

# DRT Electric Minibus Evidence Base



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# Executive summary

Following the approved budget amendment to ringfence funding of £560,000 capital and £260,000 revenue from the Growth and Efficiency Fund within the 2022/23 budget for rural transport provision utilising electric buses, the following research has been carried out to explore a range of different options as to what this provision might look like, the deliverability of these options, and some other alternatives that may be worth consideration. These different options have been summarised in the table below.

Scheme option	Description and examples	Things to consider regarding deliverability	Indicative costs
1. A demand responsive service, without an app	<p>Tender to local transport operator to deliver a DRT pilot in an area advised by the District Council.</p> <p>Examples include the Wee Bus scheme and Coalfield Community Transport.</p>	<ul style="list-style-type: none"> <li>Provides a more valuable and tailored approach to passenger need/desire</li> <li>More complex tendering/procurement process</li> <li>Long process to set up</li> <li>May not attract as wider demographic without an app.</li> <li>Size of operational area- maximum area for 1 vehicle was 34 sq. miles.</li> <li>Need to consider range of EV and whether it has rapid charging capabilities.</li> </ul>	£500k + £150k revenue costs
2. A demand responsive service, with an app as well as telephone bookings.	<p>Tender to local transport operator to deliver a DRT pilot in an area advised by the District Council.</p> <p>Additionally tender for an app provider to provide the software which will allow bookings and route designs for drivers as well as live bus tracker for customers.</p> <p>Examples include Digigo, Fflesci, Katch Bus and East Leeds Flexibus.</p>	<ul style="list-style-type: none"> <li>An app appeals to a wider demographic of younger users, students and commuters.</li> <li>Significant additional costs attached to procuring an app and app provider.</li> <li>Lack of mobile data coverage in parts of the district may affect user accessibility. Having telephone booking as well would counteract this.</li> <li>An app may allow better user experience and more likely to refer other people to use the service.</li> <li>Katch example- 44% total bookings come from their app.</li> <li>Some pilots started without an app but are now setting up an app (Wee Bus).</li> </ul>	£500k + £260k revenue costs
3. SCC to contract delivery partner (either commercial operator, or as above) to deliver like-for-like replacements for lost services/missing links	<p>Allocate funds to SCC, with a remit to contract an operator(s) to deliver a set and timetabled route under relevant permit/contract. Ask SCC to base route based on currently cut services.</p> <p>OR</p> <p>Choose one of the models above, but ask SCC to deliver links</p>	<ul style="list-style-type: none"> <li>Previous routes proved not to be financially viable. Simply reducing the size of vehicle will not solve this, especially with added costs of EV infrastructure.</li> <li>The District Council will not need to lead on contracts or legal definitions/issues.</li> </ul>	Any amount of funding could be inputted, but SCC could advise on output
4. A flexible scheduled service	<p>Allocate funds to an operator (community transport provider) to deliver a service under a section 22 community bus</p>	<ul style="list-style-type: none"> <li>Provides a service that can fill gaps but can also react to specific needs when required.</li> <li>The District Council will need to undertake contracts that are not usually given out at</li> </ul>	£190k-£250k (depending

	service. This would run to a timetabled route, but with slight flexibility on the ground to make diversions for those in need. Community transport providers include Connecting Communities East Anglia and Borderhoppa.	this tier of authority- lots of legal support needed.	on whether vehicles leased or purchased)
5. Electric Car Club	District Council set up and manage an electric car club by procuring EV cars and setting up dedicated charge points. Customers pay an annual membership fee and then pay an hourly fee to use the vehicle by using a website or app. Customers return the vehicle to its charging point after use. Examples include the Teviot Electric Car Club and the South Ayrshire Community Car Club.	<ul style="list-style-type: none"> <li>• Long process to set up.</li> <li>• Mid Suffolk car ownership is very high, so may not attract as many customers as other car club pilots.</li> <li>• Scheme would need an app also- high additional cost element. Can partner with Hiyacar app which is already set up.</li> <li>• This doesn't help people with mobility issues or people that cannot drive.</li> <li>• Potentially cheaper in other elements- buying/leasing cars not minibuses, and no driver costs.</li> </ul>	£100k + £260k revenue costs
6. Bus Vouchers	<p>Incentivise people to use public transport by giving funds to operators to enable us to give out bus vouchers for free travel.</p> <p>This could improve the financial positions of current bus operators in Mid Suffolk to preserve services, and maybe allow some of the previously cut/at risk services to run.</p>	<ul style="list-style-type: none"> <li>• This would help more in the short term- increase in public transport usage but journeys may drop after scheme ends.</li> <li>• Less sustainable and less futureproof (2030 petrol vehicle ban).</li> <li>• Connecting Communities passenger subsidy in Mid Suffolk was £135,280 in 2020-21 and resulted in 1894 passengers. So, each extra passenger had a £71 subsidy. (COVID impact). 2019-2020 Mid Suffolk subsidy was £150,480 with 14,362 passengers (each passenger subsidy= £10).</li> </ul>	£150k subsidy + £150k revenue
7. Electric Minibuses for use of community groups/events	<p>Council procuring electric minibuses that can be booked by community groups/specific use events.</p> <p>Example of this is the Rural Development Trust.</p>	<ul style="list-style-type: none"> <li>• This would help to support community groups specifically.</li> <li>• This process would be simpler as there's no app procurement, therefore reducing costs.</li> <li>• If minibuses procured are electric, there's still high cost of vehicle and charge points.</li> <li>• May be less impactful as it's only for people apart of a community group- would reach a smaller demographic.</li> </ul>	£500k subsidy + £150k revenue

Further detail on the above options, from case study evidence, follows below.

In addition, this study explores a range potential EV vehicles and EV charging solutions that could support some of the above options, which have been detailed in the evidence base (section 3, 4, and 5). This report also touches on some initial research around which areas might benefit from funded provision, including an audit of current bus and community services to narrow down areas currently lacking provision (section 6).

## Options 1 & 2: DRT Services

With regards to electric minibus provision specifically (options 3 & 4 above), several case studies for similar electric minibus DRT schemes have been summarised in the second table, and more detail can be found in the evidence base section of this report (section 2, pages 6-13).

Scheme	Launch/pilot	Funding	Operational area	Vehicle used	Fare prices	Booking	Outcome
Fflesci	14/3/2022 pilot	To set up a zone it costs £5000 for app software and £400 per month per vehicle.	Whole scheme in Wales covers 460 sq. miles.	1 * Mellor Orion E 16-seater.	Introductory fares £1.50 for single journey from villages into the town. £1 for all journeys within the town (Ruthin)	Can book 1 hour ahead using Fflesci App or on Fflesci Wales website or by telephone	Denbigh have had growth of 38% and a met demand of 90.6%. They now do 1380 journeys per month. Expanding zones too.
Digigo	April 2022 pilot for 2-year trial period.	£2.6 million rural mobility funding.	Central Essex area 70 sq. miles and Braintree area 45 sq. miles.	6 * SAIC LDV 12-seater	0-2miles= £2.50 2-4 miles= £4.00 4-6 miles= £6.00 7+miles= £8.00	Book via Travel Essex App. Used provider Moovit to create app.	N/A
Wee Bus	February 2022 after 8-month pilot trial.	Funded by HITRANS, Stagecoach, Highland Council- have secured funding until 2026.	Ferintosh, Culbokie and Mulbule areas covering 34 sq. miles.	1 * Nissan E NV200 6-seater	Currently 'pay what you can' with recommended £2 cash for return fare.	Telephone bookings 1 day in advance. App is also in development.	Averaging 45 single journey equivalents per month (last 12 months). £90 average monthly revenue.
East Leeds Flexibus	September 2021 pilot	£2.234 million- Leeds Public Transport Investment Programme.	East Leeds 7 sq. miles.	7 * 16-seater Mellor Orion E buses	Flat fare of £2 contactless payment. Under 19s pay £1.20.	Booking via Flexibus app book at least 1 hour before and picks customers 200m of their house.	N/A
Katch Bus	Pilot launched May 2021- being trialled until December 2022.	Totals spend was £173,874.	Operates in 2 zones and covers total area of 20 sq. miles.	2 * Renault ZE 8-seater electric minibuses.	Travel to 1 zone= £7 return fare and £4 single adult price. Travel in both zones £10 return and £6 single adult.	Booking via Katch app or by telephone.	Total 5470 total passengers. £17,535.50 revenue and £50,214 operator subsidy.
Coalfield Community Transport	Pilot launched September 2021.	£160k from Green Economy Fund.	No specific operational area.	1 * 16-seater Mellor Orion E	Membership fee is £5 a year for disabled or elderly. Travel is free as it's charity run.	Booking via yellow buses website or by telephone.	Service has 350 members and transports around 16 people per day.

# Case Studies

## Fflesci Scheme:

- **Launch date:** Fflesci is a Demand Responsive Transport service run by Transport for Wales and runs in 12 locations across Wales. The scheme was first piloted in 2020. Denbigh's electric DRT was first launched on the 14th of March 2022.
- **Locations:** There are 12 zones including in Newport, Pembrokeshire and Denbighshire, covering urban as well as very rural areas like Denbigh. The total operational area covered in Wales is 460 square miles. In rural Denbigh the bus serves several villages and hamlets in the surrounding area, which have previously never had a bus service.
- **Technology/software:**
  - The Fflesci app is smart technology that provides 'the back office' for the whole service.
  - The app and website are used by passengers to book rides. Additionally, customers can message the driver, contact customer services and submit complaints, and the driver uses the app to monitor bookings by 'ticking off' when someone has got onto the bus.
  - The back office is used to set up new geographical zones, place virtual bus stops in the zones, plan routes, and organise schedules – for example bus operators can block out shifts in their day to run fixed routes such as the school run. This enables maximum use of buses within the Fflesci scheme, as some bus operators do a school run in the morning, then deliver DRT afterwards.
  - The back office can also create analytics including met demand (how many people tried to book a vehicle versus the number of successful journeys), cancelled rides, no shows, and the number of successful journeys.
  - The service also allows block booking in rural areas, for people that use it for the school run, or are travelling to the same destination.
  - Virtual bus stops are added in locations where passengers are likely to want rides from (inputted by officers). When a customer books a bus, they get assigned to the nearest virtual bus stop for pick up. If there are no virtual bus stops near them, they can contact customer services to set one up.





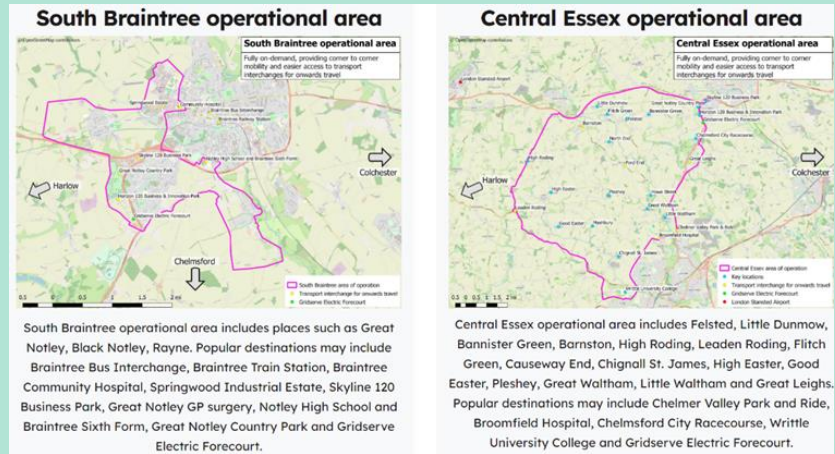
- To avoid replicating services, if someone tries to book a bus on the Fflecsi app when there is a normal scheduled bus coming that way, the app will tell the customer to use that bus instead. This means that fixed bus routes are not impacted by the DRT service.
- The app was set up by Via/Ride With Via, who have also set up DRT services in Milton Keynes and Tees Valley, which have proved successful to date. This company could replicate their software to use in Mid Suffolk.
- **Booking:** Passengers can book 1 hour ahead by using the Fflecsi app, or on the [fflecsi.wales](http://fflecsi.wales) website, or by calling their dedicated call centre. The app gives real-time information and can let customers know of any changes to pick up times. Booking times depend on the size and population density of the zone; as time to get to one side of a zone to the other increases, the time in advance to book also increases. Customers get picked up as close to their location as safely possible, so there are no physical bus stops for this service. However, all physical bus stops are placed as virtual bus stops in the back office, so people can walk to the nearest bus stop to get picked up if they wish.
- **Fare price:** Introductory fares were pegged at £1.50 for a single journey from the villages into Ruthin and £1 for journeys within Ruthin. Customers pay once they have boarded the bus, and in Denbighshire, on average, the service only experiences 1 no-show a day out of 80 passengers.
- **Vehicle:** In Denbighshire, Wales's first zero emission 100% electric 16 seat minibus- Mellor Orion E minibus is used. In the wider scheme across Wales, there are 26 vehicles in total, most of them diesel fuelled (as of 2021).
- **Funding:** The scheme is run by Denbighshire County Council and Transport for Wales. To set up a new zone/location it costs Transport for Wales £5,000 for the software technology, which is a one-off cost. The ongoing costs are £400 a month per vehicle. In a new zone the County Council for that area uses their own fleet and drivers.
- **Outcome:** the average wait time for a vehicle is 15 minutes. Across Wales the programme delivers around 5,000 rides per week (January 2021 survey). In Denbighshire specifically, from June 2021 to June 2022 they experienced a growth of 38%, as they increased from 1000 journeys per month to 1380. In Denbighshire the scheme has met a demand of 90.6%. The Denbighshire zone has broken even on costs and revenue and have made savings on services that the scheme replaced. The scheme is so successful that new zones are being created currently.
- **Issues:** this service was put in place to replace old services that had been/were to be cut, and there was some backlash as some people simply did not respond well to the change. Some older demographics



struggled to use the app, so were encouraged to use the website or call the dedicated phone call centre to book.

## DigiGo Scheme:

- **Launch date:** April 2022 for 2-year trial period.
- **Location:** Operates within 2 rural/suburban areas of Essex: South Braintree and Central Essex. Central Essex operational area covers 70 square miles and the Braintree area covers around 45 square miles.
- **Booking:** Uses the Travel Essex app which allows journeys to be booked and paid for and has real time arrival information and vehicle tracking. This allows choice, flexibility and will appeal to a wider demographic, but may be difficult for digitally isolated people to use.
- App was created in partnership with Mobility as a Service (Maas) provider Moovit. Moovit TimePro allows bus companies to give accurate arrival times- this reduces customer complaints. Moovit currently works in partnership with First Buses.
- Moovit creates co-branded apps with White Label Application. Moovit is highly accessible as there is additional support for people with hand motor and visual impairments.
- **Fare prices:** affordable, young person discounts and concessions. Prices shown in adjacent figure.
- **Operation hours:** Service operates from 7:00-22:00 hours- 7 days a week: longest operating hours for a scheme like this.
- **Vehicle:** Uses 6 SAIC LDV 12-seater electric minibuses with a range of 120miles.
- **Chargers:** Essex has good EV infrastructure, and the scheme uses the Braintree Gridserve Electric Forecourt to charge their fleet.
- Essex County Council intends to implement a 100% electric DRT service across the county within the next 5 years.



### Pricing Structure

DigiGo fares offer three ticket options - Adult, Young person and Concession.

The table below outlines single fares, per person.

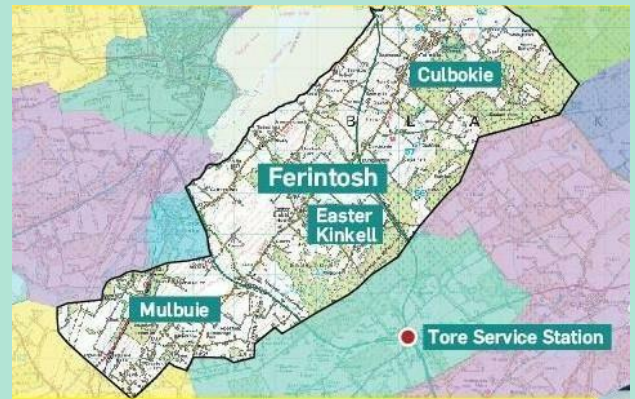
Distance	Adult	Young person	Concession*
0 to 2 miles	£2.50	£1.87	Free
2 to 4 miles	£4.00	£3.00	Free
4 to 6 miles	£6.00	£4.50	Free
7+ miles	£8.00	£6.00	Free



- **Funding:** Essex Council had £2.6million of rural mobility funding to get this pilot up and running, but did everything (aside from the procurement of an app) in-house.

## Wee Bus Scheme:

- **Launch date:** launched in February 2022 after an 8-month pilot scheme.
- **Location:** Scottish DRT electric minibus community transport scheme in the Black Isle area in the Highlands and the operational area covers 34 square miles.
- **Booking:** telephone bookings 1 day in advance, and an app is in development as HITRANS see this as making DRT more efficient.



- **Fare prices:** The trail run is currently 'pay what you can' with a recommended £2 cash for return fare. No payment in advance and they have experienced zero "no shows", but some have cancelled and rescheduled to another day.
- **Vehicle:** The scheme uses an electric 6 seat minibus. Nissan E NV 200 adapted for wheelchair access, which has been purchased.



- The vehicle was bought by the Highland Council who also pay for the running costs - this is cost effecting for the Council, as the alternative was to pay Stagecoach a subsidy to run an underused service.

- **Chargers:** upcoming installation of a local charger 22kWh AC for this vehicle to utilise.
- **Funding:** The project is a partnership between Ferintosh Community Council (supported by the Culbokie Community Trust), HITRANS, Stagecoach, The Highland Council, CSI Ross-shire and Bannermans Transport and they have secured funding until 2026. Now costs the Highland Council £3,500 a month for lease of the vehicle, administration and management costs and operational costs.

- The bus is run by paid drivers during the weekday daytimes, and volunteer drivers run the service at the weekends and evenings.

- **Outcome:** 428 passengers in 407 journeys from July 2021-May 2022. £856 estimated revenue. The service replaced part of an



existing Highland Council contract service operated by Stagecoach, and initially achieved a savings of ca£45k/annum. With current inflation and true costs, the project represents a ca£35k/annum savings to the Council.

## East Leeds Flexibus:

- **Funding:** Scheme total cost= £2.234 million and this project is a part of the Leeds Public Transport Investment Programme (LPTIP) (Connecting Leeds).
- **Launch date:** 27<sup>th</sup> September 2021
- **Scheme description:** the bus drivers have been trained on digital technology that is used to devise route planning based on customer bookings.
- **Booking:** scheme is accessed through the Flexibus smart phone app, which uses algorithms to match vehicles with capacity, to users. The scheme will link communities with employment areas, complement existing public transport, and link to current transport hubs. Customers must book at least 1 hour before travel and the bus picks them up at a safe place within 200m of their location. By using the map icon on the booking, customers can get directions to a relevant pick-up point.
- **Operational hours:** The service operates from 7am to 7pm, Monday to Saturday.
- **Fare price:** there is a flat fare of £2 and payment is contactless. West Yorkshire MCard products are also valid on the Flexibus. Under 19s pay £1.20.
- **Vehicle:** 7 Mellor Orion E-buses are used in the scheme.
- **Operational area:** covers 7 square miles.

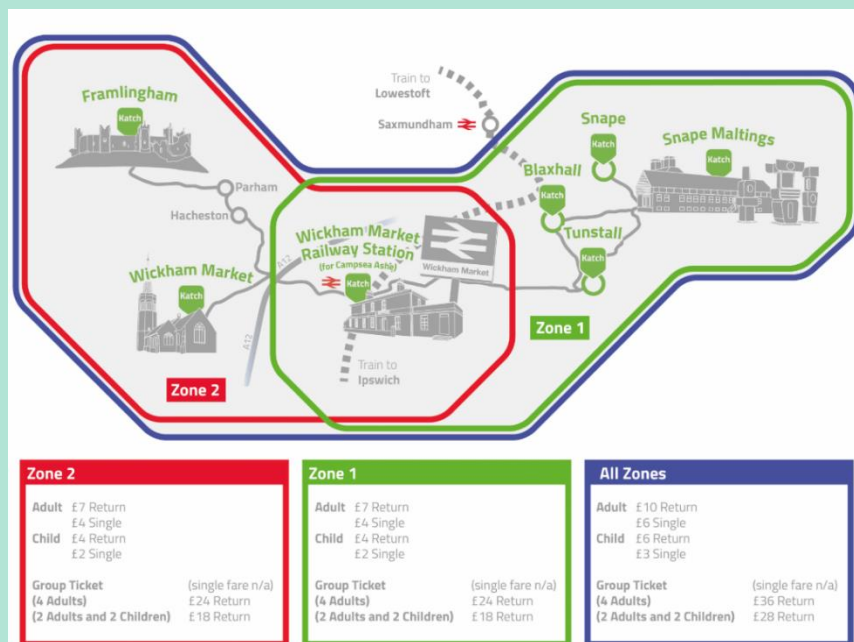
## Katch Bus Scheme:

- Katch Bus is an electric vehicle taxi bus service operating in East Suffolk.
- **Vehicle:** 2 x Renault ZE 8-seater electric minibuses.
- **Location:** The bus operates in 2 zones: Zone 1 connects Wickham Market with Snape; Zone 2 connects Framlingham with Wickham Market Station. It is a circular route connecting Framlingham, Wickham Market, Wickham Market Railway Station, Tunstall, Snape Maltings, Snape and Blaxhall. Operational area covers 20 square miles.
- **Launch date:** It's a pilot scheme that launched by Suffolk County Council in May 2021 and is being trialled until December 2022.
- **Funding:** The scheme is in partnership with CarSmart, Suffolk County Lines, East Suffolk Council, Framlingham Town Council and The East Suffolk Lines.



A Service Level Agreement between Suffolk County Council and CarSmart was used to enable the pilot scheme.

- EV lease fees per vehicle= £14,637 (x2)
  - Vehicle insurance= £4,600
  - Marketing to date= £20k
  - Taxi license and driver license fees= £3k
  - EV maintenance (safety inspections and ongoing costs) = £1,100 per vehicle
  - Charging infrastructure installation= £13k (one off cost)
  - App and phone set up= £5k (one off cost)- funded by CarSmart
  - Fare subsidies= £36k
  - ESCP supported= £43k towards fares subsidies and £10k towards marketing
  - East Suffolk Community Rail Partnership supported £7,800 towards charging infrastructure
- **Booking:** Passengers can either book the bus via the Katch App or by telephone, making it accessible for people with or without smartphones. The app is advantageous for real time information because it tracks the bus journey and shows departure and arrival times. 44% of total bookings came from app.
  - **Fare prices:** To travel to one zone, Adult Return tickets cost £7, Adult single tickets cost £4. When travelling in both zones ticket prices are £10 for an Adult Return and £6 for a single ticket.
  - **Operation hours:** The Katch bus operates from 7:30am to 8pm Monday to Friday and 10am to 8pm on Saturdays.
  - **Chargers:** electric charging points have been installed at Wickham Market station in Campsea Ash where buses can recharge.
  - **Outcome:** To date there have been approx. 3536 single journeys and 1934 return journeys. 27% (1478) journeys have been multioccupancy. If more than 4 adults take a Katch bus, the fares exceed the cost. £17,535.50 revenue so far and received £50,214 operator subsidy.
  - **Limitations:** Katch operates around 8 fixed bus stops - which may isolate hamlets along the route that have no bus stops.
  - Covid, and its associated loss in public confidence in



the using public transport. resulted in low passenger numbers to begin, but the scheme is now to recovering from this.

## Coalfield Community Transport:

- **Location:** provides a community transport service in East Ayrshire south-west Scotland.
- **Launch date:** a pilot electric minibus scheme which launched in September 2021.
- **Vehicle:** Purchased an electric minibus for passengers in East Ayrshire, which has low floor accessibility. 1 x 16-seater Mellor Orion E minibus. There have been significant issues with the vehicle due to problems with the software impacting rapid charging capabilities. Mellor promised to fix this free of charge - the vehicle still has issues and has been off the road for months. After 2000 miles the gear box also broke. It is thought that the vehicle engine is too powerful for the vehicle, and people have had to push the vehicle over bumps. The bus has also taken impact from rural bends and road bumps. Community transport in Glasgow runs 10 Mellor Orion E buses and have had no issues – so all issues with the East Ayrshire vehicle may be due to the rapid charging model being poor.
- **Booking:** made via Yellow Buses website or by telephone. To use the service residents must apply for a membership which has certain requirements: over 60, disabled or claiming benefits, for example. Membership costs £5 a year and after this any travel is free and funded for by East Ayrshire Council. This scheme is run by a charity.
- **Funding:** Cumnock awarded £160,000 from Green Economy Fund. Purchased the bus for £175,000, installed a rapid charger for £30,000 and maintenance costs and issues have cost around £10,000.
- **Outcome:** service has 350 members and transports around 16 people per day.
- Additionally, in the area, The Green Economy Fund has enabled the purchase of over 40 electric vehicles, supported by SP Energy Network.

## Conclusions from Case Study Evidence:

- Features of a successful DRT pilot include:
  - A service that complements existing public transport networks- so linking communities to transport hubs (e.g., towns with railway stations).
  - **Operational hours** that are long – e.g., running Monday to Saturday 7am-7pm, as this attracts more customers. Having full time paid drivers during weekdays and volunteers make up the weekends and evenings appears to be a successful operating model.



- **Operational area:** the operational area can vary depending on how urban/rural the area is. The largest area is the Central Essex operational area for Digigo with 3 12-seater minibuses covering 70 square miles, but this is less rural than Mid Suffolk. Rural areas of Scotland in Ferintosh have 1 6-seater minibus covering 35 square miles. Initially starting with a smaller area then expanding may be the best approach to ensure the service is not overrun.
- **Booking:** having an app is quick and easy for consumers, and allows live tracking of vehicles. However, with patchy data across Mid Suffolk and an elderly demographic, having a telephone line as well would be advisable. Any provision would need to consider the threat of “no shows”. Booking and paying may combat this.
- **Chargers:** most schemes have their own chargers specifically for the minibuses.
- **Fare prices:** need to be affordable to attract customers. Concessions and young person tickets should be considered. It should be considered whether prices should vary depending on length of journey, as this could be more profitable than flat fees.
- Any scheme could negatively impact local taxi companies and taxi drivers’ livelihoods. However, a public transport solution offering alternatives to previously lost bus services may not have such an impact. It is an issue that should be considered and may require further investigation.
- Ongoing financial sustainability of the service needs to be considered, as some of these case studies are run by charities or have ongoing streams of funding to keep them running. So, this scheme should either be priced in a way to break even and cover costs, or ongoing funding streams need to be identified to make it sustainable.
- Consideration, as laid out below, needs to be given as to whether the route operates to bus stops or not:

No bus stops for DRT	Specific bus stops for DRT
<ul style="list-style-type: none"> <li>• From the evidence base the Wee Bus, East Leeds Flexibus, Coalfield Community Transport, Digigo and Fflesci scheme don’t have specific bus stops and arrange the pickup customers at a specific location that they provide.</li> <li>• The East Leeds Flexibus guarantees to pick up passengers at a safe space within 200m of their location. This is good as it allows customers to be picked up from outside their house, so is good for immobile/disabled people.</li> <li>• This is also very convenient for customers as it reduces the travel time going to a bus stop.</li> </ul>	<ul style="list-style-type: none"> <li>• Katch Bus is the only scheme in the evidence base that has specific bus stops that customers get picked up from.</li> <li>• The bus stops have the eye-catching green Katch logo on- making them easy for customers to find and walk to.</li> <li>• The specific bus stops make it easier for bus drivers to plan their routes, rather than going to people’s houses, which may take longer.</li> <li>• But there are issues for disabled or people with mobility issues who may not be able to walk to the bus stop- making it less accessible.</li> </ul>



- It may make routes more complicated- but services like Digigo and East Leeds Flexibus use their app to plan out routes, making it easier for drivers.

- There are still isolated villages and hamlets in the area that have no bus stops- so are technically not covered by the scheme.

## Option 3

### Subsidize current routes:

- Funding could be utilised to subsidise the current bus provision in Mid Suffolk, to allow them to retain at risk services, increase the frequency of existing services, or re-instate previously cut their services.
- This would improve provision in the short term and help with the current issues around mobility and access to nearby towns and services.
- However, long-term issues with bus provision would still exist; as with any non-demand response provision, some services are likely to be underused and therefore not sustainable.
- Continuing to use the diesel buses currently within local fleets, although still reduced the amount of single occupancy car journeys, it is less beneficial to carbon reduction ambitions than implementing provision utilising electric buses and would not increase progress around EV charging infrastructure in Mid Suffolk.
- There is a very local example of Ipswich Borough Council subsidising bus routes when Suffolk County Council was unwilling to support Ipswich routes, linked here: <https://www.ipswich.gov.uk/content/ipswich-borough-council-continues-support-bus-services-despite-soaring-costs>

## Option 4

### Flexible scheduled service:

- Allocate funds to an existing community transport operator/provider, to deliver a service under a section 22 community bus service.
- This would run a timetabled route, but with slight flexibility to make diversions for those in need- this would allow disabled or immobile people to have access to services (hospital appointments etc.)
- Pros:
  - provides a service that can fill in the gaps and can also react to people with specific needs.
  - Would be cheaper than leasing or purchasing our own electric vehicles
  - Without an app, there's lower costs
- Cons:
  - Without rebranding these community transport buses, they wouldn't attract a wider demographic of youth, commuters or students.

- No increase to EV infrastructure- less futureproofing.
- May have conflict with a current procurement process for the rural transport contract (Connecting Communities) which commences in April 2023.

## GoStart Community Transport, Sudbury:

- Community transport operator in Babergh District which has a concept/idea of a slightly different model to traditional flexible scheduled service, whereby they would have a membership scheme where members pay a weekly fee and they get unlimited use of the service with no extra cost at the time of travel.
- This idea needs research into whether it is legal/within licensing.
- Good idea as it means service has a constant income and encourages use of the service that people have already paid into.
- The Acton Electric Bus Club- offering services Monday to Friday with optional Saturday
- Pre-booked services 24 hours in advance- not fully on demand as cannot have paid drivers on standby.
- No examples of this currently in the UK but there is something similar in Germany- from 1<sup>st</sup> June to 31<sup>st</sup> August 2022 people can pay £7.60 for monthly travel pass for unlimited use of public transport including buses, U-Bahn, S-Bahn, trams, and local and regional trains. 520,000 tickets have been sold by May 30<sup>th</sup>.

## Option 5

**Community Electric Car Clubs:** the concept is to facilitate a club that people can join as members and use an electric car for any journeys, for example to commute to work or to drive to their nearby town/facilities and serviced, at an hourly rate charge.

**Mid Suffolk Car Ownership:** Mid Suffolk has the lowest population density but the highest car ownership rate in Suffolk. Its' car ownership rate is ranked 11<sup>th</sup> in local authority area in England and Wales according to RAC figures. This is important to consider, as car club schemes are typically implemented in areas with lower car ownership, where there is increased appeal in being able to rent a car hourly. However, if being used to incentivise a switch to EVs, and challenge perceptions around barriers to switching, it could still have an impact in Mid Suffolk, and give people a better sustainable travel option.



## South Ayrshire Community Car Club:

- **Launch date:** 2-year pilot scheme launched in 2018.
- **Aim:** North Ayrshire is an area of multiple social deprivation and low car ownership, so this scheme aims to tackle social isolation by connecting people to the places and facilities they need in a sustainable way.
- **Funding:** £60,000 was used from the Green Economy Fund to help the local community access 2 electric vehicles. In March 2022, SACT received £200,000 from Strathclyde Partnership for Transport to keep the project going.
- **Vehicle:** the club has purchased 2 Nissan Leaf electric vehicles and have a Nissan E-NV200 Y-seater
- **Prices:** there is a membership cost of £30 per year (£15 per year for concessions), then to use the car it costs £2.50 per hour, or £20 for the whole day and 5p per mile. Customers can also 'pay as you go' by paying £4 per hour plus 10p per mile with no membership.
- **Booking:** become a member by filling out a membership form on the website. Book the car using the website.
- **Charging:** Charging the car is free of charge if specific Charge Place Scotland or ROLECev charging points are used.

## Teviot Electric Car Club:

- **Location:** TECC operates from the Scottish Borders town of Hawick and was launched in February 2020.
- **Aim:** in Teviot and Liddesdale areas 15% of residents have no access to a car- so there was a clear need for car transportation.
- **Vehicles:** BMW i3 and a Nissan Leaf
- **Funding:** TECC is a fully mutual Co-operative Society registered with the Financial Conduct Authority (FCA) in April 2019. A project manager was engaged to set up the club and this post was funded for by the SPEN Green Economy Fund but since mid-2019 the operation has been run by member volunteers. From 2019- Feb 2020 a Car Club Manager was employed to promote and run the club. This work is now done by volunteers.
- **Booking:** customers can join the club on the website and using any device can book a vehicle by logging into Hiyacar website or app where a car can be reserved. The car is then unlocked using the Hiyacar app or by using a RFID card. After using the car, it's returned to its charging point and plugged in.
- **Prices:** there is no membership cost, so it just costs £3 per hour plus insurance cost or £24 for the whole day plus insurance. But with no **Charging:** the cars are fully charged at the start of the hire, but extra charging must be paid for by the hirer. Customers can use the ChargePlace Scotland card on the car and will get billed afterwards.
- **Challenges:** TECC has installed additional chargepoints, but this was challenging as the site is a car park with no postcode and this made

discussions with the DNO and telecoms operators difficult – this was time consuming.

- **Outcome:** in the first 7 months the cars have been driven 2400 miles and the club has 27 members and 2 people have disposed of their own cars and 2 others have used this car instead of their own for longer journeys.

## Option 6

### Bus vouchers:

- Subsidise more frequent routes where there is a lack of service in Mid Suffolk.
- Previous results from Connecting Communities subsidies:
  - 2019-20: Mid Suffolk received £150,480 resulting in 14,362 passengers (£10 subsidy per passenger)
  - 2020-21: Mid Suffolk received £135,280 resulting in 1894 passengers (£71 subsidy per passenger).
  - These subsidies have been decreasing over time and they were becoming more cost effective up until covid (£13 passenger subsidy in 2016-17 to £10 in 2019-20).
- Incentivise people to travel by public transport by giving out vouchers for free travel- these are subsidised by the grant money.

## Option 7

This research has found a couple of examples where a local authority will have ownership of electric passenger transport vehicles, and utilise them for one-off hire provision, or for community events or groups.

### The Rural Development Trust: Example

- Electrification project to use more electric vehicles in an existing community transport operation.
- Have a wind turbine and solar panels on a garage which has electricity storage unit inside.
- **Vehicle:** Bought a Mercedes EQC electric car, then a Mellor Orion E electric minibus and finally a Mercedes EQV minibus.
- **Chargers:** Have installed a 7kw Zappi charger to charge the vehicles.
- **Funding:** The project is funded by the Green Economy Fund, SP Energy Networks, South Lanarkshire Council and SPT. Funded £1.2 million in total for 6 organisations by SP Energy Networks. £71,881.50 awarded from South Lanarkshire Council.



Mellor Orion E electric minibus

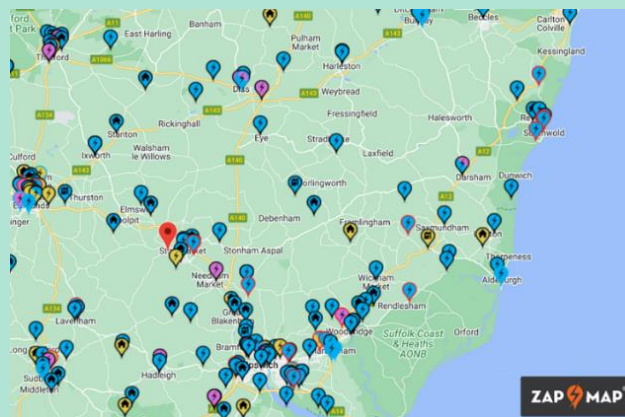
- **Booking:** The RDT buses are available for use by community groups. Need to request quote form on website or by telephone.

## Oxfordshire Comet:

- **Vehicles:** Service that uses vehicles that normally take children to school or adults to day-care centres- the council already owns these vehicles, so only running costs need to be paid for.
- Oxfordshire self-help tool kit
- **Fare prices:** exclusive use for one individual is £8.50 for 5 miles, groups cost minimum £25 an hour and shared travel is cheapest. If customers top up £50, they get £5 free and if they top up £100 they get £10 free- incentives. These prices cover the costs and this scheme does not aim to make a profit.
- **Booking:** register on the website and you get a membership card that costs £3. Customers can buy credit for their accounts to make future journeys. Customers can also top up over the phone. Customers can book their journeys 24 hour in advance for shared travel. If customers share travel then children go free.
- **Sustainability:** less sustainable than electric minibuses as it still burns fossil fuels but does incentivise shared travel which is more sustainable than single occupant car journeys.

## Chargers and EV Infrastructure in Mid Suffolk:

Currently in Mid Suffolk, according to Zap Map, there are a total of 33 chargepoints. However, there are a total of 73 chargepoints in Mid Suffolk and the surrounding towns; Diss, Scole, Bury St Edmunds and Ipswich.



## Rapid versus fast chargers:

3 types of charge points available:

Slow	Fast	Rapid
Rated up to 3kW	Rated from 7kw to 22kw	Rated from 43kw,
Used to charge vehicles overnight	Takes 3-4 hours to fully charge.	Takes 30-60 mins to fully charge.
Takes 8-12 hours	22kw uses 3 phase.	



## Osprey Charging Networks:

- Has offered to install chargers free of charge in Woolpit, Stowmarket, Sudbury and Needham Market
- Issue as to what land the council owns and Osprey want to buy the land off the Council in order install the chargers. Question of how much land.
- Offer for 9 rapid chargers to be built in Mid Suffolk- which is great for EV infrastructure.
- Council fuelcard for the electric minibuses to use at a discounted rate.
- This is an opportunity for the council to get in first and make some revenue off the rapid chargers they would install.

## Char.gy:

- EV manufacturer specialising in on street charging solutions by using existing infrastructure like lampposts and bollards to attach chargers to.
- They have investments of £400 million from the Government and Zouk Capital LLP- so have no funding from fossil fuels.
- Chargers require no app, only a webpage- this makes it quicker and easier for people to plug and go.
- Have an agreement with Octopus Energy- so uses all renewable energy and no nuclear.
- Chargers are all manufactured in the UK thus supporting local employment.
- Potential for a 15-year term Licensing Agreement where the product, maintenance, installation is all funded by Char.gy.
- Provide a revenue stream for the Council.
- Although this project wouldn't be specifically for this minibus scheme- potential for the future network and accessibility for chargers in Mid Suffolk. Can also work with other charger companies to provide a multi-pollinated network.

## EV Driver:

- EV Driver built East Anglia's first EV Network in 2017 and now operates as a consultancy service. Linda Grave, CEO, has 15 years of EV experience.
- Her advice for the minibus scheme was to exploit shared charging units at depots and to search for business partners in the operational area that will have a desire for charge units.
- Council could create public realm sites for charging that allow public charging during the day but have booked slot times specifically for the minibuses to use.
- EV database UK is a helpful website for comparing EV vehicles and can help decide which vehicle is best.

- Creting Rd Depot, IP14 5AT, in Stowmarket and Eye Airfield Industrial Estate are good options to set up depot charging units that the minibuses and other local businesses can use to charge their fleets.
  - Only compatible with rapid-charging function EVs

## Essex Vehicle Chargers:

- EV Charger installation company working across East Anglia.
- Quote started for potential rapid chargers in Stowmarket and Eye, as these towns currently have no rapid charger infrastructure.
- Council owned car park location potentials:
  - Bury Street Car Park, IP14 1HW, 89 spaces
  - Iliffe Way Car Park, IP14 1PN, 90 spaces
  - Buckshorn Lane Car Park, IP23 7AZ, 25 spaces
  - Cross Street Car Park, IP23 7AB, 25 spaces- 2 \* 22kW chargepoints already installed
- Richard Gould has visited all four sites and there are no obvious large power supplies or transformers nearby. He suggested the priority to ask UK Powernet to scope each site and provide indicative costings for providing a 100/200kW supply to each location.
- Essex Vehicle Chargers do also provide consultancy and expertise in scoping EV solutions.

## Potential EV vehicles:

### Nissan E-NV200 Combi:

- 40kWh battery
- Can seat up to 7 people
- Has rapid charger capability: CHAdeMO rapid chargers, charges from 20%-80% in 40-60 minutes, 7.5hours at wall box or 21.5 hours domestic plug.
- Range: combined= 124 miles, city cycle= 187 miles.
- Eco mode: to limit engine output and save battery capacity,
- Comprehensive guarantee: 5-year vehicle warranty (or 60,000 miles) and 8-year battery warranty (or 100,000 miles).
- No longer available- new model details coming out in 6 weeks



### Mercedes EQV Minibus:

- 90kWh battery
- Range= 213 miles

- DC charging time is 45 minutes
- Starting purchase price £78,850

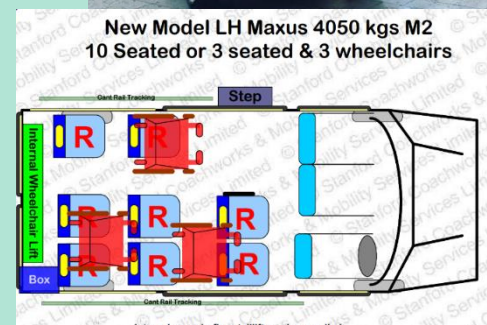
### Mellor Orion E Electric minibus:

- the first low floor electric minibus- specifically designed for demand responsive services
- 2017 Orion E had great success and engineers took customer feedback on board to enhance the 2019 model
- Single step entry and ultra-low flat floor= very accessible
- Extensive seating configuration options= customisation
- Fast charging= 4.25 hour charging system or there's an option DC fast charging system (compatible with rapid chargers).
- Technologically advanced drive train with low maintenance costs and widely available parts,
- Range= 100 miles
- Best in class floor height allowing easy wheelchair access via double rear doors and folding ramp, or fold out ramp to front entrance
- Battery heating technology to ensure optimal charging and discharging conditions are met in extreme conditions
- Offering flexible configuration options with rear doors or a solid back, fixed or removable seats plus a range of additional options,
- No longer in production. Sigma 7 bus as replacement but cost £230,000 for 1 bus. Sigma 7 is wheelchair accessible so no conversions needed.
- Vehicle used by the Fflesci, East Leeds Flexibus, Coalfield Community Transport, and the Rural Development Trust. Some reports of this vehicle being poor quality and difficult to fix.



### LDV V80 Minibus: Maxus eDELIVER 9 LH 150kW 72kWh 22

- 56kW battery
- 30kW DC (rapid charge) CCS
- Can fast charge to 80% in 1.5 hours
- MiniB Wheelchair Variant – good for accessibility
- 10 seats plus wheelchair access- 3 seats and 3 wheelchairs
- Chassis cost £56,925 plus VAT, conversions cost £19,108 plus VAT
- Total cost 1 vehicle inc. VAT is £91,239



- DC fast charging capabilities as standard
- 8 years/100,000-mile battery warranty
- Features: Blind spot warning, Cruise Control, Parking sensors, Parking camera, Intelligent anti-theft system, Keyless entry and start, Lane change assist, Driver, passenger and curtain airbags in dash aircon. Factory fitted electric step to

	Maintenance included	Length of contract (months)	Yearly payment cost	Total cost
• n/s door, Finished in White Paint.	Maintenance	24	£30,275.51	£60,551.02
	Non maintenance	24	£30,440.33	£60,880.66
• WLTP city Miles / (kms) 179 (288)	Maintenance	36	£21,940.54	£65,821.62
	Non maintenance	36	£21,858.52	£65,575.56
• WLTP Combined Miles / (kms) 146 (235)	Maintenance	48	£17,893.76	£71,575.04
	Non maintenance	48	£17,729.92	£70,919.68

• Contract hire quotes from Alphabet shown in table right.

## Citroen e-Berlingo XL 50 kWh

- 5 seats with 1 wheelchair access- 7 seats total as foldable ones in back
- Battery capacity= 50kWh, useable battery= 45kWh.
- Total power= 100kW
- Charge power AC 7.4kW, charge time=7h15m from 0-100%
- Charge power DC/rapid= 101kW, charge time= 26mins from 10%-80%.
- 135-mile range average, city range is 185 miles and min range is 85 miles (highway).
- Real range estimation:
  - City cold weather= 130 miles, mild weather= 185miles.
  - Combined cold weather= 105 miles, mild weather= 135 miles.
- In production but next available February 2023.
- Purchase price starting from £31,995
- Contract hire prices (excl. VAT):



Maintenance/non-Maintenance	Length of Contract	Upfront payment	Monthly Payment	Total cost
Maintenance	48	£ 3,153.72	£ 525.62	£ 27,857.86
Non	36	£ 3,251.58	£ 541.93	£ 22,219.13
Non	24	£ 3,826.32	£ 637.72	£ 18,493.88
Non	48	£ 2,884.98	£ 480.83	£ 25,483.99
Maintenance	36	£ 3,464.88	£ 577.48	£ 23,676.68
Maintenance	24	£ 3,979.02	£ 663.17	£ 19,231.93

## Fiat E-Ducato 42 LH2 79kwh

- Battery 47 to 79 kWh
- Charger types:
  - AC Charge 7kW, 11kw, 22kw
  - DC Charge 50kw
- Std LH2 E-Ducato 35 LH2 Van 79kWh MY20:
  - 168 combined miles range and 221-mile city range
- 9-seater, wheelchair access
- No contract hire available
- Quote for E-Ducato Van 42 XLH3 79kWh Std MY20 505HA17= £67,764.55 excluding VAT, that's including a £5,000 govt. grant discount. This is the price for the fully converted vehicle with 50kW DC rapid charger and mode 2 domestic charging cable. Quote provided by Guest Trucks Thetford.
- Minibus Options are a conversions company specialising in the supply of wheelchair accessible minibuses since 1986. The body work for this conversion will cost £19,492 excluding VAT.



## Renault Master ZE Fully Electric Minibus

- Minibus options quote request sent
- 33kw battery
- 75 miles actual driving range
- 57kW power unit gives 225Mn of torque
- Charges in 6 hours with a 32 A/7 kw wall box
- No rapid charging capabilities.

## Vauxhall Vivaro-e Lifelong Combi 100kW

- Vivaro-e Life Model Year 2022B
- 50kWh battery capacity- useable battery= 45kWh
- Total power= 100kW
- Vivaro-e Life comes fitted with a 7.4kW on-board charger and mode 3 cable. An 11kW on-board charger is available as an extra cost option.
- WLTP range combined is 129-141 miles
- WLTP range city is 182-215 miles
- Real range estimation:
  - City cold weather 120 miles, mild weather= 165 miles
  - Combined cold weather 95 miles, mild weather= 120 miles
- Battery warranty is 8 years/100,000 miles/70% capacity
- Charge time for 11kW AC charger is 5 hours, 7kw is 7.5 hours and DC current 100kw rapid charger CCS takes 30mins to charge from 0-80%.
- Prices starting from £31,995 – 9-seater Long Combi





- Needs customisation for wheelchair access- can organise wheelchair access

### Mercedes Vito eVito Tourer L3 Pro 150kW

- Combined charging system: standard 11kw charger AC from 0-100% in 10 hours and DC charging from 10%-80% in 80 minutes.
- Battery capacity= 100kWh, useable battery= 90kWh
- Total power 150kW
- There's an optionally available DC charging power of up to 80kW<sup>2</sup> (60kW battery) or 110kW (90kW high voltage battery) can be charged from 10-80% in 40 minutes.
- Seats up to 9 people- extra-long eVito Tourer with 3-3-3 seating in 3 rows.
- Seats can be rearranged to have wheelchair access but customisations will be needed.
- 8 year/160,000km battery guarantee
- 217-221 miles WLTP combined range
- Real range estimation:
  - City cold weather= 205 miles, mild weather= 275 miles
  - Combined cold weather= 165 miles, mild weather= 210 miles
- Prices starting from, brand new= £63,954 inc. VAT.



### Lease vs purchasing EV vehicles:

	Advantages	Disadvantages
Purchase	<ul style="list-style-type: none"> <li>• Better choice of vehicles</li> <li>• Asset would have value if the pilot was unsuccessful</li> <li>• The total cost of purchasing is likely to be lower than leasing,</li> <li>• There are no limitations on mileage, usage or customisation of the vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing maintenance costs,</li> <li>• Early depreciation of asset,</li> <li>• If pilot is unsuccessful, vehicle would remain council ownership/need to be sold</li> <li>• Expensive to upgrade vehicle if technology changes/ market matures</li> <li>• Large upfront cost</li> <li>• More internal resources needed to manage the vehicles,</li> <li>• May need to implement preventative maintenance programs to ensure vehicles are safe and costs are minimised,</li> </ul>
Lease	<ul style="list-style-type: none"> <li>• Ability to move with market maturity and technology changes,</li> <li>• Maintenance costs written into the contract</li> <li>• Maybe more flexibility around choice/availability of vehicles,</li> <li>• Full-service leases include maintenance, repair, accident management, insurance and registration,</li> <li>• No large down payment required,</li> </ul>	<ul style="list-style-type: none"> <li>• Higher revenue cost set against our capital funding,</li> <li>• More transactional cost if pilot</li> <li>• Council won't own the vehicle and build equity,</li> <li>• Leases may limit our options with the modifications required e.g., Wheelchair access,</li> <li>• If we exceed mileage limits or excessive wear and tear we will be charged penalties,</li> <li>• If lease is cancelled due to unsuccessful pilot there is normally a penalty to recover the</li> </ul>

- Every 3-5 years you can upgrade to the most current vehicle

outstanding finance

## Identifying the locations of need

### Existing/current public bus provision:

- An audit of public transport routes has been undertaken. All the current bus services (minus school routes) are listed on the table on page 26. The routes highlighted in green are those that have good frequency

### Current community Transport Operators:

There are two community transport operators currently providing services within Mid Suffolk:

### Connecting Communities East Anglia:

- A part of the Connecting Communities service run by SCC and Suffolk OnBoard
- Covers Mid Suffolk and Ipswich
- Currently based in Red Gables in Stowmarket.
- The transport service runs 6 days a week from 07:00 to 19:00
- This service needs to be booked the sooner the better.
- The fleet has 2 16-seater minibuses.



### Borderhoppa:

- Dial-a-ride service: can book a minimum of 24 hours in advance and up to 5 working days before travelling- so this is a more appealing and flexible service.
- This service has 8 16-seater minibuses, so has a much larger capacity.
- This service is mainly based in Norfolk and transports people from Mid Suffolk parishes into Diss and less people travel into Eye – so doesn't economically support Mid Suffolk.



BUS NUMBER	BUS ROUTE	OPERATOR	FREQUENCY	JOURNEY TIME	OUT	RETURN JOURNEY TIME	SERVICE DAYS
1	Framlingham - Monk Soham - Worlingworth - Southolt	High Suffolk Community Transport	Once weekly	09:31		12:05	Tuesday
2	Southolt - Kenton - Westthorpe - Bury St Edmunds	High Suffolk Community Transport	Once a month	09:31		14:30	Wednesday
3	Redlingfield - Worlingworth - Debenham - Stowmarket	High Suffolk Community Transport	Once weekly	09:31		13:10	Thursday
4	Bedfield - Worlingworth - Redlingfield - Diss	High Suffolk Community Transport	Once weekly	09:31		13:15	Friday
5.8	Southolt - Bedfield - Eye - Norwich	High Suffolk Community Transport	Twice a month	09:31		14:45	Wednesday and Saturdays
6	Bedingfield - Stowupland - Bury St Edmunds	High Suffolk Community Transport	Once a month	09:31		14:45	Saturday
7	Bedingfield - Ipswich	High Suffolk Community Transport	Once a month	09:31		14:30	Wednesday and Saturdays
9	Kenton - Worlingworth - Dennington - Lowestoft	High Suffolk Community Transport	Once a month (in summer)	09:31		15:00	Monday
88	Ipswich - Needham Market - Stowmarket	First Buses in Norfolk and Suffolk	23 times per day (weekday), 19 times per day (sat)	6:35-17:45 (weekday), 7:45-17:45 (sat)	6:33-17:37 (weekday), 7:33-17:32 (sat)		Monday-Saturday
110, 112, 113, 114	Diss - Eye - Ipswich	Simonds	8 times a day (from Diss, weekdays) 22 times a day (from Eye weekdays), 6 times a day (from Diss Saturday), 12 times a day (from Eye Saturday)	6:07-17:55 (weekday) 6:50-16:30 (Saturday)	7:45-18:40 (weekday) 8:20-18:10 (Saturday)		Monday-Saturday
116	Ipswich - Coddenham - Debenham	First Buses in Norfolk and Suffolk	6 times a day (weekday), 5 times a day (Saturday)	8:35-17:15 (mon-sat)	7:05-15:28 (mon-sat)		Monday-Saturday
304, 337, 338	Bury St Edmunds - Stanton - Diss/Garboldisham	Simonds	14 times a day (From Bury, weekday), once a day (from Rickingham to Diss, weekday), twice a day (from Shepards Grove to diss, Saturday), 8 times a day (from Bury, satuday)	7:50-18:45 (weekday), 8:12-17:45 (Saturday)	6:20-17:45 (weekday), 7:00-16:16 (Saturday)		Monday-Saturday
320	Bury St Edmunds - Norton - Bacton - Eye	Fareline Bus & Coach Services	once a week	13:25		09:30	Wednesday
384/385	Stowmarket - Haughley - Woolpit - Bury St Edmunds	Stephensons of Essex	4 times a day	6:20-16:10		7:40-17:40	Monday-Saturday
387/388/389/390/456/457	Diss - Eye - Gislingham - Mendlesham - Stowmarket - Rattlesden	Dan's Coach Travel	once a week from Diss, once a week from Gislingham, once a week from Stowupland, 5 times a week from Stowmarket	13:15 (Diss), 9:30 from Gislingham and Stowupland, 9:58-13:15 from Stowmarket			Monday-Friday
461/462	Stowmarket - Great Bricett/Hitcham - Hadleigh	Hadleigh Community Transport and Chambers	4 times a week (From Stowmarket), 4 times a week (From Ringshall), once a week (From Whatfield)	9:20 from Whatfield		9:50-14:15	Monday-Friday
377	Bury St Edmunds - Rougham - Bradfield St George	Mulleys Motorways	4 times a say	7:35-16:16		8:55-17:25	Monday-Saturday

## Potential operational areas/zones:

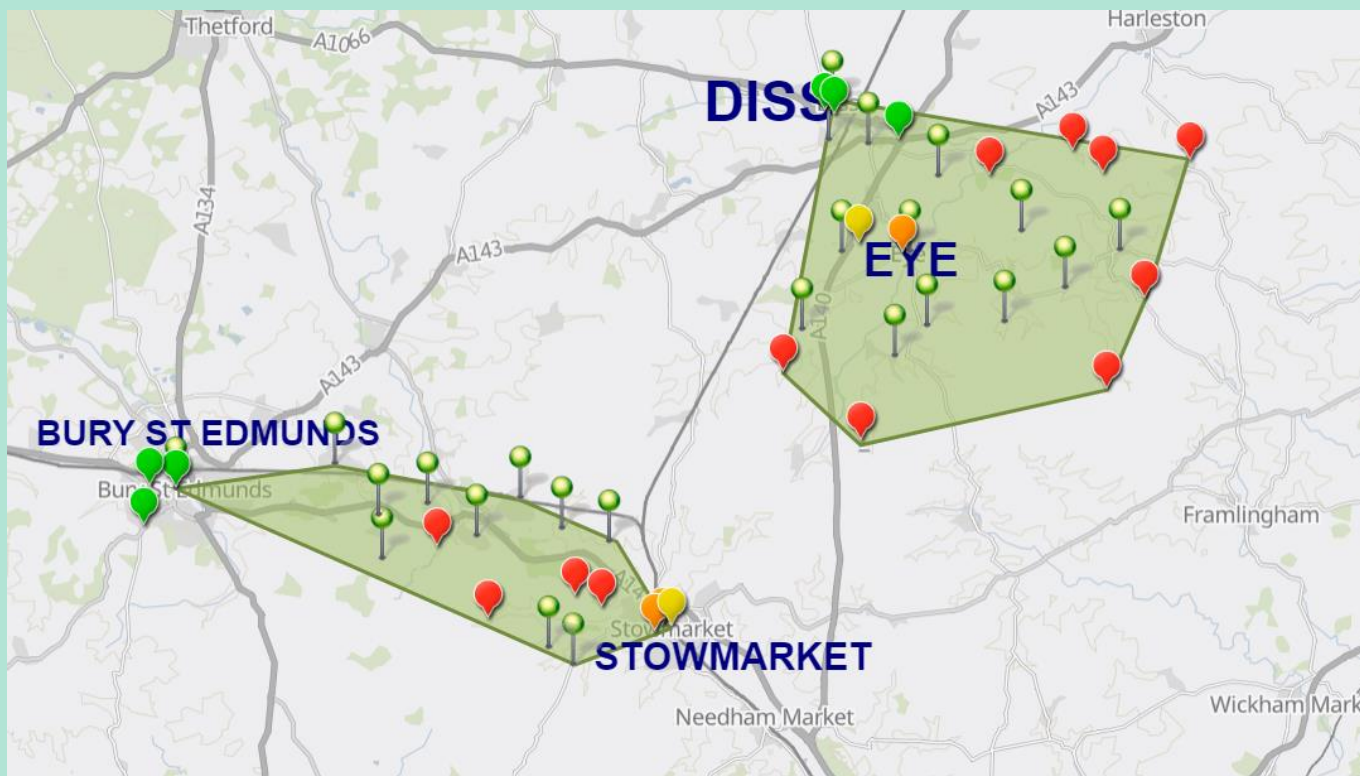
As referenced in the DRT Toolkit Government website: an occupational area for the launch of the service needs to be defined and significant destinations for employment, education, healthcare and retail and leisure need to be identified.

Places that lack a frequent service have been grouped into two operational areas, as follows:

- The first operational area is around Eye and Diss.
- This area already has 12 rapid charging points (3 150kW, 3 100kW and 6 50kW), so the current EV infrastructure in this area could support an area size this big.
- The population number that could benefit from this service according to parish 2019 figures (from the Suffolk Observatory) are shown in the table.
- In total 9486 people could use and benefit from this service.
- This area covers 62 square miles.
- The other area would cover routes between Bury St Edmunds and Stowmarket. Thurston and Elmswell are also good destinations as they have a train station, so the service would help connections between these transport hubs.
- This area has the potential to benefit 18,469 people from small villages/towns and to help connect these people to economic hubs (Stowmarket and Bury St Edmunds). This operational area covers 28.5 square miles.
- In this area there are 4 parishes with no service (2,679 population that could now be connected), 2 parishes with service 5 times a week (1,272 population), 1 parish with service twice a day (509 population) and 5 parishes with service 4 times a day (6,256 population).
- There are also 4 train stations in this operational area, so any provision could connect people to these transport hubs.

PARISH	POPULATION SIZE	SERVICE FREQUENCY	BUS NUMBERS
Palgrave	955	9 times daily (mon-fri) and 5 times daily (sat), once daily (mon-fri)	304, 110
Stuston	209	7 times daily, once a week	112, 4
Thrandeston	134	No service	N/A
Brome and Oakley	546	once weekly, 7 times daily	4, 112, 110, 112,
Eye	2352	22 times daily, once weekly, once weekly, twice monthly	113, 114, 320, 456, 5, 8
Hoxne	875	No service (only school routes)	
Stradbroke	1541	No service in Mid Suffolk- only connected to Framlingham and Ipswich	118
Denham	184	No service (only school routes)	N/A
Horham	290	No service (only school routes)	N/A
Syleham	201	No service (only school routes)	N/A
Wingfield	336	No service (only school routes)	N/A
Thornham Magna	201	Once weekly, once monthly	320, 2
Occold	527	No service	N/A
Wetheringsett	714	No service	N/A
Fressingfield	1135	No service	N/A
Worlingworth	895	No service	N/A
Total population	11095		

PARISH	POPULATION SIZE	SERVICE FREQUENCY	BUS NUMBERS
Beyton	707	once weekly, 4 times daily	320, 384
Hesset	552	4 times daily	377
Drinkstone	600	No service	N/A
Woolpit	2155	4 times daily	385, 384
Harleston and Shelland	218	No service	N/A
Onehouse	874	No service	N/A
Haughley	2239	4 times daily	385, 384
Wetherden	603	4 times daily	
Great Finborough	857	5 times weekly	390, 461
Tostock	509	twice daily	384, 320
Buxhall	415	5 times weekly	390, 461
Rattlesden	987	No service	N/A
Elmswell	4376	Destination/transport hub	N/A
Thurston	3377	Destination/transport hub	N/A
Stowmarket	21,348	Destination/transport hub	N/A
Bury St Edmunds	40,944	Destination/transport hub	N/A
Total population	80761		



Map key:



Locations with rapid chargepoints



Potential car park locations for chargepoints



Parishes with no bus services



Potential depot locations for chargepoints



Other parish locations included in the operational area

Link to interactive version of this map: <https://arcg.is/Dmiay>

## Travel Planning:

- Another thing to consider when choosing an operational area is where new developments are being built, as this can significantly change the transport needs for that area.
- For example, 400+ homes are being planned in the Bacton area- this will increase demand for public transport so needs to be considered.
- This is also relevant for significant employment developments where 100s of new jobs may be created- people will need public transport for commuting to these new employment areas.
- These points have not been considered in the potential operational areas seen above- but should be considered in future decision making.



## Challenges to consider & potential solutions:

Challenges	Solutions
Signal and broadband across mid Suffolk- potential barrier as there are gaps in mobile data coverage in rural Mid Suffolk- this may mean some people won't be able to book online on a website or an app when they're out and about.	Having a telephone number that people can book on as well as an app- Katch uses this system and has proved very successful.
Affordability of fare prices: the initial cost of running the service is very high, due to purchase or lease of vehicle, marketing, app development.	Need to make the fare prices affordable at the beginning and using introductory fares like with the Fflesci scheme did, as this will attract new customers to try the service. Also need to make sure people's free bus pass works on the service too- although this will reduce revenue, it makes it accessible for elderly people.
Technology change: EV minibuses are still a new technology and new models may come out that mean our minibus loses value, or that parts may need replacing.	Choosing the right minibus from a well trusted brand, as well as leasing the bus instead of purchasing as if the technology does change, the Council isn't at as big of a loss.
"Range anxiety"- minibus drivers being worried about electric minibus running out of power due to poor EV infrastructure in Mid Suffolk.	Although EV infrastructure in rural areas is lacking, so we need to install 4 rapid charger points in the areas where the service will be running, as they can charge the vehicle from 20%-80% in 40-60 minutes. Need to make sure the vehicle we choose is compatible with rapid chargers.
Threat of "no shows" as people may book a bus before paying and not show up- therefore losing income.	Make sure in the booking process people book and pay in advance. Paying a deposit when booking, then paying the full fare cost on the bus once it has been calculated may also be a good option. This would help to avoid wasted trips.
High cost of replacing vehicle battery	Making sure the EV minibus we lease/buy has a long warranty for the battery. Most have 8 years/100,000 miles battery warranty.

### Ongoing Financial Sustainability:

- There is a question as to whether some of the options are financially sustainable, as without the scheme making enough revenue to cover costs, once the funding runs out the scheme will have to end.
- There needs to be consideration as to whether there are renewable funding streams available to keep the service running. The need for this depends on

how successful the service is and whether fares/prices are priced in the right way to encourage high usage but to also make it financially sustainable.

## Electric Vehicle scheme alternatives:

Although the focus of this evidence base report is how electric vehicles are utilised for provision, it may also be worth making some consideration regards to alternative sustainable fuels.

### HVO Fuel:

Pros of HVO fuel	Cons of HVO fuel
<ul style="list-style-type: none"> <li>• HVO has no maintenance or fuel economy implications</li> <li>• It can mix with fossil diesel in a bulk tank</li> <li>• Not difficult to store as it's a more stable fuel than ordinary diesel (has a lower water content)</li> <li>• HVO doesn't affect a vehicles' second-hand value, whereas other alternative fuels' residuals can be more uncertain</li> <li>• Sweden, share of biofuels in road transport is around 20%, showing it can be successful</li> <li>• Can be used as a sustainable alternative without changing infrastructure (e.g., no charge-points needed)</li> <li>• Most manufacturers have already approved HVO100 for their diesel vehicles, including Citroen, Mercedes-Benz, and Renault.</li> </ul>	<ul style="list-style-type: none"> <li>• HVO only available from a small number of distributors in the UK- may be hard to get hold of. Stowmarket Beesley Fuels is an HVO fuel supplier.</li> <li>• It's expensive around 10-15% more expensive than diesel. But it is less costly than changing infrastructure.</li> <li>• Inconsistent quality when palm oil is being used.</li> </ul>