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Bus Back Better

Support Package 6: Demand Responsive
Transport
Technical advice note

January 2023

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Abbreviations

Term	Definition
BSOG	Bus Service Operators Grant
DfT	Department for Transport
DPS	Dynamic Procurement System
DRT	Demand Responsive Transport
DDRT	Digital / Dynamic Demand Responsive Transport
EEH	England's Economic Heartland
EP	Enhanced Partnership
EV	Electric Vehicle
KPI	Key Performance Indicator
LA	Local Authority
LTA	Local Transport Authority
MaaS	Mobility-as-a-Service
NBS	National Bus Strategy
NHS	National Health Service
PCV	Passenger Carrying Vehicle
PHV	Private Hire Vehicle
PSV	Public Service Vehicle
PTS	Patient Transport Service
RMF	Rural Mobility Fund
SEND	Special educational needs and disabilities
SUV	Sport Utility Vehicle
TE	Transport East
TfSE	Transport for the South East
TfW	Transport for Wales
WAV	Wheelchair Accessible Vehicle
ZEB	Zero Emission Bus

1 Introduction

This technical note is one of a series produced as part of the joint project commissioned by three Sub-National Transport Bodies (STBs), England's Economic Heartland (EEH), Transport East (TE) and Transport for the South East (TfSE), to help support Local Transport Authorities deliver the government's National Bus Strategy for England ('Bus Back Better'). To deliver this strategy, the government has invited Local Transport Authorities (LTAs) and bus operators to formally collaborate and work with stakeholders and bus users to identify, and then implement, initiatives that will improve bus services and attract new users. It is envisaged that these improvements will be delivered through Bus Service Improvement Plans (BSIPs), Enhanced Partnership (EP) schemes, and franchising.

1.1 Background

The Department for Transport (DfT) has identified some additional funding to support its key priorities. There are four areas where Sub-National Transport Bodies (STBs) could undertake further work:

- **Decarbonisation:** Helping the DfT and Local Authorities (LAs) to implement the commitments made in the Transport Decarbonisation Plan.
- **Buses:** Helping LAs to deliver on the commitments in Bus Back Better and develop an effective intra-regional bus network.
- **Electric Vehicle (EV) Infrastructure Strategy:** Assisting LAs in the rollout of EV infrastructure, potentially through regional strategies.
- **Local Authority Capability:** Playing a role in building capability within resource- constrained LAs, to help them in the planning and delivery of local transport.

Three STBs, EEH, TE and TfSE, have joined forces to deliver a package of work to assist local transport authorities (LTAs) within the three regions with the delivery of their BSIPs and implementation of their EPs. The LTAs are:

- **England's Economic Heartland:** Bedford, Buckinghamshire, Cambridgeshire, Central Bedfordshire*, Hertfordshire*, Luton*, Milton Keynes, North Northamptonshire, Oxfordshire*, Peterborough, Swindon, West Northamptonshire.
- **Transport East:** Norfolk*, Suffolk, Essex, Southend-on-Sea, Thurrock.
- **Transport for the South East:** Bracknell Forest, Brighton & Hove*, East Sussex*, Hampshire, Isle of Wight, Kent*, Medway, Portsmouth*, Reading*, Slough, Southampton, Surrey, Windsor & Maidenhead, Wokingham, West Berkshire*, West Sussex*.

(* indicates an LTA that has received BSIP funding)

The project supports all the LTAs whether they have received DfT funding for their BSIP or not.

The project is split into two stages. The initial stage of the project – **triage and prioritisation** – ran from August to December 2022. It took stock of LTAs' current progress in delivering their BSIPs and scoped the work programme for future delivery activities. Online workshops were held in September 2022 and provided a forum for LTAs and bus operators to discuss their aspirations and explore themes, priorities, challenges and potential solutions. The project is ensuring that opportunities for technical pieces of work that would benefit multiple authorities are identified and progressed.

The second stage of the project – **implementation** – involves the delivery of support packages for the following topics that were identified during Stage 1 :

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

Support will be delivered using a mix of channels, including webinars, toolkits and guidance, case studies and one to one support. It will also include establishing bus forums in each of the three STB areas to promote efficiency, avoid duplication of effort, share knowledge and best practice, and identify where joint working would be productive. The technical work will be undertaken to collate evidence and research. The emphasis will be on a regional approach so that common themes can be identified but localised assistance will be available to improve capacity in LTAs and provide specialist inputs regarding local issues.

1.1.1 Intended outputs and outcomes

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

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

Project Outcomes: these outputs will seek results in outcomes aligned to the National Bus Strategy including:

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

TfSE is managing the project on behalf of the three STBs. A consultant consortium of Mott MacDonald and Arup is delivering the project. A Steering Group has been established, comprising the DfT, the three STBs, representatives from some of the LTAs, and Mott MacDonald and Arup.

1.2 Overview

Bus Back Better requires that each LTAs' BSIP places a focus on improving bus patronage by making services more frequent and more comprehensive, such as through the provision of Demand Responsive Transport (DRT). However, the NBS also highlights that DRT schemes are not a perfect solution to every challenge and several large operators have tried, and found it difficult, to operate them commercially. Therefore, this Support Package will focus on providing expert advice for LTAs regarding DRT scheme design and commercial success.

1.3 Introduction to DRT

DRT is a form of transport where the service provision is determined by responding to the demand of users, rather than through fixed routes or timetables. The term covers a wide range of vehicular transport solutions – from traditional ‘dial-a-ride’ services that provide transport which is booked by phone, to new transport services that incorporate newer technology such as an internet service and GPS-enabled mobile phone apps.

In this note, DRT is defined as a flexible form of transport where the service provision is determined by user demand, using shared vehicles and mobile app technology, enabling optimal vehicle capacity use and dynamic routing of the vehicles. It excludes more traditional forms of ‘dial-a-ride’ services which are being replaced by technology improvements that simplify booking and scheduling processes. It also excludes ride-hailing services (e.g.: Uber and other similar taxi services) which are largely in the domain of private providers. In some areas, this type of service is also known as DDRT – Dynamic Demand Responsive Transport or Digital Demand Responsive Transport, reflecting the use of technology and data in its service offering.

To help LTAs in their exploration of DRT schemes, this note is set out as follows:

- **Section 2** outlines the aspects of policy relevant to DRT.
- **Section 3** explains different features of DRT schemes.
- **Section 4** explores the various, different functions DRT can serve.
- **Section 5** presents the key success factors and challenges that LTAs should consider when planning for DRT services in their locality.
- **Section 6** outlines the potential future considerations for the management and operation of DRT in a changing transport landscape.
- **Section 7** presents some case study summaries of DRT schemes implemented across the UK.

2 Policy Context

This section summarises the national, regional, and local policies that have been developed in relation to DRT. These policies indicate that there are aspirations across all levels of government to trial DRT as a mobility solution in certain contexts.

2.1 National Policy

There is increasing recognition of, and aspiration, in DRT at national level, and this is reflected in several national government policies and initiatives. The **Future of Mobility: Urban Strategy**¹ published by the DfT in 2019 sets out the many changes in demand for transport. Among the changes is the increasing prevalence of shared mobility. DRT is recognised as one of the mobility options that can help passengers travel in the same vehicle at the same time, increasing vehicle occupancy and reducing the number of vehicles on the road (Section 3.25). Section 7.30 sets out the DfT's commitment to review legislation covering flexible bus services, with a view of ensuring DRT services can operate to the maximum of their potential. This is to ensure that flexible bus services can be deployed in a variety of geographies, including those which are commercially challenging. The strategy is underpinned by the government's nine principles for facilitating innovation in urban mobility:

1. New modes of transport and new mobility services must be safe and secure by design.
2. The benefits of innovation in mobility must be available to all parts of the UK and all segments of society.
3. Walking, cycling and active travel must remain the best options for short urban journeys.
4. Mass transit must remain fundamental to an efficient transport system.
5. New mobility services must lead the transition to zero emissions.
6. Mobility innovation must help to reduce congestion through more efficient use of limited road space, for example through sharing rides, increasing occupancy or consolidating freight.
7. The marketplace for mobility must be open to stimulate innovation and give the best deal to consumers.
8. New mobility services must be designed to operate as part of an integrated transport system combining public, private and multiple modes for transport users.
9. Data from new mobility services must be shared where appropriate to improve choice and the operation of the transport system.

In 2020, as part of the government's 'better deal for bus users'², the DfT launched the **Rural Mobility Fund (RMF)**³, to trial on-demand services in rural and suburban areas. A fund of approximately £20 million was granted to 17 LTAs. The DfT also published a **DRT Toolkit**⁴ for local authorities in 2022 to support efforts in implementing DRT in England.

¹ DfT, Future of Mobility: Urban Strategy (2019) - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/846593/future-of-mobility-strategy.pdf

² DfT, A better deal for bus users (2020) - <https://www.gov.uk/government/publications/a-better-deal-for-bus-users/a-better-deal-for-bus-users>

³ DfT, Rural mobility fund (2021) - <https://www.gov.uk/government/publications/rural-mobility-fund>

⁴ DfT, DRT: Local Authority Toolkit (2022) - <https://www.gov.uk/government/publications/demand-responsive-transport-local-authority-toolkit/demand-responsive-transport-local-authority-toolkit>

Most recently, **Bus Back Better**⁵ identified the potential for DRT to contribute to an overall bus network that is more frequent, more comprehensive and safer. In particular, it promotes DRT as a potential option to provide more comprehensive 'socially necessary' services through its integration with conventional buses to align service levels with community needs. The DfT has actioned LTAs and operators, through Bus Back Better, to consider their local context and explore innovative and bold approaches to improve bus services, including the potential use of DRT. The DfT is also considering offering new incentives to encourage the provision of DRT as part of the modernisation of the Bus Service Operators Grant (BSOG), to encourage the delivery of services, and bus use, in rural areas.

2.2 Regional Policy

In England, outside of London, seven sub-national transport bodies have been created. Funded by the DfT and its local authority partners, these bodies produce a transport strategy for their region and advise the government on investment priorities.

EEH's **Regional Transport Strategy**⁶ (2021) stated their support for DRT to be one of the key mobility options in delivering new approaches, ownership and business models that facilitate access to transport (see Policy 136 of document).

TE's **Transport Strategy**⁷ (2022) identifies DRT as part of the place-based interventions that are being considered especially for rural and coastal areas, alongside initiatives such as the roll-out of super-fast broadband and digital services. Expansion of innovative solutions such as DRT will be considered to complement the conventional bus networks.

The regional strategic priorities of TfSE, as stated in its **Transport Strategy for the South East**⁸ (2020), include:

- A 'smart' transport network that uses digital technology to manage transport demand, encourage shared transport and make more efficient use of our roads and railways.
- An affordable, accessible transport network for all that promotes social inclusion and reduces barriers to employment, learning, social, leisure, physical and cultural activity.
- A seamless, integrated transport network with passengers at its heart, making it simpler and easier to plan and pay for journeys and to use and interchange between different forms of transport.

While not specifically mentioned, DRT has the potential to deliver the abovementioned priorities. However, in TfSE's more recent **Future Mobility Strategy**⁹ (2021), DRT was listed as a potential mobility solution for a wide variety of contexts, including major economic hubs, urban areas, rural areas, and remote rural areas.

⁵ DfT, **Bus Back Better (2021)** - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/980227/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf

⁶ EEH, **Connecting People, Transforming Journeys: Regional Transport Strategy (2021)** - https://eeh-prod-media.s3.amazonaws.com/documents/Connecting_People_Transforming_Journeys_av.pdf

⁷ TE, **Transport Strategy (2022)** - https://www.transporteast.org.uk/wp-content/uploads/TE_Strategy-July22..WEB_-1.pdf

⁸ TfSE, **Transport Strategy for the South East (2020)** - <https://transportforthesoutheast.org.uk/app/uploads/2020/09/TfSE-transport-strategy.pdf>

⁹ TfSE, **Future Mobility Strategy** - <https://transportforthesoutheast.org.uk/app/uploads/2021/07/Future-mobility-strategy-Final-report.pdf>

2.3 Local Policy

A total of 33 LTAs sit within the TE, EEH and TfSE areas. Some of these LTA's Local Transport Plans (LTPs) include DRT as part of the mobility solutions for their locality, acknowledging that there is growing interest to consider DRT as a potential mobility solution in some local areas.

Several DRT services are already operating within the three STB regions, indicating a growing interest within the local transport community in the potential for DRT to address mobility issues. The DRT services currently operating in the three STBs are as follows:

- Arrivacllick, Ebbsfleet, Kent;
- Arrivacllick Watford;
- Connect, Surrey*;
- DigiGo, Essex*;
- DaRT, Essex;
- Flexibus, Norfolk*;
- Go2, Sevenoaks, Kent;
- HertsLynx, Hertfordshire*;
- Katch, Suffolk;
- MK Connect, Milton Keynes;
- PickMeUp, High Wycombe*;
- Ting, Cambridgeshire.

** Indicates that RMF funding contributed to the establishment of the DRT service*

3 Features of DRT Services

DRT is characterised by flexible routes and smaller vehicles operating in shared-ride mode. Pick-up and drop-off locations are determined by user demand. Traditional DRT, more commonly known as dial-a-ride, has typically been seen as a transport solution for those who cannot access traditional transport services, such as those with mobility issues or those in rural areas where providing a regular fixed route bus service would not be economically viable.

Today, DRT is increasingly being considered as a mobility solution that can fill the gaps in transport provision in urban, suburban, and rural settings. Paired with smart and mobile technology, DRT can match supply to demand, provide flexibility for users who have non-standard journey requirements or patterns, and provide a more attractive solution than low frequency or indirect bus services. DRT services can be used for a range of types of journeys, including for commuting, socialising, health and social care and education.

The features of DRT services can vary, usually tailored to local needs or operator capacity. The following section summarises some common features of DRT and how they can vary across different DRT services in operation.

3.1 Licensing and Registration

DRT schemes can include flexible bus, taxi, or private hire vehicle (PHV)-based services. Depending on the type of service that LTAs want to provide, the DRT scheme can be operated under several different regulatory frameworks. Each framework has varying regulatory implications, including those related to the type of vehicles to use, driver licensing, service areas, taxation, and insurance.

Most DRT services are specified as a 'flexible bus service'. Specifying a service in this way will require it to be registered with the Office of the Traffic Commissioner. Current regulations for England and Wales define a flexible bus service as one which:

- Serves one or more local communities or neighbourhoods within a geographical area.
- Does not necessarily follow a fixed route for each journey.
- Is provided primarily for the purpose of carrying passengers who have booked in advance of the journey and whose collective requirements determine the route of each journey notwithstanding that other persons may also be travelling.
- Provides seats that are all available for use by members of the general public.
- Is provided in consideration of the payment of individual passenger fares which are not subject to variation according to the number of passengers carried on the journey.

Another regulatory framework that DRT services can operate under is the PHV licensing regime. Under this regime, the licensing of vehicles and drivers is regulated by the relevant district council while the service registration (where required) is with the Office of the Traffic Commissioner. Use of PHV licensing allows vehicles with less than eight seats to operate if pre-booked. MK Connect in Milton Keynes is an example of a recent DRT scheme operating under PHV licensing. As such, MK Connect is able to use smaller vehicles in its operations and the drivers of these vehicles are not required to hold a passenger-carrying vehicle (PCV) driving license. Additionally, as a PHV license holder, it does not fall under the National Concessionary Travel Scheme (NCTS) that is statutory for bus services. Therefore, it has no obligation to offer free travel for concession pass holders (note: MK Connect has chosen to do so, regardless). Other UK examples of PHV licensed DRT services are relatively rare, particularly at the scale of MK Connect operations.

Current regulations reflect the technology available at the time that the regulations were developed. In a regulatory review consultation conducted by the DfT in 2020¹⁰, there was a dominant view from stakeholders that the regulatory framework for taxis, PHV and buses is outdated. Stakeholders feel that the differences between how modes are regulated hampers innovation and creates inconsistent outcomes for passengers. The DfT is considering regulatory reform and modernisation of licensing to support innovation which will potentially support the roll out of more DRT.

3.2 Vehicles and Drivers

The type of vehicles used for DRT services can vary. Typically, vehicles include people carriers and small minibuses, larger high-specification and fully accessible minibuses, and smaller conventional buses. The vehicle capacity can range from four-seat SUVs to 20-seat van-derived minibuses. Minibuses are the predominant form of vehicle used for most DRT schemes in the UK.

Following the DfT's Decarbonising Transport (2021)¹¹ strategy, the UK government has outlined that new diesel and petrol cars and vans will no longer be sold from 2030, and that all new cars and vans must be fully zero emission at the tailpipe from 2035. As such, all efforts must be made towards a fully electric DRT fleet, including wheelchair accessible vehicles (WAVs).

The type of vehicles that can be used for operation may depend on the type of legislation the service is operating under. For example, services that operate under a PHV license may only use vehicles of 8 seats and less, while those that operate under PSV operator licensing as a 'flexible bus service' can use vehicles with more than eight seats.

Drivers of DRT vehicles can be employed as either full-time or part-time by operators and can be paid by the hour or based on trips. In some cases, to meet the demand during peak hours, trips can be outsourced to self-employed drivers such as those driving taxicabs. However, the nature of self-employed drivers can bring scheduling risks which must be considered when enlisting their services.

CASE STUDY: MK CONNECT

Since 2021, MK Connect has been using Vauxhall e-Vivaro vehicles that can seat up to 7 passengers and are fully electric, and Renault Trafic diesel WAVs that are wheelchair-accessible. The vehicle fleet is a mix of 70% electric and 30% diesel vehicles.

Whilst the intention was to procure a fully electric fleet, electric WAVs were unavailable at the time of procurement and hence the mixed fleet.

During peak times, hackney drivers are enlisted to cater for additional demand. The council is currently considering swapping out larger vehicles for smaller SUVs due to low occupancy of vehicles.

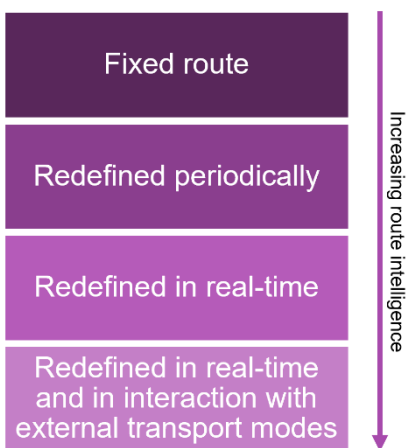
¹⁰ DfT, Future of Transport regulatory review: call for evidence on micromobility vehicles, flexible bus services and Mobility-as-a-Service (2020), <https://www.gov.uk/government/consultations/future-of-transport-regulatory-review-call-for-evidence-on-micromobility-vehicles-flexible-bus-services-and-mobility-as-a-service>

¹¹ DfT, Decarbonising Transport (2021), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/d-carbonising-transport-a-better-greener-britain.pdf

3.3 Route Intelligence

DRT services has different levels of route intelligence, depending on the technology it employs. Arup's publication on DRT, *Going the Distance*¹², reviewed a range of digitally enabled DRT systems and summarised the different levels of route intelligence of DRT services onto a qualitative scale. The scale is used to categorise the degree to which data and algorithms are used within different DRT routing systems. It ranges from 'fixed', such as services provided by conventional buses, to 'redefined in real-time and in interaction with external transport modes'. The full scale can be seen in Figure 1.

Figure 1: A qualitative scale, demonstrating the degree to which data is used within DRT routing



The DRT service area is usually predefined – users are shown the extent of the zone in which the DRT service operates and can then set their origins and destinations within the area. Most of the digitally enabled DRT services are fully demand responsive, where services have fully flexible routes and timings, and can change each day to suit the needs of the passengers. Where there might be enough demand, especially during peak times, services can be fixed along a corridor with no predetermined stops. These services would stop where there is demand and can deviate to serve nearby demand without significantly increasing overall journey times.

The algorithms in most DRT services allow for flexibility in the location of pick-up and drop-off points.. This means that once booked, users are directed towards predetermined pick-up points, which may be a bus stop or a virtual bus stop – a designated location that is convenient and safe for customer pick-ups but does not have any

physical bus stop infrastructure. This is similar for the drop-off points. For most operators, the aim is to have a maximum walking distance to, or from, a pick-up or drop-off point of 400 metres, which is the average distance between two bus stops. However, several operators, such as MK Connect¹³, have noted their current average walk to pick-up and from drop-off points is around 200 metres. The flexibility of pick-up and drop-off points allows for more efficient routing and journey times. The requirement for this short walk may be overridden for users with mobility impairments and those requiring assistance, which can be set in app user profiles or highlighted when booking the service.

Despite running without a fixed schedule and route, most DRT services offer pick-up and drop-off within guaranteed timeframes, which ultimately reconciles the requirements for flexibility, reliability, and certainty.

A number of DRT technology providers are currently active in the UK, including Padam, Via, Loki, Liftango, Zeelo and Tandem.

¹² Arup, *Going the Distance*, iDRT (2018) - <https://www.arup.com/perspectives/publications/research/section/integrated-demand-responsive-transport-in-cities>

¹³ Milton Keynes Council, *Demand Responsive Transport: MK Connect 6 Month Review (2021)* - <https://milton-keynes.cmis.uk.com/milton-keynes/Calendar/tabid/70/ctl/ViewMeetingPublic/mid/397/Meeting/7029/Committee/1440/SelectedTab/Documents/Default.aspx>

3.4 Booking and Payment System

Most recent DRT services have been rolled out together with a smart phone app that can be accessed from anywhere with internet connectivity. The app is used for user registration and booking of the DRT services. When registering, users can state their mobility requirements to allow WAVs or assistance to be arranged when bookings are made. To accommodate digitally excluded customers, these DRT providers also allow for bookings and payment to be made via phone. Regardless of the method in which the booking is placed, the travel demand is fed into dynamic routing technology to allow for the flexible routing of the service. The timeframes within which a journey can be booked by users vary. Traditional DRT services only allow for trips to be booked days in advance as they use manual scheduling and routing. The incorporation of dynamic routing technology and seamless communication systems enables trips to be booked as late as a few minutes before a vehicle departs. Current DRT software can update routes and schedules dynamically to reflect the demand in real-time, although there are some limitations and trade-offs as passenger trips ultimately need to be fulfilled within designated timeframes. Vehicles are tracked and users are able to monitor and see the progress of their vehicle in real time via the app. The ability of the DRT service to allow for pre-booking can be determined on specifications set by the operator. Payment transactions are becoming increasingly cashless through apps or payment over the phone, but most DRT providers still allow for cash transactions on-board the vehicle. DRT providers are increasingly trying to capture bookings and payments through apps to reduce manual handling of data and transactions, with the aim of reducing related costs, such as costs for a call centre.

3.5 Ticketing and Fares

The fare structures and fare levels offered by DRT services vary and are especially dependent on the function of the service. Primarily DRT services function as a complement to the fixed bus network and hence, fares are generally priced similarly or equivalent to local bus fares. This avoids penalising residents in areas that are not serviced by the fixed route bus network. Fares can be priced at a flat rate per trip or within a range based on distance. However, fare levels of some DRT services may be impacted by bus-related policies, such as the government's £2 cap for single adult bus fares between January and March 2023¹⁴. The fare structures of DRT services may also mimic those of bus services. Often, tickets are priced differently for adults, children, and concessionary pass holders. In some areas, local travel cards are used to access discounted fares or accepted for travel without further payment.

CASE STUDY: PICKMEUP

Since launching in September 2022, PickMeUp in High Wycombe, has experienced demand for both live and advanced booking systems. Approximately one-third of trips are currently booked in advance.

CASE STUDY: DIGIGO

DigiGo is the DRT service in Braintree and Chelmsford, Essex, launched in April 2022. The service can be requested via the TravelEssex app, where users can create an account, book a journey, and pay fares. DigiGo offers three ticket options: adult, young person, and concession. The fare rate for each option varies according to journey distance. The following table outline the single fare rates, per person (in £).

Distance	Adult	Young person	Concession
0 – 2 mi	2.50	1.87	Free
2 – 4 mi	4.00	3.00	Free
4 – 6 mi	6.00	4.50	Free
7+ mi	8.00	6.00	Free

However, following the government's Bus Fare Cap Grant, from 1st January to 31st March 2023, all ticket prices are capped to £2.00.

¹⁴ DfT, £2 bus fare cap across England to save passengers money (2022) - <https://www.gov.uk/government/news/2-bus-fare-cap-across-england-to-save-passengers-money>

4 Applications of DRT

DRT has the potential to perform several different roles in the public transport system. Features of DRT services can be modified depending on its role within the community. This section explores the different functions existing DRT services can play in their locality.

4.1 Complement Fixed Transport Network

For many, the primary function of DRT services is to complement the existing fixed bus route network. In this role, DRT can provide a more commercially efficient way to serve a wider area. This is especially true for rural areas where providing fixed bus routes may not be commercially viable. DRT can provide people in rural communities with access to services and amenities within the local area. This, in turn, helps to sustain rural communities and reduce inequalities. However, it is acknowledged that DRT services do not benefit from the economies of scale that fixed services do, where the costs of running buses are generally fixed and so increasing patronage will result in a direct decrease in cost per passenger. Cost per passenger for DRT services will decrease only up to a certain number of passengers before stabilising, resulting in a higher overall cost when passenger numbers increase. As such, an ongoing revenue subsidy is likely to be required for most DRT services.

Many rural transport networks operate in a hub-and-spoke configuration with feeder lines connecting to a main hub. Traditionally, this results in a series of fixed route feeder services that tend to run empty at times during the day, alongside dial-a-ride services that supplement the fixed network. DRT, with its flexible scheduling and routing, has the potential to operate as a feeder service timed to connect into the fixed timetables, enabling smooth interchanges between different modes of transport. Thus, positioning DRT as a mobility option for first and last mile connections. DRT feeder services can also improve the viability of fixed route inter-urban services by increasing patronage.

4.2 Building Demand for Fixed Route

New developments present prime opportunities for shifting people to more sustainable modes of transport, as new residents move in and adapt to new travel behaviours. However, often the demand from these areas in their early phases is not sufficient to enable a fixed bus route to be commercially viable. Developments that are built in phases also often lack the infrastructure needed for a fixed bus route.

DRT can respond to sporadic demand at new development sites with smaller vehicles and represents a good alternative to low-frequency fixed route services, especially in the early phases as residents move in. With a public transport option to access the town centre or amenities and services outside the development, residents have an alternative to owning a vehicle or a second vehicle. High quality DRT services, potentially funded through Section 106 developer contributions, can help increase user confidence in public transport, eventually building enough demand from the new developments for the provision of, potentially commercially viable, fixed bus routes.

4.3 Inclusive Community Transport

DRT has the potential to offer a more reliable and resilient way of addressing a number of transport needs and contributing to areas of public policy where access and inclusion are significant challenges. One such need is the requirement for accessible transport. DRT has the potential to provide transport services for people with disabilities who find it difficult or impossible to use conventional passenger transport. When user profiles are created during registration, DRT operators allow users to state their mobility requirements. Users with a wheelchair or disability will be matched with a fully accessible vehicle such as a WAV. The services are also accessible to passengers with vision and hearing impairments as well as those with additional needs. Inputting the mobility needs of users as a variable into the system allows it to minimise the walking distance to and from pick-up and drop-off points.

DRT can also provide transport for individuals or groups who may be characterised as being socially deprived. This may include people with a low income or people with no access to a vehicle who may otherwise be excluded from skills development or the job market. DRT can offer transport to leisure facilities, retail outlets, employment, education, after school clubs, medical appointments, etc., helping to mitigate aspects of social isolation. Typically, the two market segments above have previously been served by voluntary sector organisations on a non-profit basis. Using DRT to provide access to these market sectors enables a more holistic offering, combining business thinking with social value to deliver high quality transport services that benefit local communities. However, making them commercially viable is challenging.

It is acknowledged that in areas where DRT is aimed at unlocking suppressed travel demand to enhance social inclusivity and rural mobility, more trips may be made. To balance these objectives with decarbonisation, DRT operators should focus on reducing the fuel consumption and tailpipe CO₂ emissions of DRT vehicles and increasing passenger numbers within each vehicle to reduce the emissions per passenger per km.

4.4 Replacing Supported Bus Services

The potential for flexible and demand responsive transport services to replace low frequency buses in the suburbs and rural areas should be explored in more detail for relevant geographies. MK Connect in Milton Keynes and Fflecsi in Holywell are examples of DRT services that were introduced to replace low frequency buses with the aim of providing a more sustainable and cost-efficient way to maintain quality transport services. Guided by demand in terms of time, origins and destinations, DRT can provide services as and when needed allowing for a more efficient use of vehicle, fuel and driver time compared to traditional buses that run on fixed schedules and routes. A DRT service runs only when there is demand and on optimised routes, resulting in fewer kilometres travelled overall than a fixed route, reducing fuel consumption. Vehicle size can also be optimised to match demand, which lowers the CO₂ emissions per passenger and per kilometre travelled. DRT services also have the potential to combine traditional dial-a-ride services with low frequency bus services in rural or lower density urban areas allowing for a more efficient use of resources and lowering the operating costs of providing similar levels of connectivity. MK Connect in Milton Keynes, for example, helped the LTA save over 50% in costs while providing the same level of service to its residents¹⁵

CASE STUDY: FFLECSI HOLYWELL

Introduced in July 2021, Fflecsi in Holywell replaced three low frequency bus routes. Fflecsi operates in a specified area, enabling residents without public transport services to connect with commercial bus services or go to specific destinations. The DRT services resulted in a significant increase in patronage in the Holywell area. Due to its popularity and success, a further two bus routes were replaced with the service in August 2022.

¹⁵ Milton Keynes Council, MK Connect Case Study Interview, (2022)

5 Key Success Factors and Challenges

DfT released a DRT local authority toolkit¹⁶ in April 2022 to provide guidance to LTAs for setting up DRT services in their locality. The toolkit sets out four actions for local authorities to take in setting up DRT service, as shown in Figure 2.

While there is no “one size fits all” solution for DRT, the following sub-sections highlight several key success factors that have been important to the success of DRT schemes currently in operation. These success factors have been mapped to the four steps for setting up DRT services outlined in the DfT toolkit. The challenge is for LTAs to get these factors right, as each factor is highly context dependent.

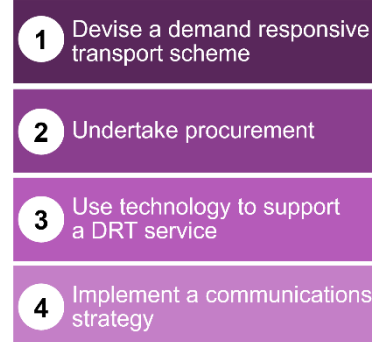


Figure 2: Actions for local authorities as outlined in the DRT Toolkit

5.1 Devise a Demand Responsive Scheme

There are many decisions for an LTA to make in establishing a DRT service in its locality. LTAs must first decide the main aims for the planned DRT service. Based on those aims, LTAs can then define the zone of operation and estimate the likely demand for the service. These will enable the development of a business case and procurement strategy that will impact its funding and the regulatory framework it operates under.

The implementation of several existing DRTs highlighted several key success factors in this step. The key success factors for this step are:

- Well-defined objectives.
- Geography and topography.
- Optimal scale.
- Consistent / long-term funding.

5.1.1 Well-defined objectives

When planning for a DRT service, LTAs must clearly define the objectives that the service is trying to achieve. A clearly defined objective will help identify the targeted users of the DRT service and the anticipated role of the DRT in the local transport network. It will also help LTAs make decisions on the regulatory framework and various other operational parameters such as vehicle specifications, hours of operation and many more.

Section 4 of this note set out several different applications of DRT that can be referenced to help define the function that a DRT can play in its local area, ranging from complementing the fixed transport network to replacing supported local bus services.

5.1.2 Geography and topography

Areas where DRT services have proven to be effective are rural areas outside of urban areas which have traditionally lacked public transport coverage. An example of a DRT service that thrived in a rural setting is Tees Flex, a DRT service operating in the Tees Valley, North England. The service was introduced to primarily reconnect members of the rural communities

¹⁶ See footnote 4

who had become isolated due to the cutting of unsustainable bus services in their areas. Luke Marion, Interim Managing Director of The Go-Ahead Group's Oxford Bus Company, stated that:

“The sweet spot for demand-responsive buses tends to be suburban, or semi-urban areas – often on the fringes of bigger towns or cities. These are places where there’s a decent level of population eager to get from A to B on fairly short journeys, but who don’t always want to travel using fixed, linear routes¹⁷.”

Another setting where DRT can be effective is in urban or suburban areas where pockets of developments are spread out across a wide area or a challenging topography that is not served well by the fixed bus routes. PickMeUp in High Wycombe, for example, attributed their current effectiveness to the locality's development patterns where several housing developments have relatively low access to the core frequent bus network along the spine roads (for more information see Case studies: PickMeUp (High Wycombe, Buckinghamshire). Different localities have different geographical and topographical features that would define their needs, which need to be translated into the DRT service objectives.

5.1.3 Optimal scale

Experience from existing DRT services has shown that there is an 'optimal scale range' at which DRT services operate. If the operation is too small in scale, then the service will not achieve commercial viability. If it is too big in scale, then the operations will get too expensive to run, as DRT services do not enjoy the benefits of economies of scale that traditional bus services do. The demand established for DRT, however, is primed to be used as justification for a fixed route service, serving its function to build demand for a fixed route (see Section 4.2). The 'optimal scale', however, is dependent on many factors that will be bespoke to each locality.

5.1.4 Consistent / long term funding

LTAs must be diligent in identifying and securing funding sources for the continuing operations of DRT services. Many recent DRT services were established using the funds received from the national government under the RMF scheme. However, it is imperative that LTAs identify further sources of funding to ensure the scheme is sustainable following the end of the funding period or allocation.

One potential source of funding that can be used for DRT services is the Section 106 contributions. Buckinghamshire Council, the council under which PickMeUp of High Wycombe operates in, specifically highlighted the importance of wording Section 106 agreements to allow for flexibility in using the funds for new and innovative transport solutions such as DRT. Milton Keynes City Council are also amending Section 106 agreements to explicitly include DRT, allowing access to said funds for DRT operations. Additionally, LTAs can also look out for future central grants or other public transport funds that may support DRT services such as BSOG, community infrastructure levies, contributions from local business or employers, or existing local authority bus funding.

There is also opportunity to broaden the application of DRT in order to take advantage of multiple funding mechanisms. Prior to Covid-19, Go2 in Sevenoaks had plans to diversify their core function based on time of day and the associated different demand patterns. For instance, capitalising on the commuter market in the morning and evening commuter periods, the special educational needs and disabilities (SEND) school market during the school drop-off and pick-up periods, and then providing a community transport service and a patient transport service (PTS)

¹⁷ Luke Marion, Intelligent Transport Volume 06, Issue 04, Roundtable: On-demand and shared mobility (2022) - <https://www.intelligenttransport.com/transport-articles/141839/roundtable-on-demand-and-shared-mobility-issue-4-2022/>

during the day. Transport subsidies and grants associated with SEND and the National Health Service (NHS) are then potentially available to help support the commercial viability of DRT.

5.2 Undertake Procurement

When tendering a DRT service, LTAs must ensure that their specifications include considerations on zones of operation, hours of operation, criteria for stops, vehicle specification, technology requirements, accessibility, and service performance. A key success factor identified from existing services in this step is the provision of inclusive operations.

5.2.1 Inclusive operations

Successful DRT services are designed for inclusion – certain aspects of the service are designed to overcome the barriers that some people face in accessing traditional public transport services. One such barrier is the design of the vehicles used in public transport services as well as the assistance provided by the drivers. Successful DRT services often deploy wheelchair accessible vehicles and trained drivers to support users with mobility requirements, improving their access to public transport services.

In some DRT services where there may be clashes in different objectives, the requirement to be inclusive is prioritised over other objectives. For example, Milton Keynes Council procured diesel powered WAVs despite its efforts for a fully electric fleet as electric WAVs were yet to be in the market and it was deemed more important to provide accessible services compared to having a fully electric fleet.

5.3 Use Technology to Support a DRT Service

The technology solution used in the DRT services can be procured jointly or separately from the vehicles. Investing in a technology system can improve efficiency and user experience of DRT services. A key success factor identified from existing services in this step is the usage of technology for inclusivity.

5.3.1 Technology for inclusivity

As a public transport service, DRT must be intended for everyone and designed for inclusion. The technology platform used in DRT services may offer a variety of benefits, such as making booking by users quicker, but it can be challenging to non-digital natives. As such, whilst the aim is to capture as many bookings as they can onto the online platform, operators should strive to offer multiple booking and payment methods that can accommodate those who may have difficulties with, or no access to, the latest technology. Many schemes continue to provide telephone booking services as an alternative to online booking.

Additionally, the technology also supports the creation of a digital profile on its platform. This profile allows the communication of mobility needs between users and the service, ensuring that users' needs are always being considered when booking and arranging for trips, and delivered efficiently.

5.4 Implement a Communications Strategy

Attracting a sufficient number of passengers is key to the viability and success of DRT services. To do this, the DfT toolkit suggests implementing a communications strategy with the following actions:

- Have a clear communication strategy.
- Organise face to face events.
- Produce online and printed materials.

- Communicate benefits.
- Consider ticketing solutions.
- Encourage feedback and adapt communications and operations.

Several key success factors were identified from existing services in this step, which includes the consideration of other transport stakeholders and monitoring and evaluation plan.

5.4.1 Consideration of other transport stakeholders

DRT service organisers should consult with the local taxi industry, as the flexibility that DRT services offer may clash with the taxi target market. LTAs must clearly define how DRT services will operate alongside taxi services to ensure that both offerings are supported. It is important to position DRT services as complementary to existing transport services, instead of competing with them. Current examples demonstrate that different LTAs are taking different approaches to this issue, with some choosing to limit booking time windows while others choosing to limit operation hours.

Additionally, collaboration with other transport providers would enable a more efficient and effective delivery of transport services. This would be especially useful for DRT services that aim to act as feeder services to the fixed transport network, such as trains and other buses. Collaboration would enable the sharing of information and data that can result in a more seamless transfer between modes and an improved passenger journey experience.

5.4.2 Monitoring and evaluation plan

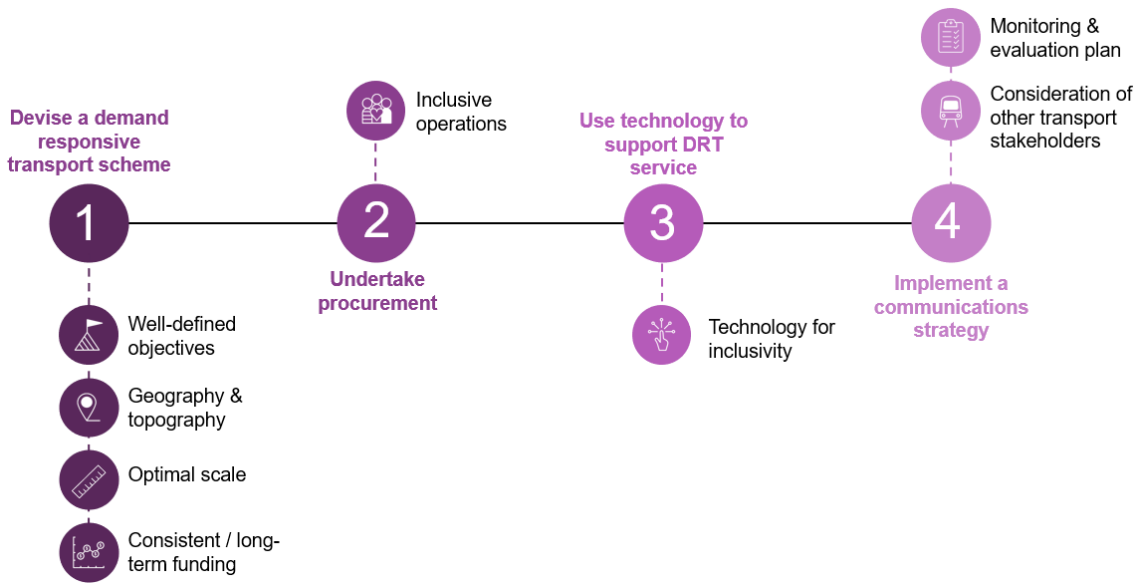
As DRT services are launched, monitoring and evaluation plans must be in place to ensure an objective approach to assessing the effectiveness and efficiency of the DRT service. LTAs must determine the frequencies in which surveys are carried out, data is analysed, and effectiveness and efficiency evaluated.

Relevant data must be collected to provide robust data driven insights. The use of technology in booking, payment and routing enables the collection of a variety of data for monitoring and evaluation purposes. However, LTAs must work collectively with the DRT service operators to determine the types of data that needs to be collected and how it is effectively used.

Through monitoring and evaluation, LTAs can determine the sustainability of the DRT services. Metrics to determine sustainability must recognise that the success of DRT should not only be defined in terms of commercial performance, but also its social impact.

Figure 3 provides a summary of this section.

Figure 3: Summary of steps and key success factors for LTAs in implementing a DRT scheme



6 Future Considerations

As a result of changes to the economy, lifestyles, technology and public policy, the transport landscape in the UK is rapidly, and dramatically, changing. This has implications for DRT management and operations. This section explores some potential future considerations and challenges for LTAs in their management and operation of DRT.

6.1 Electrification of Transport

Zero emission buses (ZEBs) have received considerable attention in recent years. More than 30 cities around the world have pledged to only buy zero emission buses from 2025. For example, Transport for London is planning to have an entirely ZEB fleet by 2030. The transition to ZEBs is no longer a question of “if”, but of “when and how.” Electrification of transport services is occurring across all sectors of transport including DRT.

EVs are gaining in popularity and market share with an increasing range of EV types being manufactured by an increasing number of manufacturers. As a result, DRT operators are well positioned to procure an all-electric fleet for their operations. Some recent DRT schemes include electric minivans as part of their fleet. However, some fleets are not fully electric as electric options are still lacking for WAVs required to meet the need for accessible transport. The ability for operators to source suitable grid connections, and the potential timescale associated with this roll-out, are also factors currently limiting EV fleets.

A key question in fleet electrification is up-front capital funding, as it not only requires the vehicles to be electrified, but also the provision of associated infrastructure, such as charging facilities and energy network capacity is needed. DRT operators and LTAs would need to determine how to provide the infrastructure needed which will differ depending on local context and fleet ownership. It is noted that it can be difficult to make the business case for the additional funding required for fleet electrification and the supporting infrastructure where funding of services is currently time-limited to trial periods shorter than the payback period for capital investment. In the longer term, however, EVs can be more cost-effective to operate than diesel alternatives. Charged EVs have the potential to reduce operational costs through EV energy tariffs (cheaper electricity overnight or a discounted energy rate for EV owners). Operators of vehicles that hold a zero emission bus certificate may also be eligible for a 22p per kilometre rate of BSOG funding for those vehicles¹⁸.

It is acknowledged that the carbon reduction of EVs used for DRT services depends on the availability and usage of 100% renewable energy sources such as solar energy or green hydrogen. Potential long-term operational cost savings are even more apparent if EVs are charged using renewable energy. The up-front investment required to introduce EVs to a fleet and to install solar panels and battery storage could potentially be paid for (or in part) by grants such as the zero emission bus regional areas (ZEBRA) scheme - which helps LTAs outside London to introduce zero emission buses and the infrastructure needed to support them.

¹⁸ DfT, Bus Service Operators Grant: guidance for commercial transport operators (2022) - <https://www.gov.uk/government/publications/bus-service-operators-grant-guidance-for-commercial-transport-operators/bus-service-operators-grant-guidance-for-commercial-transport-operators>

6.2 Mobility-as-a-service (MaaS)

MaaS brings every kind of transport together into a single intuitive mobile app. It seamlessly combines transport options from different providers, handling everything from travel planning to payments. To realise its full potential, DRT can be offered as part of a MaaS ecosystem that includes other modes such as buses, taxis, bike hires and e-scooter hires. This concept is illustrated in Figure 4, with DRT (and other modes) supporting a core Metro network. MaaS has the potential benefit of providing access to multiple modes of transport on a single journey – a product of physically integrated transport, integrated digital payments and combined mode ticketing. This ease of access would naturally lead to an increase in public transport patronage. These are benefits that DRT services would enjoy if offered within the same platforms.

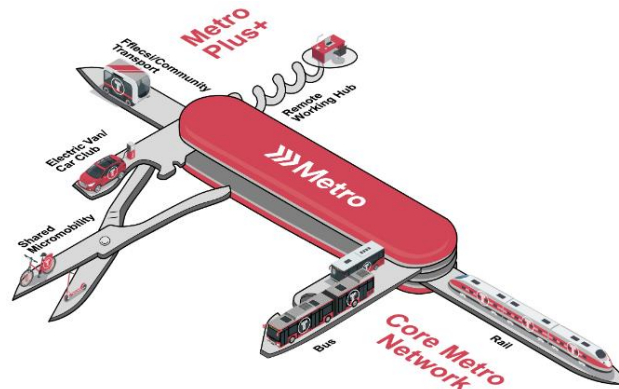


Figure 4: MaaS illustrated as a Swiss Army knife of transport options, including community transport.

The benefits of incorporating DRT services as a part of a MaaS ecosystem are aplenty, but LTAs must be wary of potential market failures that can decrease the public value. Arup's publication "Future of Mobility and MaaS: Governance and Orchestration" explored several factors contributing to market failure that governments must consider such as information asymmetry, monopoly, unstable markets, and incomplete markets¹⁹.

DRT services already operate on digital platforms with a system to plan, book and pay for travel. Users who are familiar with DRT will not experience a big shift in their journey experience should it be incorporated as part of a MaaS ecosystem. PickMeUp in High Wycombe, for example, has attempted to incorporate fixed route services information onto its platform. When a user requests a ride that can be served by an existing fixed route bus service, the PickMeUp app will suggest the bus route to the user as an option. LTAs with existing DRT services are increasingly looking at the possibility of doing something similar to enable a more holistic transport options offering and more informed decision-making by users.

6.3 Driverless Vehicles

Drivers form a major part (around 60-80%) of DRT operational costs, even higher than fixed route services (typically around 50-60%) – although these proportions fluctuate depending on technical specifications and local factors. The future potential to introduce autonomous or driverless vehicles into the equation may transform the economics of DRT, and address challenges in the availability of drivers.

Eliminating drivers would naturally create some new operating costs, such as increased vehicle and maintenance costs, and the need for upgrades in ticketing or payment systems, but these costs are likely to be minor when compared with the savings. These savings can then be used to provide improved or expanded services while keeping the subsidy levels unchanged. Lower operating costs of these driverless vehicles could also encourage authorities without DRT to introduce it, as the financial commitment would be smaller.

¹⁹ Arup, Future of Mobility and MaaS: Governance and Orchestration (2019) - <https://www.arup.com/perspectives/publications/promotional-materials/section/the-future-of-mobility-and-maas>

The capital cost of driverless vehicles will certainly be higher than existing vehicles, especially in the early stages of the technology's development. However, like buses, most of the lifecycle cost of providing these transport services is in the operating costs rather than the capital purchase cost. Consequently, it is expected that a driverless vehicle that may cost more than a conventional vehicle would pay for itself after a few years of operations.

CASE STUDY: SCOTLAND & FRANCE AUTONOMOUS BUSES

Scotland:

Stagecoach will launch a driverless fixed route service in Edinburgh from March. The route will cover 14-miles in mixed traffic at up to 50mph across the Forth Road Bridge from Ferrytoll Park & Ride in Fife to Edinburgh Park Transport Interchange. It has capacity for around 10,000 journeys per week.

France:

In Paris, the route of the Bois-de-Vincennes autonomous shuttle has been operating since 2017. Autonomous shuttles also transport employees of a BNP subsidiary to and from Rueil station.

7 Case Studies

The following section provides case study summaries of DRT schemes currently in operation across the UK:

- **PickMeUp (High Wycombe):** An example of urban/suburban DRT that complements the fixed bus routes. It was developed to service areas that, due to various reasons, had relatively low public transport accessibility to the core frequent bus network.
- **MK Connect (Milton Keynes):** An example of urban/rural DRT that has replaced some fixed bus routes. It was developed to provide a more cost-effective public transport solution for particular areas and to increase the public transport accessibility of rural areas.
- **HerstLynx (North and Eats Hertfordshire):** An example of rural DRT that complements the fixed bus routes. It was developed to to serve areas with poor public transport accessibility and provide transport links between rural areas and designated 'Key Hub Towns'.
- **Fflecsi (various locations in Wales):** An example of a nationwide DRT service, under which a number of pilot schemes have been introduced. It was developed to integrate with the fixed route network, to complement community transport and improve the public transport accessibility of rural residents.

The case studies were selected based on their varied scale, approach and context – in terms of urban/rural setting, technology provider, type of scheme and contractual arrangements. The differing nature of the schemes should provide LTAs in the EEH/TE/TfSE areas with a broad set of reference points. When reviewing these case studies, it is critical to reflect on the geography and market environment they are implemented in.

PickMeUp (High Wycombe, Buckinghamshire)

Scheme Type

Complement fixed bus routes

Lead Partner

Buckinghamshire County Council

Operator

Carousel Buses (Go-Ahead)

Technology Provider

Via

Area of Service

Urban/Suburban

Operational Period

Sep 2022 – present

6am – 7pm, Mon – Fri



Scheme Scope

The PickMeUp scheme complements the existing local bus network in High Wycombe. It does this by servicing suburban areas that, due to the topography of High Wycombe, do not have regular fixed route bus services and have relatively low accessibility to the core frequent bus network along the spine roads. It also augments the bus network in areas where there are currently limited, infrequent services and helps to support new housing developments before regular services are introduced. No existing fixed route bus services have been replaced by the DRT scheme.

The current fleet size is five minibuses (22 seats) and there is an aspiration to expand the fleet to up to eight minibuses (to be introduced based on demand). All vehicles are wheelchair-user-friendly with low flooring.

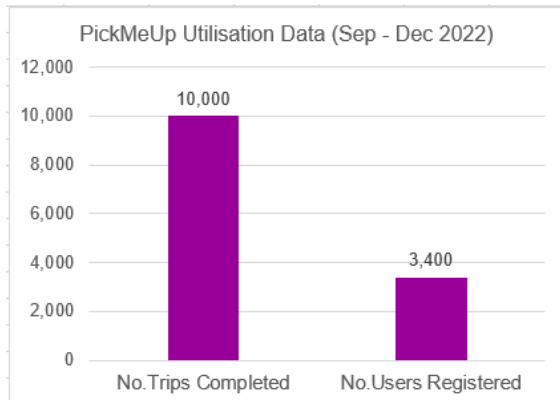
It is a three-year pilot scheme with the option to operate for five years if funding permits. Pending the long-term financial viability of the scheme, Buckinghamshire Council intend DRT to be the key public transport solution for appropriate areas.

Fares and Ticketing

Ticketing is fully integrated with the wider local public transport system. Tickets can be purchased via the PickMeUp app with credit/debit card or PayPal, or via cash or card to the driver. Alternatively, journeys can be booked via a phone call service operated by Carousel Buses. The booking system is provided and maintained by Via. Due to the integrated nature of the scheme, the PickMeUp app has been designed to recommend the best transport option for any journey, incorporating the routing and scheduling of fixed bus routes. This ensures that the commercial network is not undermined.

PickMeUp has zonal fares ranging between £2 and £3.50 for adults for a single journey, reduced fares for children and is free for concessionary pass holders. Day tickets for £4.50 are also offered. Fares are slightly higher than local bus fares (by no more than £1). No automatic fare capping has been deployed but all local bus ticket discounts are valid for the DRT service when paying onboard.

Utilisation



Source: High Wycombe PickMeUp: 10,000 rides in 10 weeks, routeone, 2023

Feedback

The scheme has so far been generally well-received by the public. Key points:

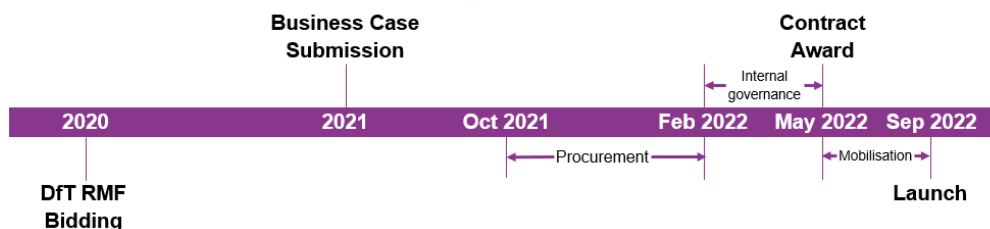
- **Positive:** Speed of the service, customer service, intuitiveness of the app.
- **Negative:** Service coverage (geographical and operating hours).

Buckinghamshire Council is planning to conduct a six-monthly survey of users and non-users to collect feedback. The PickMeUp app also allows passengers to rate each trip.

Scheme Development

Buckinghamshire Council was granted £736,000 as part of the DfT RMF in March 2021. This forms the majority of the funding for the scheme, with the balance provided by Section 106 contributions from two residential developments. No subsidy is currently provided by Buckinghamshire Council as the scheme was developed on a cost-basis. However, BCC is required to fund some administrative functions. Further opportunities for Section 106 contributions to assist funding the scheme will be considered as the trial continues.

The procurement process occurred between October 2021 and February 2022. Buckinghamshire Council set out the objectives and key requirements for the scheme, but placed the onus on the tenderers to demonstrate how the scheme should be set up and operate (which is similar to standard bus operator contracts). The contract was awarded to Carousel Buses in May 2022, following a period of internal governance procedures. Under the service contract, the operator provides the vehicles and drivers and covers all operational costs. Buckinghamshire Council only manages the administrative aspects of the scheme contract.



Learnings

- There are benefits to partnering with an experienced operator – fast mobilisation and able to incorporate learnings from elsewhere.
- Flexible wording of Section 106 agreements (around improvements to public transport generally) can enable potential contributions to DRT if a scheme is implemented in the future.
- It is useful to integrate data from the whole transport network (i.e. fixed route bus or rail timetables) into DRT booking apps so that passengers are directed to the best transport available option. This, combined with integrated ticketing, enhances the complementary nature of DRT to the wider local public transport network and reduces the risk of existing commercial bus services being undermined.
- There is demand for both advance and live booking systems.
- The collection of data and setting of KPIs is important for the monitoring and evaluation of a DRT scheme – especially for justifying further funding..
- Sufficient time should be allowed for internal governance following procurement to avoid delays in launch.

MK Connect (Milton Keynes, Buckinghamshire)

Scheme Type

Replacing local bus service

Lead Partner

Milton Keynes City Council

Operator

Via

Technology Provider

Via

Area of service

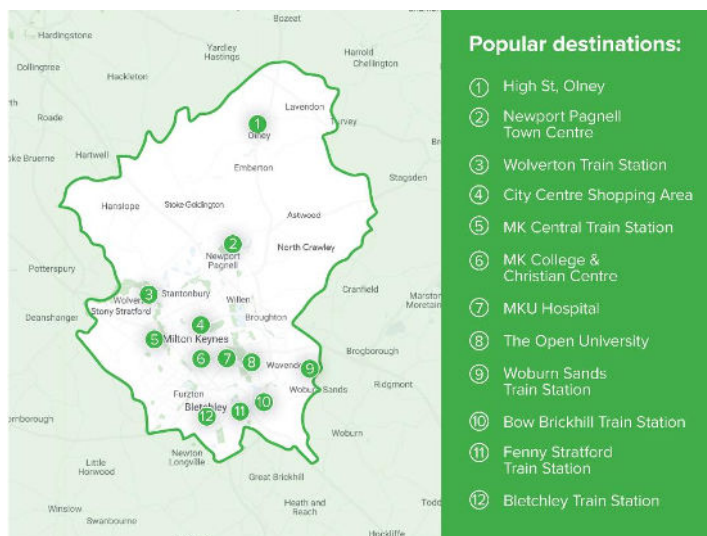
Urban/Rural

Operational period

Apr 2021 – present

6am – 11pm, Mon – Sat

9am – 6pm, Sun



Scheme Scope

The MK Connect scheme was developed to provide a more cost-effective public transport solution for areas where fixed route bus services were experiencing operational cost challenges post-Covid-19. It was also designed to provide services to rural areas that were not serviced by commercial bus services. In total, 11 supported bus services have been replaced by the DRT scheme. It also aims to supplement the existing bus services through increased operational hours. Currently, MK Connect accounts for approximately 5% of all public transport trips in Milton Keynes. Consistent to comparable bus services, the pick-up time varies from up to 30 minutes in urban areas to up to one hour in the rural area.

The current fleet size is 26 minibuses (eight seats), 50% of which are EVs. Diesel vehicles are still required in order to provide wheelchair access. The scheme is established under PHV licensing, and so during busy times, the service can be supplemented using other vehicles and drivers. Pre-booking of the DRT service is not allowed to avoid undercutting the taxi industry.

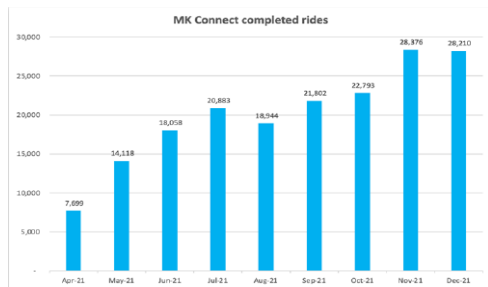
Fares and Ticketing

MK Connect can be booked on-demand via the MK Connect app, web portal or by phone call and paid for with credit/debit card through an account. Currently, most bookings are made through the app, with approximately 5% of completed rides being booked by phone (note: <1% of users have only ever booked by phone). In cases when the booking request can be fulfilled by fixed route buses with no longer than 30 minutes waiting and one hour for the entire journey, the booking system will direct users to fixed route bus services.

Unaccompanied travel for children under 10 is not permitted.. Children between 10 and 14 years old can travel unaccompanied but cannot make the bookings themselves.

Fixed fares of £3.50 per trip are charged during peak hours (7am-9am, 4.30pm-6.30pm) and £2.50 at all other times. Benefiting from the junior concessionary scheme, All in 1 MK cardholders are entitled to a discounted fare of £1.10. Older Person's and Disabled Person's bus pass holders can ride free after 9.30am on weekdays and all day on weekends. There are aspirations to develop a zonal ticketing system and integrate this as part of a multi-operator ticketing scheme with other operators in the future.

Utilisation



Source: Demand Responsive Transport 6 Month Overview Scrutiny Report, Milton Keynes City Council, 2022

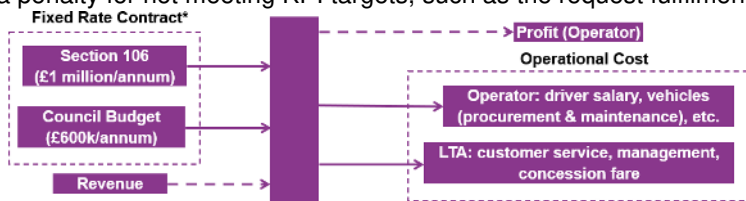
Feedback

The scheme has received generally positive feedback. Key points:

- **Positive:** Regular users, benefit to mobility impaired users as a viable bus service.
- **Negative:** Some retirement communities prefer traditional buses rather than DRT, concerns of capacity issues in morning peak.

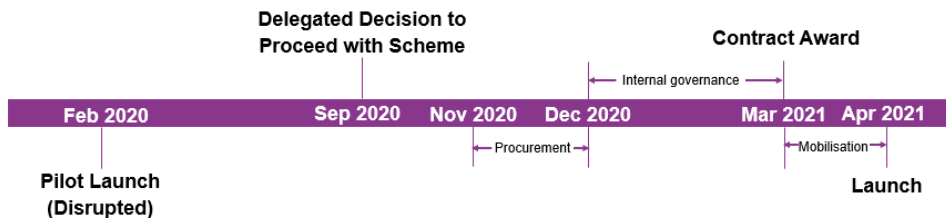
Scheme Development

The scheme runs on a fixed rate (net cost) contract basis, funded through a combination of Section 106 contributions and Council budget. The revenue and profit go to the operator directly, however they are responsible for all operational management costs with the exception of customer service and contract management costs which are funded by Milton Keynes Council. The operator is required to pay a penalty for not meeting KPI targets, such as the request fulfilment rate.



*: A cost of £2.3 million/annum for equivalent fixed route services when MK Connect was introduced.

Prior to this scheme, a pilot was launched in February 2020 but was disrupted by Covid-19. The decision to proceed with the scheme was approved in September 2020, following which the procurement process began. The contract model was designed such that the operator has full control of the fleet size required to fulfil the demand, given the fixed ticket price set out by Milton Keynes Council.



Learnings

- Modelling scenarios with existing fixed route services and DRT will determine if there is a need for DRT in the given context and help with the business case for the scheme.
- Allow for sufficient time for mobilisation and internal governance.
- Establishing the scheme under PHV licensing allows for use of taxis during peak times and assists with driver shortages. There are, however, challenges associated with this arrangement, including management of drivers, usage of public bus stops and perception of competition with the taxi industry. It is critical that the taxi industry is engaged early if PHV licensing is going to be used.
- Using a Dynamic Procurement System (DPS) can speed up the procurement process.
- Sufficient mobilisation time for publicity activities and stakeholder engagement is crucial to raise awareness among users.
- Usage data and KPIs are crucial to explore future options for DRT schemes (such as passenger transfers and zonal ticketing system) and develop an evidence base to support long-term plans.
- Specifying DRT in Section 106 agreements, where applicable, (with pricing based on the equivalent regular supported services) is beneficial if you know you want to implement DRT.

HertsLynx (North and East Hertfordshire)

Scheme Type

Complement fixed bus routes

Lead Partner

Hertfordshire County Council

Operator

Uno

Technology Provider

Padam Mobility

Area of service

Rural

Operational period

Sep 2021 – present

7am – 7pm, Mon – Sat

10am – 4pm, Sun



Scheme Scope

HertsLynx was implemented to serve the villages in North and East Hertfordshire with poor public transport accessibility and provide transport links between rural areas and designated 'Key Hub Towns' (and rail stations). The scheme covers a vast area of approximately 150 miles² / 400km². Passengers can travel anywhere within the zone except for travelling between stops within the same Key Hub Town. All routing is flexible.

The scheme was originally anticipated to be similar to dial-a-ride services. However, only 10% of users have been found to be concessionary pass holders. In contrast to the expected market, it has gained popularity among young people (approximately, 25% of users), especially college students in Buntingford.

The fleet size has expanded from three minibuses (16 seats) to four minibuses in November 2022, with an additional EV to be added to the fleet soon. The vehicles are all accessible by wheelchair users and all dial-a-ride services in the area have been moved to the same platform to increase service efficiencies.

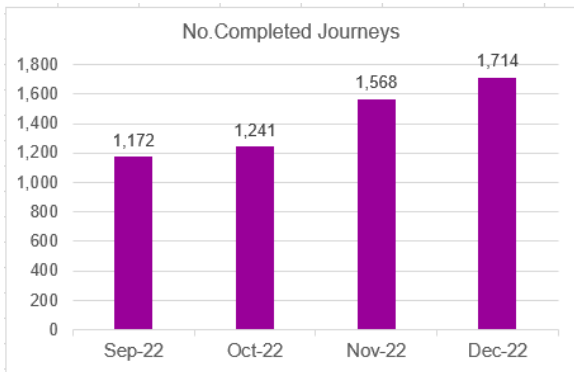
It is a four-year pilot scheme. However there are aspirations to extend the operational hours on Friday and Saturday, to expand the operator zone to cover 2 extra Key Hub Towns, and to increase the fleet size to up to seven vehicles from mid-2023. Additionally, Hertfordshire Council is developing a new DRT scheme to serve West Hertfordshire (to be launched in Autumn 2023).

Fares and Ticketing

Bookings can be made via the HertsLynx app, web portal or by phone call live or up to 30 days in advance. The split between live and advance booking varies from month-to-month. Only cashless payments are accepted, including debit/credit card online, and account credits on the app. Approximately 80% of the users book through the app, 15% book online and 5% use the call centre.

Fares are distance-based, ranging from £3 for trips up to two miles to £6 for those over 10 miles. As part of the Bus Fare Cap Grant funded by DfT, all single fares will be capped at £2 from January until the end of March 2023. Services are free for concessionary pass holders and SaverCard holders and children under 10 travel for half full fare price.

Utilisation



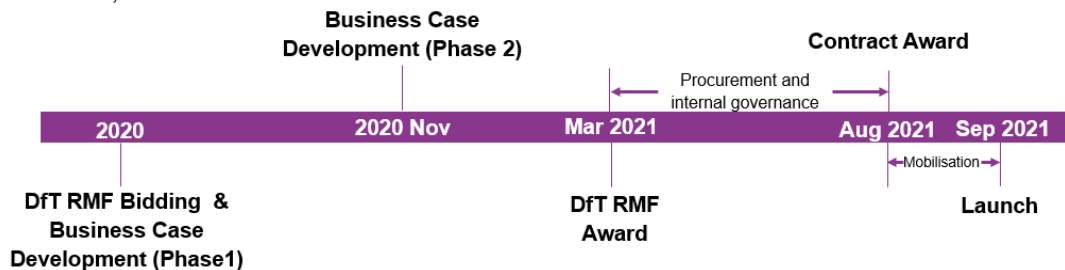
Source: Hertfordshire County Council

Most frequent category of use: leisure travel (40%), travelling to a train station (34%), visiting friends and relatives (32%), travelling to/from work (24%).

Scheme Development

Hertfordshire County Council was granted £1.4 million as part of the DfT Rural Mobility Fund (RMF) in March 2021, which formed most of the funding for the scheme. This is supported by the fare revenue and Section 106 contributions. The timeline between procurement and launch was fast (approximately 6 months). This was achieved by significant preparation prior to the award of the RMF funding.

There are separate contracts for the technology provider and the operator to enable the potential usage of the same technology across different operators in the future - de-risking the outcome to ensure the authority can pick the most appropriate combination of platform and operator for its needs. Hertfordshire County Council has strategic control over the scheme and is responsible for customer service during the Council's working hours. The Council owns the vehicles, although the operator is responsible for insuring and maintaining them. Two types of KPIs have been formed over the course of operation - operational KPIs around punctuality and customer service KPIs focusing on vehicle maintenance, etc.



Learnings

- Pre-arrangement of tendering allows quick turnaround for the procurement and mobilisation process.
- Procuring vehicles as the LTA's assets allows vehicles to be used for similar services post-trial periods.
- Pre-ordering vehicles well in advance can mitigate risk of delays.
- Holiday seasons can have a huge impact on patronage and therefore should be taken into consideration (especially, avoid launching over the holiday season if possible). There are also benefits to providing bespoke trips for communities or implementing temporary stops at family attractions to maintain the level of demand during the holiday season.
- Resources dedicated to customer service should be considered as part of tender preparation and evaluation. Customer service requirements shouldn't be underestimated as expectations for such bespoke services are higher than for traditional fixed routes.
- Scheme success depends not only on its financial sustainability and ridership, but also positive social impacts, particularly for those in isolated rural areas.
- There is potential for DRT schemes to support other council initiatives, such as home to school schemes. This may allow access to other funding mechanisms within council budgets.

Feedback

The scheme has received generally positive feedback. Key points:

- **Positive:** Well-received among students.
- **Negative:** High expectations of a bespoke service.

Hertfordshire County Council surveyed users to gauge feedback over the summer of 2022 - 74% were very or extremely satisfied and less than 10% were dissatisfied. Between September and December 2022, over 90% of feedback ratings received were at the highest level. Some people are booking 3-4 weeks in advance, ensuring that they can rely on the service to get to work, college or catch a train.

Fflecsi (various locations, Wales)

Scheme Type

Complement fixed bus routes

Lead Partner

TfW / Local Authorities

Operator

Local Bus Operators

Technology Provider

Via

Area of service

Rural/Suburban

Operational period

Jun 2020 – present



Scheme Scope

Fflecsi is a nationwide DRT service, under which a number of pilot schemes were introduced across Wales, including Newport (scheme terminated in September 2022), Conwy Valley, Pembrokeshire and the operational area of Bwcabus. The service was developed to integrate with the fixed route network by incorporating fixed timing stops at railway stations and major bus stops. It was also utilised to complement community transport and benefit rural residents for essential journeys during Covid-19. It has remained popular post Covid-19 with common trip purposes being shopping, attending appointments and leisure.

The trials are still in operation at 10 locations across Wales during January 2023, most of which are rural or suburban areas. Typically, the operational zone covers railway/bus interchanges, shopping destinations, community facilities or attractions, and the operational timings are Monday to Saturday during the day. The services have replaced low-frequency and long-distance fixed routes in some areas. Powered by Via, the routing is flexible.

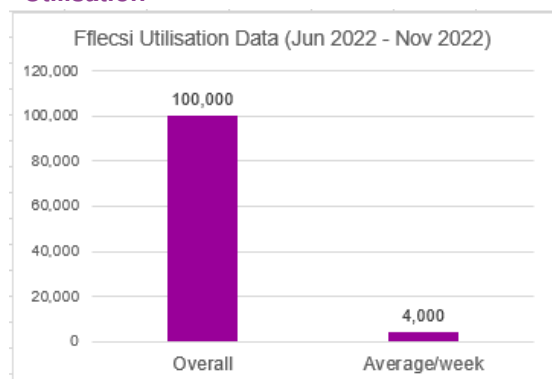
DRT plays a critical role on the roadmap for TfW to fully integrate the public transport network and franchise all bus services nationwide. Additional funding has been used to expand the call centre to support people who are unable to book via the app and have to rely on the customer services.

Fares and Ticketing

Booking can be made via the Fflecsi app or by phone call. The type of booking required, whether advance or on-demand, depends on the local operator, therefore differs across locations. Due to the integrated nature of the service, passengers who book trips through the Fflecsi app or by phone are offered either the best available DRT trip or a fixed-route option (where available). This ensures that the commercial network is not undermined.

Fares vary across locations. In places where the operational coverage is relatively small (mainly the town centre and surrounding suburbs), such as Denbigh or Prestatyn, single fares are applied within town or at higher rates if travelling to another village. In some other areas, such as Holywell and Rhondda, fares are consistent with fixed route bus fares. Overall, adult fares range from £1.50 to £6 and are comparable to fixed bus services. Concession card holders can travel for free and children/other local bus discounts are also valid on the DRT service. Payments can be made onboard to the driver by cash or card.

Utilisation



Source: [Wales fflecsi: A brief guide to fflecsi, TfW, 2021](#)

Feedback

In 2022, Transport Focus Wales was commissioned to assess the experience of Fflecsi schemes in Denbigh, Pembrokeshire (excluding Bwcabus), Conwy Valley and Newport. Feedback has generally been positive. Key points:

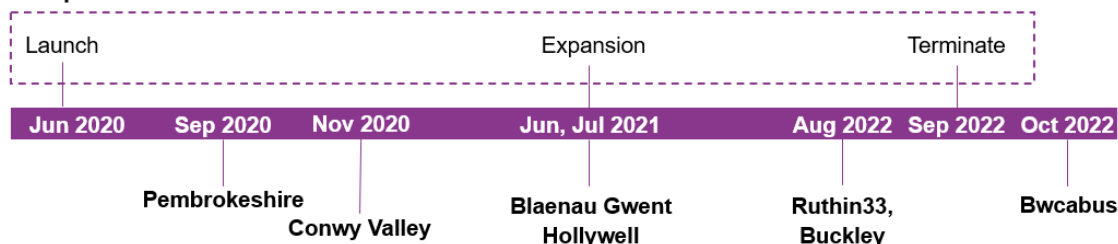
- **Positive:** Better reliability and convenience compared to bus services that require changes; benefit to mobility impaired users.
- **Negative:** Concerns over app usage, especially in rural areas; last minute change of pick-up time, seat availability with increasing demand.

Scheme Development

The schemes were initially funded by TfW. It is expected that local authorities will pay a similar level of contribution to commercial bus routes being replaced by the DRT service.

Fflecsi is led by TfW/local authorities in partnership with local bus operators and a single technology provider, Via. For the first time, bus operators were in direct coordination with local councils across multiple geographics in order to consolidate the network. The service began with a single zone in Newport as a three-month pilot, and soon expanded into a nationwide transport network, as shown in the diagram below. The Fflecsi urban pilot in Newport came to an end in September 2022, of which data gathered was used to enhance the fixed route bus timetable.

Newport



Learnings

- The devolved government has played a vital role in leading region-wide transport network changes by engaging with the LTAs and set examples to follow. This is the type of leadership STBs in England could provide in the future.
- It is essential to consider DRT services as part of wider multi-modal public transport network.
- Developing DRT schemes as part of the public transport mix helps to deliver a more comprehensive public transport service for local communities, particularly in rural areas.
- There are challenges to integrating different services so it is important to ensure the comparable services are not undermined.
- Using a single technology provider allows for short turnaround of scheme expansion if required.
- There are benefits to partnering with other parties such as the ambulance services and community transport providers.
- Data gathered throughout the operation is beneficial not only for the scheme evaluation but also for future bus strategy and network enhancement.
- Evaluating customer feedback and raising awareness of the DRT service among potential users by engaging with communities are critical to increase demand.

