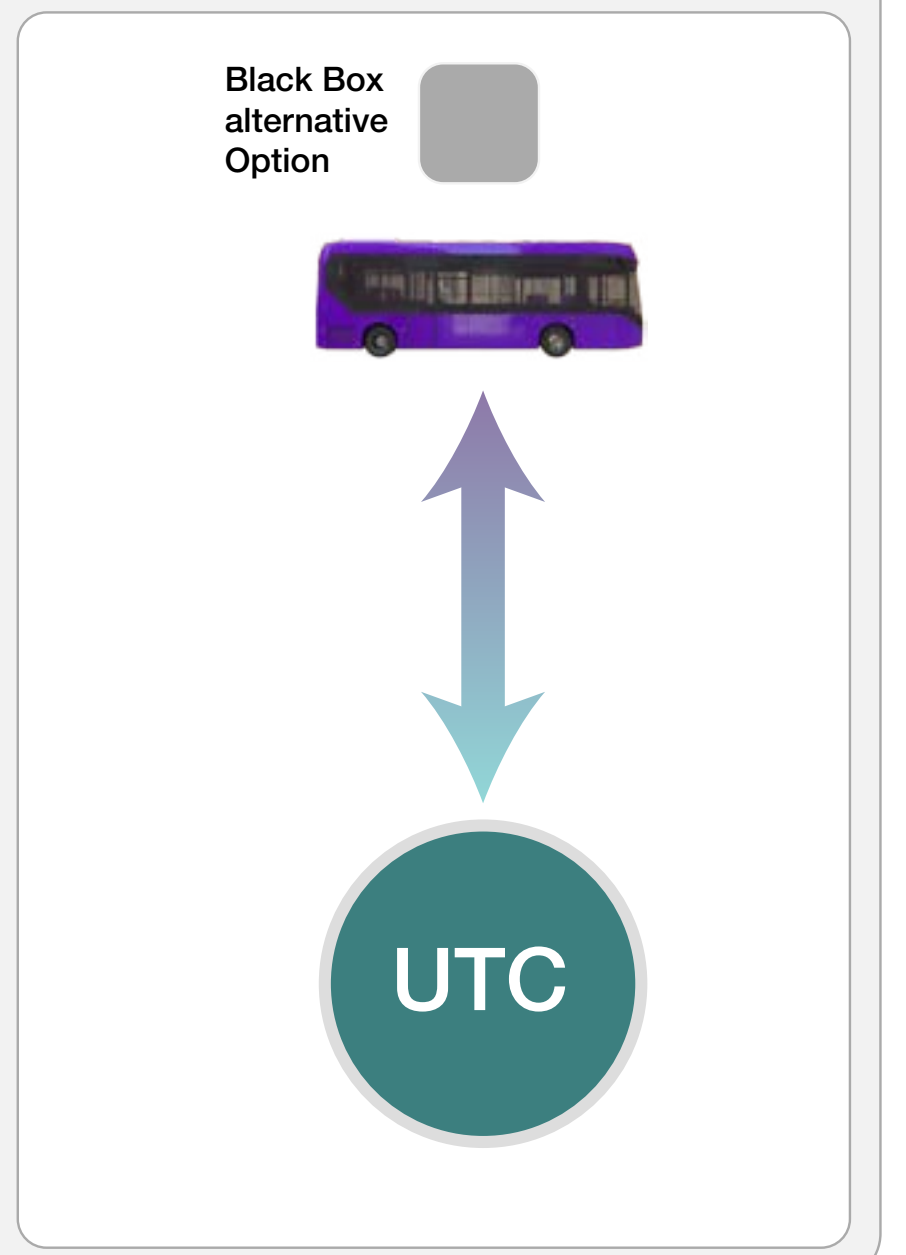
OPTION 2: Network-wide distributed priority

UTC system talks to Bus RTI system(s) to negotiate priority
Requires both: an operational UTC system and Bus RTI system



OPTION 3: Alternative network-wide distributed priority

Individual buses talk to central UTC via Signal Controllers
Requires: equipment on-bus.



OPTION 1 applies where the impact of giving localised bus priority will minimise disruption to the rest of the highways network, or where a junction is isolated from UTC control.

OPTION 2 is preferred where Authority UTC systems are deployed and where the majority of bus operators support RTI.

OPTION 3 is less burdensome for bus operators to support because there is no need for a prediction engine. RTI suppliers used to provide management systems for trigger files and communications to UTC because they had kit on buses and relationships with authority public transport teams.



Key Concept 2: Benefits and risks

Benefits

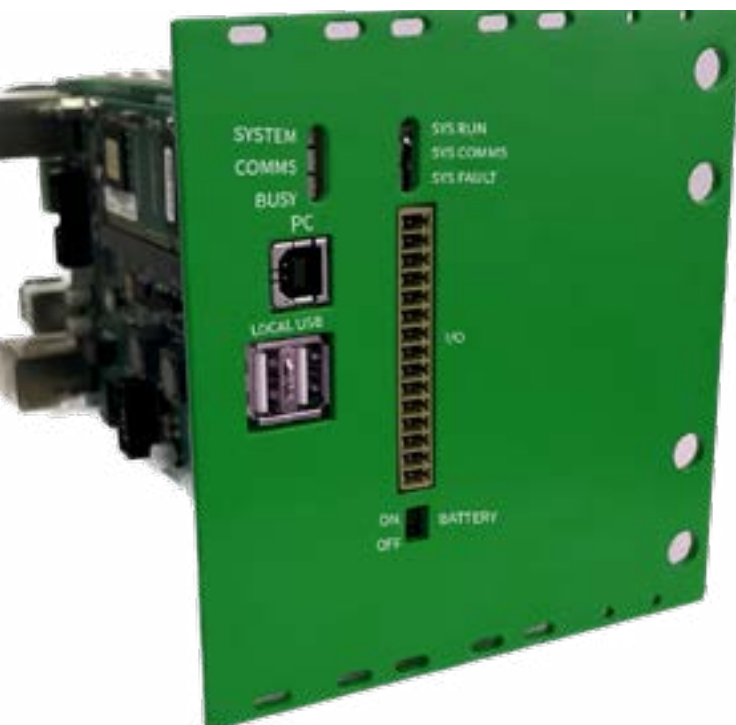
- Bus journey time consistency and increased punctuality.
- Bus customers arriving at their destinations on time.
- Lower cost of digital versus physical measures.
- Increased bus patronage.
- Improved reputation of buses as a customer choice.
- Reduced emissions.
- Improved air quality.
- Economic and social benefits.
- Operator benefits:
 - reduced fuel consumption
 - improved fleet management
 - more efficient resourcing

Risks

- Scheme misses its KPIs
- Lack of evidence of benefits because of small study / sample sizes
- Need for ongoing oversight and management
- Lack of:
 - Political support
 - Adaptability
 - Network validation

Causes of failure

- Political opposition
- Insufficient capacity leading to conflicting traffic pressure
- Lack of ongoing oversight of data and configurations
- Lack of post scheme performance monitoring i.e. is the scheme still working 6, 12 or 24 months later?
- Lack of sufficiently fine-grained system rules to avoid giving every bus priority, regardless of whether it is early or late or the knock-on effect on other parts of the network
- Lack of funds to meet the future revenue cost of keeping the system operational





Key Concept 3:

Navigating transport planning priorities

Implementing traffic signal bus priority in a large city presents a different challenge to implementing the same in a semi-rural area with small towns.

A large city needs to manage a lot of traffic and weight signal times to ensure that all highway users can make equitable use of the road network. They also need a lot of traffic signal orchestration for which Urban Traffic Management & Control (UTMC) systems provide a solution. A small town and semi-rural area may not require this and may be able to rely upon a range of isolated local signal management solutions.

Political considerations

Potential positives

- Implementation may support policy goals locally or at national level, such as promoting public transport to reduce traffic on the roads.
- Bus customers may be supportive based on a likely uptick in the reliability of bus services.
- Digital TSP can be easily adjusted to reflect political priorities

Potential detractors

- Special interest groups may be extremely concerned about losing out and may lobby to stop or water down the scheme.
- A policy change or the election of new political representation may cause work on the scheme to be abandoned.

Economic considerations

Potential positives

- Business access improvement
- Savings in bus operator costs
- Reduced congestion

Potential detractors

- Scheme Costs
- Benefit-Cost Ratio (BCR) may not have a sufficient yield.
- Disruption during works but may not apply during implementation of digital traffic signal priority.

Social considerations

Potential positives

- Improvements to access of bus services
- Improved to quality of life through more reliable bus services

Potential detractors

- Car drivers and other groups feel left out leading to social friction
- In the competition for roadspace other groups feel that the quality of their journeys has reduced

Technological considerations

Potential positives

- Improved bus network efficiency

- Increased data with which to track bus services and general road network performance

Potential detractors

- Integration challenges with existing systems e.g. RTI engine, SCOOT MOVA, etc
- System Failure
- Cybersecurity threats

Environmental considerations

Potential positives

- Improved air quality
- Reduced emissions

Potential detractors

- Negative impact on congestion for other road users if not managed well

Legal Considerations

Potential positives

- Improved compliance with national bus strategies e.g. through BSIP improvement
- Opportunities to clear and equitable enforcement

Potential detractors

- Legal challenges



Key Concept 4:

Traffic Signal Bus Priority delivery steps

Planning

Best to implement as part of a comprehensive set of bus service improvement schemes under an area wide transport strategy.

Discovery process

Five approaches to consider:

1. Identify problem areas.
2. Strategic alignment
 - a. Capacity pressure from urban growth.
 - b. High importance routes/strategic connections.
3. Local context
 - a. Capacity pressure from urban growth.
 - b. High importance routes/strategic connections.
 - c. BSIP and Enhanced Partnership if either or both exist.
 - d. Early engagement with bus operators to understand where they encounter bottlenecks.
 - e. Local Transport Plan.
4. Implementation feasibility and capability e.g. can local bus operators and signal systems support bus priority
5. Opportunism – under the UK planning system, major new developments are expected to contribute to transport improvements through infrastructure additions and cash. This presents an opportunity to propose bus priority in a planning

application.

Options development

Once you have worked through this process:

- Model the results if the scope and size of the scheme warrants it and the modelling work is affordable.
- Gather data e.g. traffic flow and turning counts, bus performance, signal timing, network performance.
- Consider regulations and safety
- Share your findings including the model with your colleagues and the wider stakeholder e.g. this might include bus operators, your supply chain, highways engineers, passenger groups – get feedback.
- Cost the options, including cost comparisons and or integration with other measures.

Business Case & Approvals

Prepare a Strategic Outline Business Case

- Strategic and economic justification: journey time savings, reliability benefits, mode shift impacts.
- Costs estimation: civil engineering costs, signal upgrades, communications, maintenance including projected revenue costs.
- Risk assessment: safety, network performance, air quality, stakeholder objections.

- Governance: approvals through transport committees, funding bodies, BSIP governance, or political oversight.
- Prepare a plan and consult with Elected Members
- Submit the agreed plan for approval
- Issue a Public Consultation
- On completion of the Consultation period, analyse the results and submit Scheme for approval.

Design

- Prepare outline design, on approval
- Develop Detailed design

Implementation

- On approval implement Scheme.

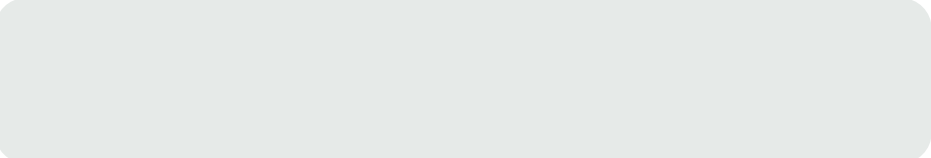
Post scheme implementation

- Gather data
- Validate the results



Key Concept 4:

Traffic Signal Bus Priority delivery process and system overview



A Senior Policy Team Member Guidance: Senior Policy role

Bus Priority Role		Technology
Provides political leadership on transport strategy and investment		Office automation e.g. Microsoft 365
Represents residents' concerns on bus services, accessibility, and network coverage		Statistical programmes
Acts as a public-facing communicator on service changes and improvements		Publishing programmes
Skills	Channels	Report and committee management systems
Mediation	Facebook, Twitter/X, WhatsApp	Basic data dashboards
Policy	Local authority website	Social media management tools
Leadership	Transport forums and public consultations	Mapping or briefing packs



Anastasia Coleman

Elected Councillor at an English Unitary Authority

“ I represent a mixed urban–rural ward. With a background in community development, I advocate for accessible, reliable, and environmentally responsible public transport that supports social inclusion, economic opportunity, and high-quality local services for residents. ”

Goals

Holding the transport and environment brief, I am committed to ensuring that residents in my Authority have reliable, affordable, and accessible local services. I strive to improve network integration across modes and borders. I support and campaign for decarbonisation and healthy travel through improved bus and active travel options; and I promote investment in under-served or isolated communities where good public transport can make a positive impact.

Motivations

I am passionate about reducing inequality through the provision of better mobility options and am a strong advocate for public services that improve community well-being. I assess solutions to ensure that we pick ones that have a sustainable legacy. I enjoy collaborating with officers and partners to deliver change and thrive on positive resident feedback and being able to demonstrate local benefits.

Frustrations

I recognise that it is often challenging to communicate the complexities of transport decision-making to residents. We often walk a tightrope trying to balance political expectations with operational constraints and I feel constrained by funding uncertainty and short-term grant cycles. These do not sit well alongside the slow delivery timelines for infrastructure projects.

B Transport Planner Guidance: Transport Planner role

Bus Priority Role		Technology
Leads development of bus network strategies		GIS tools (ArcGIS, QGIS)
Oversees business cases for public transport schemes		Transport modelling packages (Visum, Aimsun etc)
Works to align service planning with local needs		Office automation software e.g. Microsoft 365
Skills	Channels	Excel (heavy use) Power BI and Tableau
Transport modelling	LinkedIn	Signal and traffic analysis tools (LinSig, JCT software)
GIS and spatial analysis	Occasionally: Twitter/X	Project collaboration tools (SharePoint, Teams, Trello)
Business case development (HMT Green Book, DfT TAG)	Industry newsletters (CIHT, ITS(UK), Urban Transport Group)	Mapping/visualisation (Adobe Illustrator and Canva for clear public-facing outputs)



Callum Manning

Transport Planner

“ I work at an English Regional Authority. I’ve got 15 years’ experience in exploring planning opportunities to improve local mobility. Multimodal network planning and data-driven analysis are a core part of my work. I focus on how to deliver reliable, sustainable public transport to support regional GVA growth and social equity. In line with my Authority’s policies. ”

Goals

Amongst my many responsibilities, I want to improve bus journey time reliability and punctuality as part of a broader policy in my Region to increase modal shift from private car to sustainable travel. My work supports economic regeneration and social

accessibility and delivers interventions that reduce carbon emissions. Naturally I strive to ensure my team’s work in transport planning aligns with local development and future mobility strategies.

Motivations

I enjoy solving complex network or operational problems with practical solutions. I want to make tangible improvements to everyday mobility. I take professional pride in delivering credible, evidence-based sustainable work. I am enthusiastic about the contributions that technology and innovation can make to mobility.

Frustrations

I want to achieve as much as possible in my work for my Authority but am sometimes hindered from achieving desirable social and economic outcomes by slow decision cycles and political constraints. In relation to improving bus journey times, poor-quality data from bus operators and legacy systems, particularly its inconsistency, delays the development of business cases and planning activities. Overly bureaucratic appraisal requirements that slow delivery are also a significant burden.



Public Transport Manager Guidance:

Public Transport Manager role

Bus Priority Role		Technology
Oversees Bus Service Improvement Plan (BSIP) and Enhanced Partnership		Excel (timetables, monitoring, financial tracking)
Manages supported bus services, tendering and performance monitoring		GIS tools (ArcGIS/QGIS for route mapping and gap analysis)
Leads network reviews, service changes, and public-facing communications		Office automation software e.g. Microsoft 365
Skills	Channels	Contract management platforms and procurement portals
Contract management and procurement	LinkedIn, WhatsApp	Power BI for dashboards and performance reporting
Budget management and financial appraisal	Local authority and transport forums	CRM / helpdesk systems for passenger enquiries
Network planning	Follows DfT, CPT, UITP and local operators	
	Reads industry newsletters	

Motivations

I have strong commitments to public service and equitable mobility. I get satisfaction from ensuring isolated communities remain connected. I have a passion for turning policy into practical, visible improvements. I enjoy collaborative problem-solving with operators and stakeholders. I have a desire to secure long-term stability for County-wide transport provision.

Frustrations

I have to endure volatile funding cycles and short-term grants. Our Authority like many others suffers from bus operator staff shortages that impact service reliability. I have limited influence over commercial service decisions. We have to contend with high social demand in rural areas that produce a low financial return.



Diana Barnes

Public Transport Manager in a Local Authority

“ Amongst my responsibilities I oversee local bus services, contracted routes and accessibility programmes. With over a decade of operational and policy experience, I encourage operators and the Council to collaborate on ensuring services remain reliable, financially sustainable and aligned with community transport needs and County-wide strategic goals. ”

Goals

I strive to maintain a financially sustainable and socially necessary bus network by helping operators to improve reliability and patronage growth, especially in rural areas. A key means of achieve this involves strengthening operator partnerships to improve better service quality through the DfT Enhanced Partnership scheme and the BSIP-funded improvements.

D Network Operator Guidance: Traffic Manager role

Bus Priority Role		Technology
Traffic management and road space coordination		Asset management systems e.g. Confirm & Mayrise
Understanding of traffic signals, bus priority impacts and network flow		Roadworks permitting systems (e.g., Street Manager)
Knowledge of highway legislation, safety standards		Traffic management and CCTV monitoring tools
Skills	Channels	Microsoft Teams, SharePoint, Excel, and Power BI
Contractor and supply-chain management	LinkedIn	Contractor scheduling and works-tracking tools
Operational planning, scheduling, and resource allocation	Local authority traffic and operations groups	Chrome and Microsoft Edge
BSc in Engineering	Follow industry bodies on Twitter/X	



Darren Farrell

Highways Operations Manager at a County Council

“ I have more than 20 years’ experience in highway maintenance, traffic management, and incident response. I lead teams delivering day-to-day network operations and ensure that road conditions support safe, reliable movement for all modes, including buses and active travel ”

Goals

Striving to reduce disruption to bus services from roadworks and incidents and improve bus punctuality by keeping priority corridors reliable and well-maintained.

Ensuring highway design and maintenance decisions consider public transport needs and strengthening operational coordination with transport planners and bus operators.

Supporting safe, dependable multimodal travel across the highway network.

Motivations

I take pride in keeping the county’s network running safely and smoothly and delivering practical, problem-solving outcomes the public can see. I have a strong operational discipline and commitment to public service. I enjoy collaboration that improves reliability for all road users and am keen to reduce complaints and increase public trust in the network.

Frustrations

I often find that emergency utility works disrupt bus routes with little notice. We have limited budgets for preventative maintenance and conflicting priorities between long-term planning and immediate operational pressures. We sometimes suffer from public criticism, even when disruptions are unavoidable or outside council control. We face significant challenges managing ageing infrastructure that requires constant reactive attention.

E Traffic Signals Software Engineer Guidance: Traffic Signals Engineer role

Bus Priority Role		Technology
SCOOT, MOVA, UTC configuration and optimisation		UTC systems e.g. SCOOT, ImCity, Yunex/UTC
Traffic modelling and microsimulation		LinSig, Aimsun, Vissim for modelling
Signal design, controller specification, and validation		Office automation software e.g. M365
Skills	Channels	Data analysis in Excel, Power BI, and Python
Data analysis from AVL, detector, and journey-time sources	LinkedIn	GIS tools e.g. ArcGIS and QGIS
Understanding of TSRGD and safety audit	JCT, ITS(UK) and IHE forums	Asset management and fault logging systems
Clear technical writing and presenting design options	Follows DfT, local operators, and traffic/ITS specialists on Twitter/X	CAD tools for signal layout design

Motivations

I take a technical pride in delivering well-tuned junctions and visible performance gains and enjoy solving complex signal timing and traffic flow challenges. I am committed to sustainable and efficient urban mobility. I enjoy collaborating with planners and operators to deliver real-world improvements. I am motivated by seeing quantifiable impacts on bus reliability and safety.

Frustrations

I am sometimes disappointed by the poor or inconsistent data feeds provided by bus operators as well as equipment faults and ageing detection hardware that reduce the potential for network optimisation. I have to juggle conflicting priorities between highway capacity and bus priority and emergency works that undermine carefully optimised corridors.



Dorothy Rasmussen

Senior Traffic Signals Engineer at a County Council

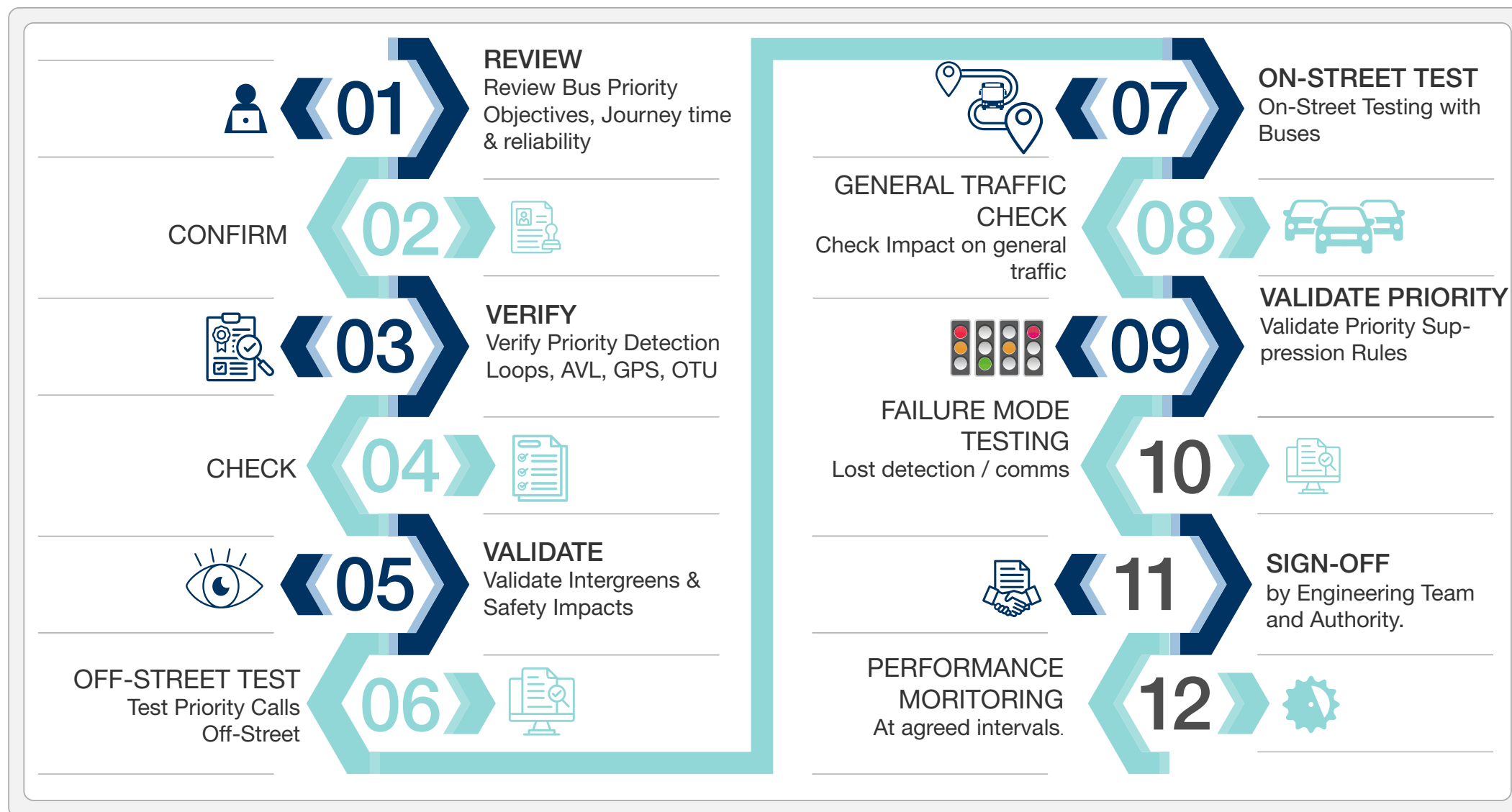
“ I specialise in adaptive signal control, bus priority, and junction optimisation. With a background in Intelligent Transport Systems (ITS) and five years in local government, I ensures signal operations support safety, efficiency, and reliable public transport movement across the network. ”

Goals

I am focused on improving bus journey time reliability at signalised junctions and expanding and refining bus priority in line with Council policy to reduce delays on key corridors through adaptive control. My work serves a broader aim of improving data quality for monitoring operator performance and supporting Bus Service Improvement Plan (BSIP) outcomes by providing measurable journey-time benefits. I strive to ensure signals are maintained and fault-free to prevent bus disruption.

E Traffic Signals Software Engineer Guidance: Traffic Signals Engineer actions

Traffic Signal Bus Priority implementation and validation



Before implementation

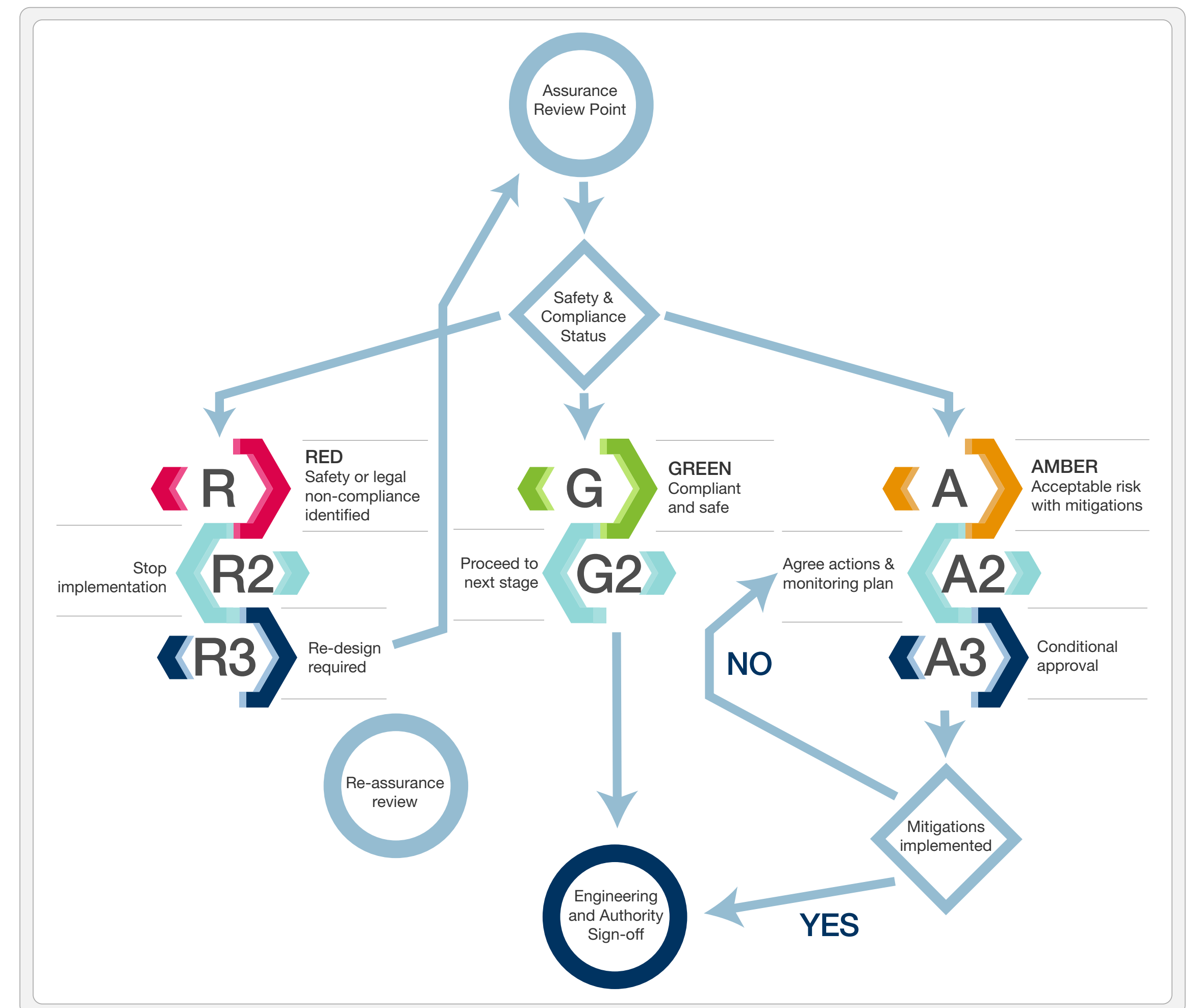
Before implementing a Traffic Signal Bus Priority (TSBP) scheme it is highly advisable for signal engineers to validate the highways network to ensure that signals at all the affected signalised junctions are fault-free and optimised for traffic flow at peak and off-peak times. This activity alone will often deliver significant improvements in overall traffic flow.

One is then left with the residual bus congestion that can be alleviated by implementing the proposed TSBP Scheme. If only a negligible improvement would be likely if the scheme was to be implemented it may not be worth proceeding.

During and after implementation

If the business case still exists to proceed with the scheme, follow the steps in the 'Traffic Signal Bus Priority implementation and validation' diagram above and validate using the DfT-style scheme validation assurance' diagram to its right and then monitor its performance.

DfT-style scheme validation assurance



F Bus Operator Guidance: Bus Operator role

Bus Priority Role		Technology
Operational leadership and team management		Fleet management systems (e.g. Trapeze, GIRO, Clever Devices)
Timetable planning and resource optimisation		Timetable and rostering software
Knowledge of licensing, safety standards, and operator compliance		Office automation software e.g. M365
Skills	Channels	GPS/AVL tracking systems for real-time monitoring
Incident management and rapid problem-solving	LinkedIn	Excel, Power BI, and reporting dashboards
Strong communication with drivers, staff, and customers	Internal operator platforms	HR and payroll platforms for driver scheduling
Budget and cost control for operational efficiency	Twitter/X for industry news	Incident logging and customer systems

Motivations

I pride myself on delivering reliable, high-quality services and gain professional satisfaction from delivering smooth day-to-day operations. I have a strong commitment to delivering improved access to public transport and customer satisfaction. I enjoy mentoring staff and improving team performance and am motivated by measurable improvements in punctuality and reliability.

Frustrations

Our schedules being affected by traffic congestion and unexpected roadworks and driver shortages and staff absenteeism impacting operations. Public criticism when delays are outside operational control takes it toll as do conflicting priorities between commercial and socially necessary routes.



Cain Carver

Senior Operations Manager at a major bus operator

“ I oversee day-to-day service delivery, driver management, and performance monitoring. With over 20 years in public transport operations, I focus on achieving punctuality, reliability, and customer satisfaction while balancing operational efficiency and cost control. ”

Goals

My job is to maintain high service reliability and punctuality that minimises operational disruption due to traffic, works, or incidents. I work hard with my team to optimise resource allocation to meet demand efficiently and improve customer satisfaction and public perception of our brand and taking the bus as a reliable and pleasant transport choice. Our work supports local authority bus priority and performance improvement schemes.



Intelligent Transport Systems (ITS) Guidance:

Intelligent Transport Systems Engineer role

Bus Priority Role		Technology
Develops ITS solutions supporting bus priority, real-time tracking, and journey-time reliability		VS Code, IntelliJ, PyCharm
Integrates vehicle, signal, and network data for operational insights		GIS software e.g. ArcGIS and QGIS
Maintains and updates software platforms for monitoring and managing public transport		Database management (SQL, PostgreSQL, MongoDB)
Skills	Channels	Traffic and bus data platforms
Software development (Python, Java, C#, or JavaScript frameworks)	LinkedIn	Real-time data dashboards (Power BI, Tableau, Grafana)
Data integration, API development, and database management	GitHub and GitLab	Version control (Git, GitHub/GitLab) and collaboration tools (Jira, Confluence)
Traffic signal and bus priority algorithm design	Twitter/X	



Kimberley Herrera

ITS Developer in a specialist ITS Technology Company

“ I design, implement, and maintain software solutions that optimise traffic management and public transport operations. I am passionate about smart mobility, and leveraging technology to improve efficiency, reliability, and user experience across transport networks. ”

Goals

My team and I work to improve bus punctuality and network reliability, enabling data-driven decision-making for planners and operators and reducing congestion impacts on public transport via intelligent signal integration through ITS solutions.

Motivations

I am passionate about leveraging technology to solve real-world transport challenges. I get professional satisfaction from improving operational efficiency and passenger experience. I enjoy collaborating with multidisciplinary teams to deliver practical solutions and achieving measurable outcomes and demonstrable impact on network performance.

Frustrations

We often grapple with system integration challenges across diverse platforms and legacy systems and poor-quality data from operators or local authorities. We encounter operational resistance to adopting new technology. We are often constrained by limited budgets for testing and deploying cutting-edge ITS solutions and the slow procurement or approval processes delaying technology rollouts.



Commonly used terms:

Abbreviations and definitions

ANPR

Automatic Number Plate Recognition – used for journey time measurement, bus priority validation, enforcement.

Automatic Strategy Selection (ASS)

AQM from UTC — automatic plan switching based on KPIs / sensors (flows, occupancy, congestion state, etc).

BlockRef

A unique identifier used in SIRI which can be matched to the same identifier to data in an operational timetable or Running Board.

Bus priority

Giving buses a longer green signal phase duration or reduced delay: can be through green extension, early start, stage insertion, gating, or plan biasing.

Call cancellation

Cancelling a stage demand once priority has been served — once a stage demand has been served and bus priority is active, the ability to cancel the demand depends on the specific logic and programming of the traffic signal control system in use.

Cycle time

Total duration in seconds from the start of one green to the same green next cycle.

Deep priority

Priority where the bus PRS / input can change stage sequence not just extend green.

Detector zone

Loop / radar / thermal / magnetometer detection area mapped to lane or approach.

Demand dependent

Stage only runs if there is demand (e.g. a pedestrian stage in a VA junction).

DfT

Department for Transport

Early cut-off

A non-priority green phase (or a conflicting traffic stream's phase) is terminated sooner than its normal minimum or maximum time to allow a priority vehicle (such as a bus or emergency vehicle) to receive a green signal sooner.

Early start

Starting a priority stage earlier than scheduled.

Green extension

Extending the green signal phase when priority vehicle present.

Gating

Deliberately limiting flow to protect downstream network (often queue length driven).

Hurry Call

Priority where a call is raised with high urgency to next stage.

Intergreen

The safety period between end of green on one stage and green on a conflicting stage

Journey Time Monitoring

Use of ANPR or Bluetooth/WiFi probes to compute route travel time live.

ITS

Intelligent Transport System

Local isolation

When a controller runs locally and is not taking UTC commands.

LogOn / ping

Periodic message from controller to UTC to confirm connection alive.

MOVA

Microprocessor Optimised Vehicle Actuation – an intelligent traffic signal control system used at individual junctions and crossings. It uses detectors to monitor traffic flow and makes real-time adjustments to signal timings to minimize delay and maximize throughput, adapting to conditions from light traffic to heavy congestion. This is a more advanced system than traditional vehicle-actuated signals and is widely used in the UK.

Offset

The timing relationship between junctions.

Part-time signals

Signals that only operate during defined hours (often minor junctions / pedestrian crossings).

Phase

A single traffic movement within a Stage.

PRS (Priority Request System)

Interface from bus (or other privileged class) into controller to request priority.

Pseudo fixed-time

VA/MOVA/SCOOT set up but effectively runs as if FT due to constraint or data.

Rollback

When stored detector occupancy is unwound to previous reliable state.

RTIG

Real Time Information Group

RTPI

Real Time Passenger Information

SCOOT

Split Cycle Offset Optimisation Technique – real time adaptive signal control.

Selective vehicle detection (SVD)

Detecting and classifying vehicles by type (e.g. bus) not just presence.

SIRI

Service Interface Real-Time Information. Normally a specific SIRI service type will be specified: SM Service Monitoring

- SX Situation Exchange
- PT Production Timetable
- ET Estimated Timetable
- VM Vehicle Monitoring
- GM General Message



Commonly used terms:

Abbreviations and definitions continued...

Split

Allocation of cycle time to a stage.

Stage

Refers to a specific combination of traffic movements that are allowed to proceed simultaneously.

Stage Recall

Where non-priority stages are truncated so the priority stage can occur early to reduce bus delay.

Stage skipping

Stage not run this cycle due to no demand or to give priority elsewhere.

TRANSYT

Offline modelling / optimisation tool for coordinated networks.

Trigger Point

When a bus travels across a defined point (virtual loop) on the approach to a Bus Priority junction.

TSRGD

The Traffic Signs Regulations and General Directions (2016) is an Act of Parliament that sets out the design and conditions for the use of official traffic signs that can be lawfully placed on or near roads in Great Britain.

UTC

Urban Traffic Control – central system supervising/joining up controllers.

UTMC

Urban Traffic Management and Control – the main initiative in the United Kingdom for the development of a more open approach to Intelligent Transport Systems or ITS in urban areas.

VA

Vehicle Actuated – extend green while detectors occupied up to a max.

White list / black list

Which vehicles are allowed to trigger priority – especially for bus fleets.

XML

Extensible Markup Language

XSD

XML Schema Document