

November 2020

# Rugeley Mobility Strategy Objectives

Zero Carbon Rugeley project, deliverable D1



**ZERO CARBON RUGELEY**  
Smart Local Energy System Design Demonstrator



# ZERO CARBON RUGELEY

## WP4-D1: RUGELEY MOBILITY STRATEGY OBJECTIVES

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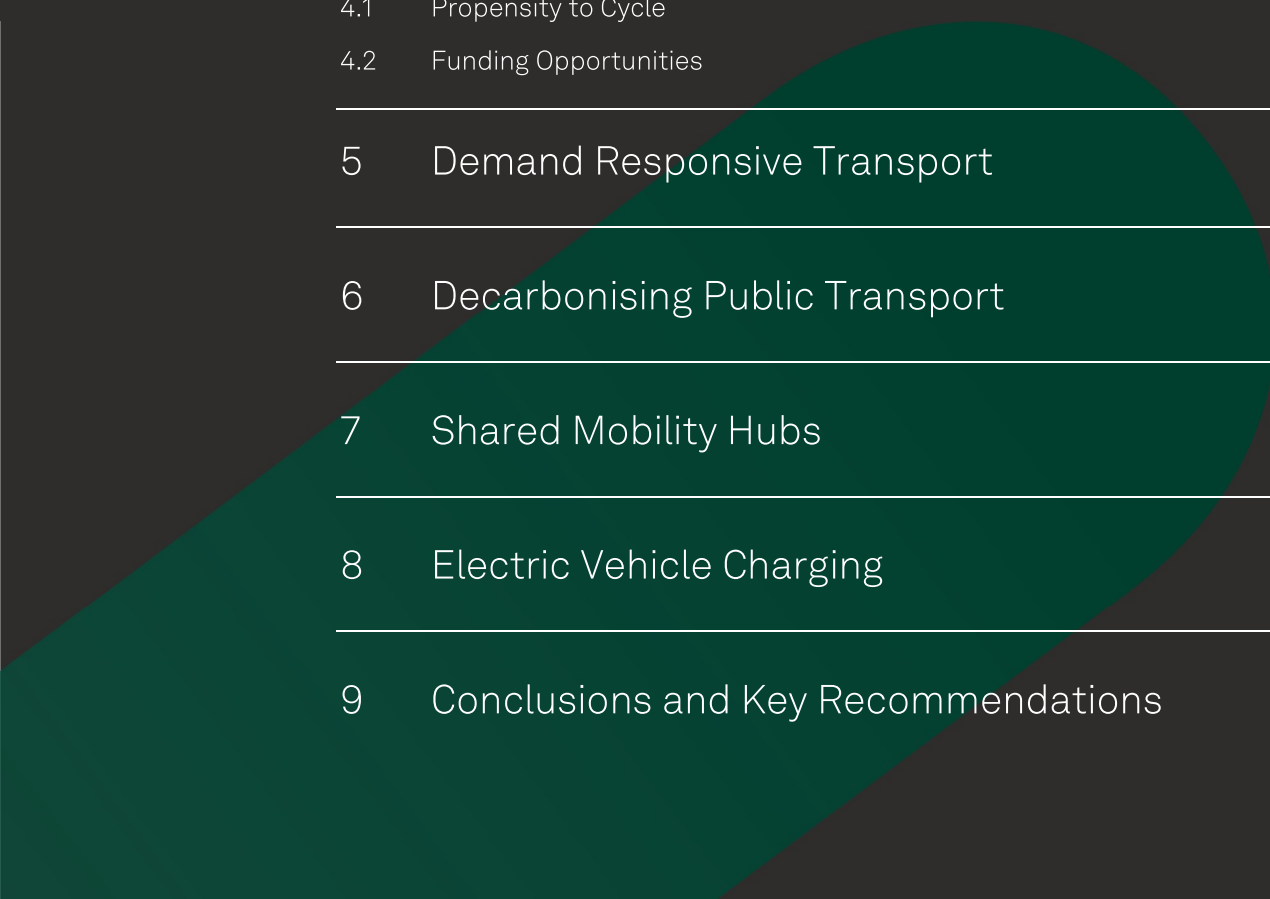
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# Introduction

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This report investigates the mobility strategy for Rugeley, and considers potential objectives of the transport system.

It has been prepared by the Connected Places Catapult, who are leading the work package 4 of the Zero Carbon Rugeley project. The objective of the work package is to investigate smart, shared and low carbon mobility options, and consider how these can be integrated into the energy system.

## Report Structure

The report is structured as follows:

- Section 2 considers the Rugeley context, and existing policy aspirations
- Section 3 investigates potential interventions to encourage walking
- Section 4 presents analysis with respect to cycling and e-scooters.
- Section 5 introduces Demand Responsive Transport.
- Section 6 outlines considers the need to decarbonise traditional buses.
- Section 7 considers the idea of 'Shared Mobility Hubs'
- Section 8 outlines electric vehicle charging infrastructure.

# Rugeley Context and Policy Background

This section considers the geographical context of the town of Rugeley and how it fits within the wider landscape, and local transport policy is presented.

## Rugeley - a 'typical' market town?

Rugeley is located in the south of Staffordshire, on the eastern edge of Cannock Chase District and next to the river Trent. It is between the town's of Stafford, Cannock and Lichfield.

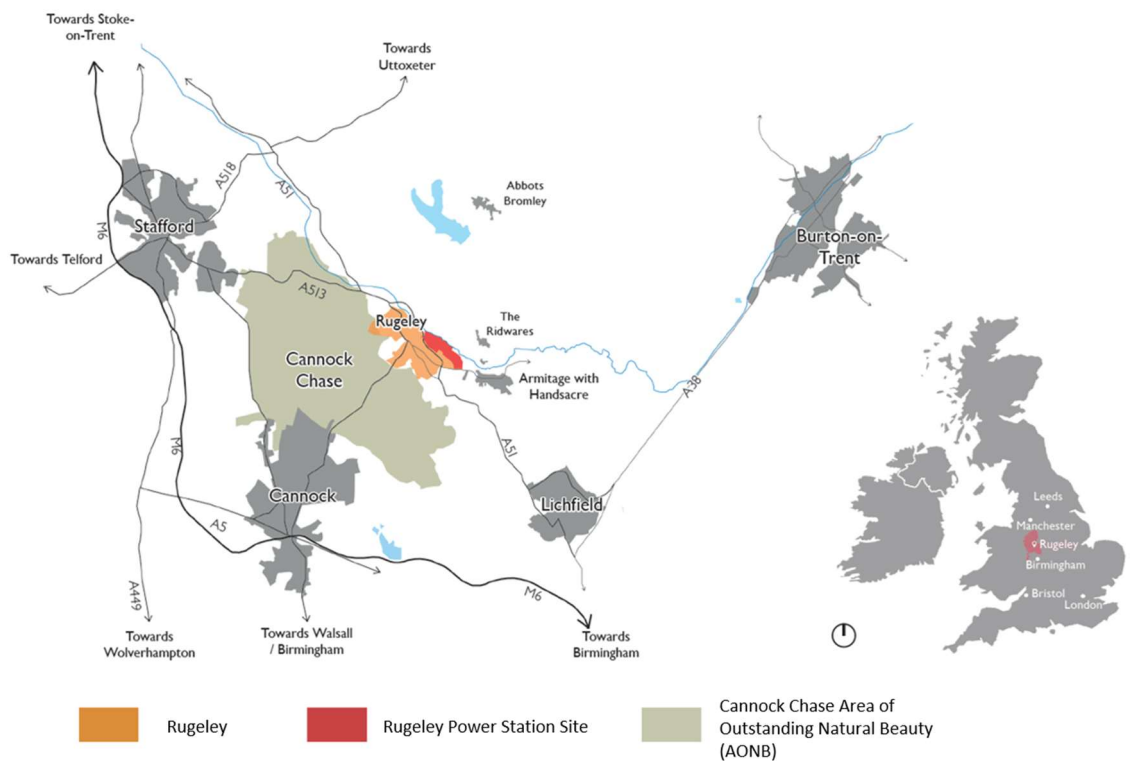


Figure 1: Rugeley Strategic Location

The population of the civil parish of Rugeley, as recorded within the 2011 Census, was 17,749. Transport connections to Rugeley are illustrated within the Cannock Chase District Council Local Plan of 2014:

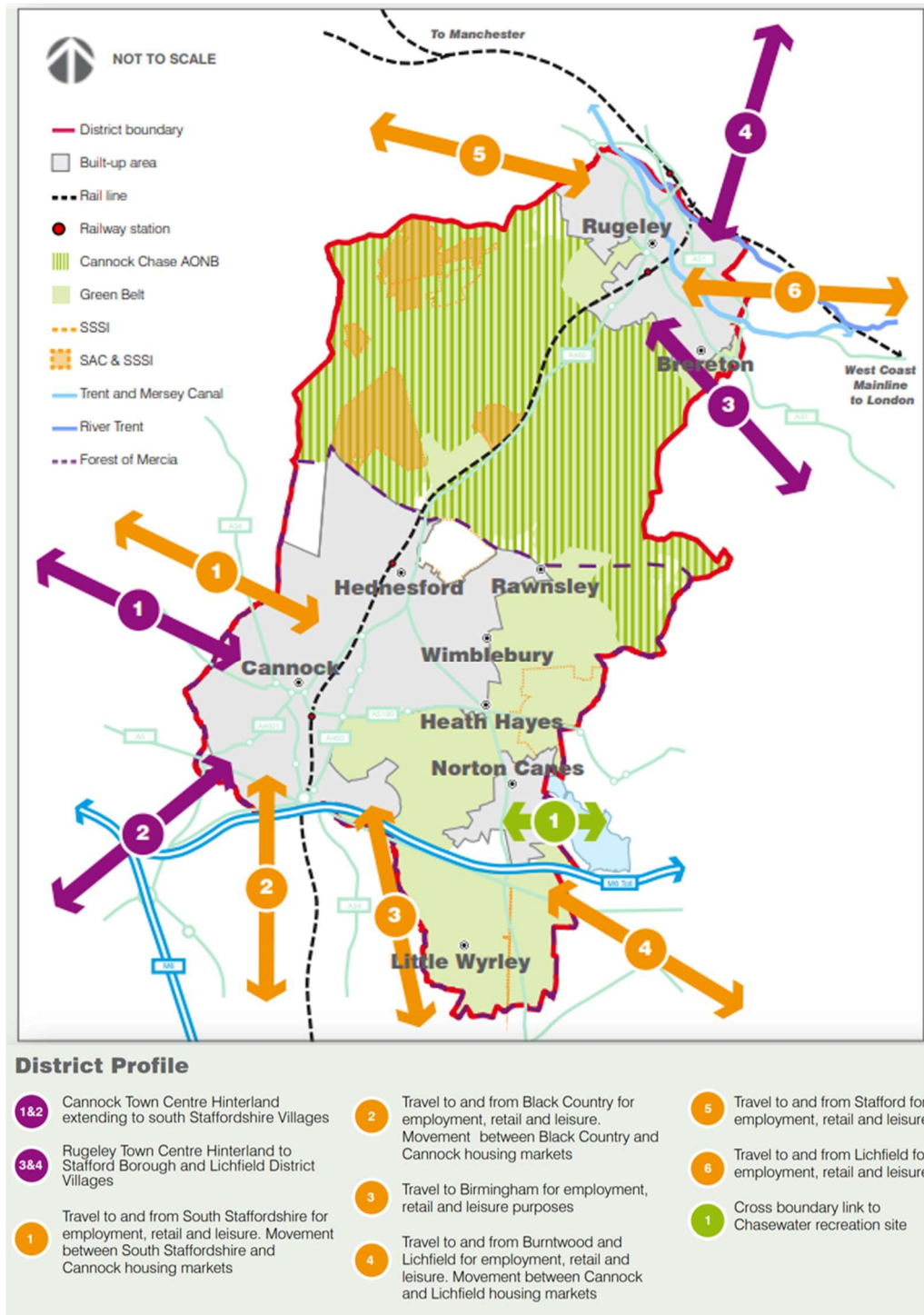


Figure 2: Extract from Cannock Chase District Council Local Plan, 2014

## Transport Strategy

The diagram below is taken from the Cannock Chase District Integrated Transport Strategy

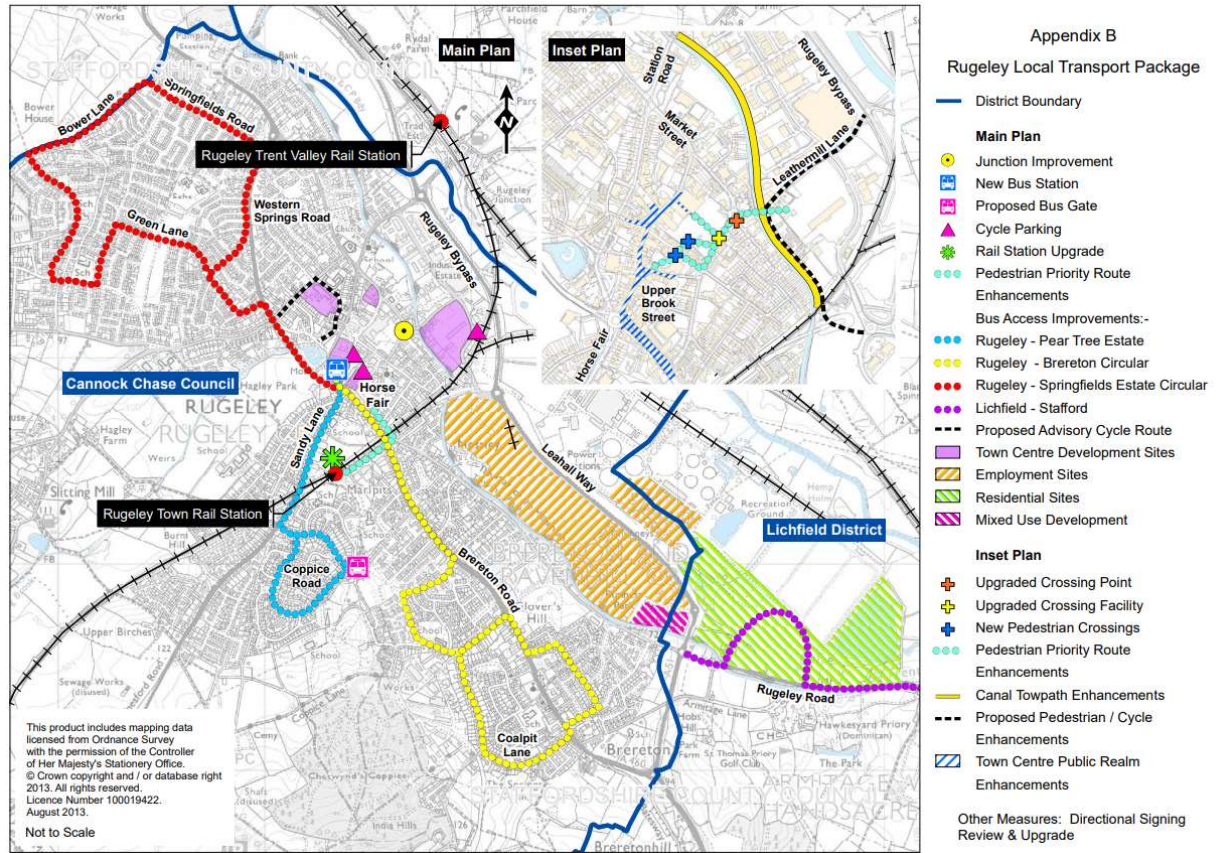


Figure 3: Extract from Cannock Chase District Integrated Transport Strategy, 2013 - 2028

The document states:

“The Rugeley Local Transport Package which builds on the proposals in the Rugeley Town Centre Area Action Plan, includes a number of public transport improvement schemes linking the main residential areas to the town centre. These will also serve potential employment and residential development sites to the east of the town centre adjacent to the bypass. Specific pedestrian linkage improvements have been identified to increase connectivity to employment, including improved access to the Rugeley Town rail station, and generally encouraging sustainable travel. There is also an aspiration for a new bus station to be provided as part of the regeneration of the existing bus station site. Significant elements of this package are expected to be funded by current retail development proposals in the town centre, whilst the remaining schemes will be delivered using a combination of developer monies from proposed residential and employment sites and Local Transport Plan resources. The new Tesco retail development will also provide funding to improve local bus services to the store and the proposed Brereton Bus Gate, to allow the Pear Tree and Upper Brereton local routes to be connected, as well as improving pedestrian access from the town centre to the store, the Trent & Mersey Canal and the Towers Employment Park.

In 2013, the County Council in partnership with Cannock Chase Council, launched a new initiative to improve the Rugeley Public Realm at Horsefair on the edge of Rugeley town centre. The proposals involve input from local stakeholders to identify local aspirations and assisted by the use of urban design consultants. This work will complement the Rugeley Town Centre Area Action Plan, and is now part of the Cannock Chase Local Plan.”

## National Policy

With respect to decarbonisation, the transport framework is being led by the Transport Decarbonisation Plan (TDP)<sup>1</sup>, currently under development by the Department for Transport. Within the document, it is stated:

“Transport has a huge role to play in the economy reaching net zero. The scale of the challenge demands a step change in both the breadth and scale of ambition and we have a duty to act quickly and decisively to reduce emissions.

The associated benefits of bold and ambitious action to tackle transport emissions are also significant. We can improve people's health, create better places to live and travel in, and drive clean economic growth. The UK is a global centre for worldleading science, technology, business and innovation and we are perfectly placed to seize the economic opportunities that being in the vanguard of this change presents. The faster we act, the greater the benefits.”

The six strategic priorities of the TDP are as follows:

<sup>1</sup> <https://www.gov.uk/government/publications/creating-the-transport-decarbonisation-plan>





Figure 4: Extract from DfT's Transport Decarbonisation Plan. Six strategic priorities for the Transport Decarbonisation Plan, to deliver a vision of a net zero transport system.

The above document was supplemented by the publication in July of *Gear Change: a bold vision for cycling and walking*<sup>2</sup>, which sets out DfT's vision for how to promote and facilitate cycling and walking.

The document states:

"Evidence from the UK and abroad is clear. Physically segregated bike tracks on main roads, including at junctions, are the most important thing we can do to promote cycle use. They give people the confidence to cycle and dramatically increase the numbers of people cycling."

"We want, and will fund, cities and towns across the UK to install first hundreds, then thousands, of miles of main road cycle tracks like this."

Of interest to the consortium, and potentially the Local Authority, is the mention of a funding opportunity for such infrastructure:

"We will choose up to 12 willing local authority areas, to benefit from intensive investment in mini-Holland schemes.

As in London, we expect to stimulate a large number of proposals across the country, from which we will choose up to 12 willing non-London local authority areas, to benefit from intensive investment in mini-Holland schemes on the same model. The main focus will be on replacing short car trips. They must be places where cycling is currently low and where there is serious political commitment to dramatic change – not just for cyclists, but for everyone who lives and works there."

If the Local Authority can demonstrate enthusiasm, expertise and vision, Rugeley could become an attractive prospect for investment, as it could represent the art of the possible at many small towns across the UK.

<sup>2</sup> <https://www.gov.uk/government/publications/cycling-and-walking-plan-for-england>

## Public Transport Provision

Rugeley is relatively unique for a small market town in that it is well served by rail. Figure 2 shows that the town accommodates two rail stations; Rugeley Town and Rugeley Trent Valley.

Rugeley Trent Valley is on the junction of the Chase Line and the West Coast Main Line. The Chase Line connects Rugeley Trent Valley and Rugeley Town to Birmingham New Street and Walsall in the south, with half-hourly services in the day time. The West Coast Main Line enables hourly services to London Euston and Crewe via Stafford. Both stations and services are operated by West Midlands Railway.

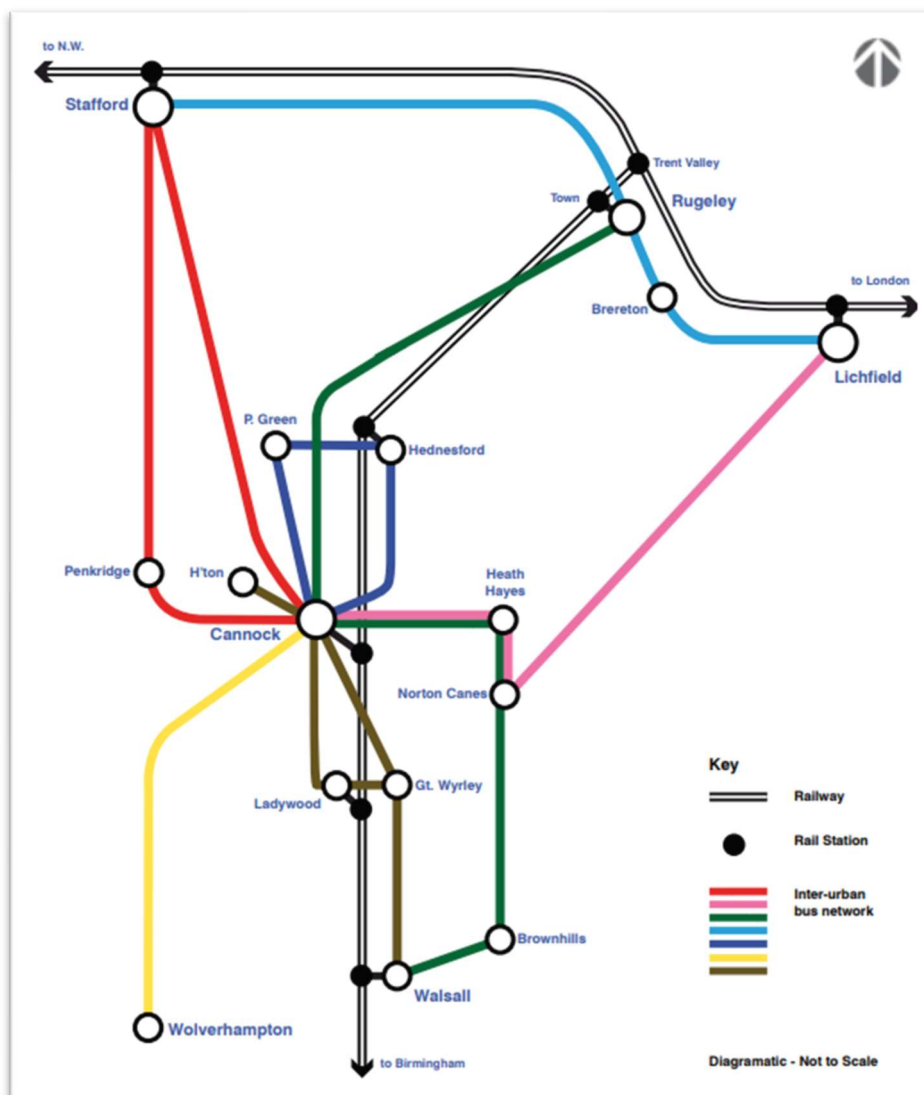


Figure 5: Core Public Transport Network diagram, from Cannock Chase District Council Local Plan, 2014

Within the 2014 Cannock Chase District Council Local Plan, under the heading of 'Vision', it was stated that:

"Rail services will be faster and more frequent, including the introduction of new inter-regional services. There will be better integration between bus and rail services and improved services to rural areas. A

demand-responsive community transport system will have been introduced to reduce social isolation in those areas where conventional bus services are not appropriate."

**Objective 5 of the Local Plan was to encourage sustainable transport infrastructure:**

"Reducing dependence on the car and promoting attractive and realistic alternatives, including public transport, walking and cycling are therefore priority objectives, together with reducing the need to travel. This approach will also need to encourage new initiatives such as home working with the advent of improved broadband facilities, to the provision of charging plug-in facilities and other ultra-low emission vehicles."

Current journey times from Rugeley to surrounding areas are summarised in Table 1.

Table 1: Journey times from Rugeley by mode

Town	Journey time from Rugeley (minutes)		
	Car	Bicycle	Public Transport*
Cannock	11	30	28
Stafford	21	57	10
Lichfield	13	50	7
Birmingham	37	128	53

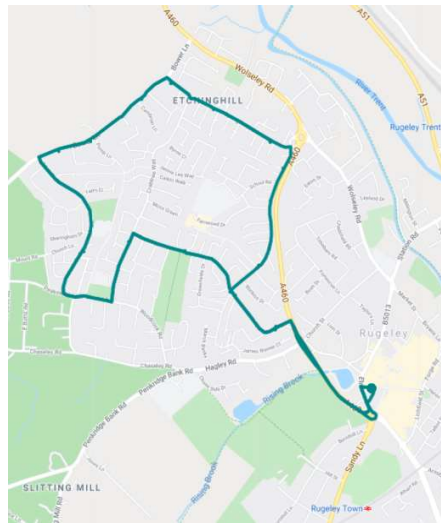
\*Excludes waiting time. Journey times derived from Google Maps for off peak weekday.

Table 1 shows that public transport offers favourable journey times, particularly to those locations that are easy to reach by train, such as Stafford and Lichfield. However, what is not included in the table is the journey times from station to the final origin or destination at either end of the journey.

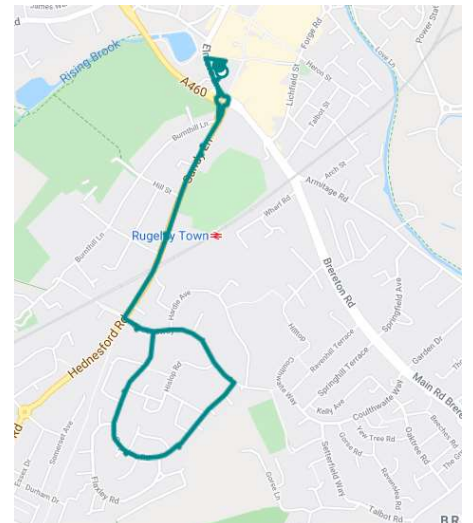
Station usage was investigated using statistics from Office of Rail and Road.<sup>3</sup> This indicates that

Bus services within Rugeley are operated by Arriva. The main services within the town include the 22, 23, 24 and the 825, as shown in Figure 6.

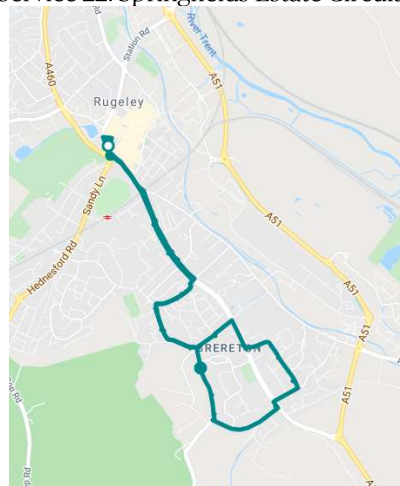
<sup>3</sup> <https://dataportal.orr.gov.uk/statistics/usage/estimates-of-station-usage>



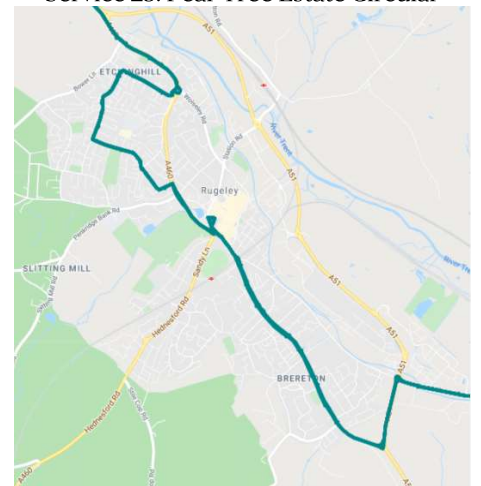
Service 22: Springfields Estate Circular



Service 23: Pear Tree Estate Circular



Service 24: Brereton Estate Circular



Service 825 - Stafford to Lichfield

Figure 6: Rugeley Bus Services

Whilst these services provide coverage around the town, they are limited in terms of time of day, with services 22-24 focusing on the weekday morning and generally running on a half hour frequency between 9am and 2pm. The 825 runs hourly throughout the day and into the late evening.

# Walking

Walking creates the lowest carbon footprint of any mode, as well as exercise benefits. This section considers opportunities to encourage this important mode.

Walking is the simplest of modes of travel. It requires no special equipment and is good for health and wellbeing. The average person walks a mile (1.6 kms) in around 15-20 minutes. Rugeley is of a size that is largely manageable on foot, as shown in Figure 7.

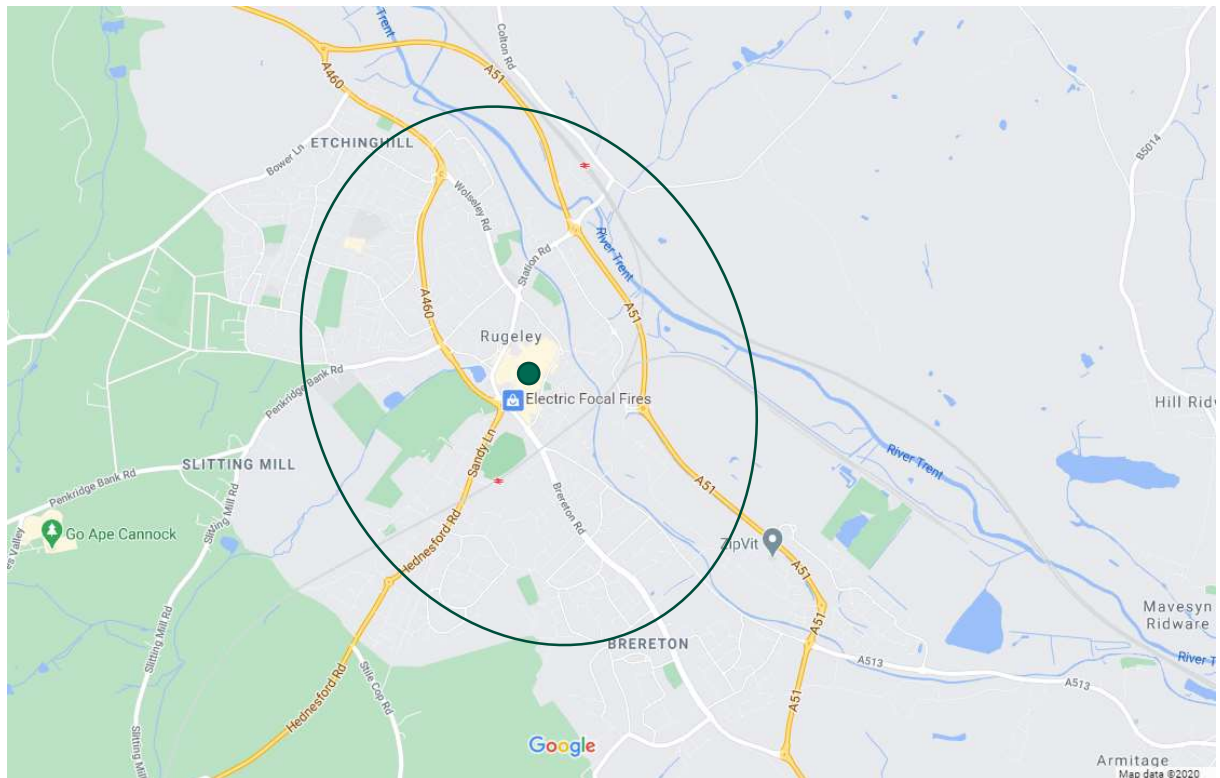


Figure 7: Approximate 20-minute walking distance from Rugeley Town Centre

Pedestrian activity has additional societal benefits. Local shops can benefit from footfall, and neighbourhoods can feel more secure with people around who might report incidents or deter crime or vandalism. Quiet streets, pedestrianised areas, parks and canal tow paths, as well as providing a pleasant walking environment, can become a place for children to play and people to meet. Improving the walking environment can help foster a sense of community.

## Better Walking Infrastructure

The enjoyment of the walking experience depends heavily on environmental factors. A twenty-minute walk alongside a busy highway can feel longer and less pleasurable than one along a stimulating route with interesting architecture, landscaping, gardens, etc.

Investing in improved walking environments, and ensuring they are as pleasant, safe and convenient as possible, is in the public interest. It could be argued that significantly higher proportion of the overall transport budget should be invested in this vital infrastructure.

The first step could be to ensure existing footways are functioning as intended. Transport for London has issued 'Pedestrian Comfort Guidance for London'<sup>4</sup>, which includes a process for determining the level of comfort on any particular section of footway, based on footway widths (which may be reduced due to street furniture or other obstructions such as people standing, or sitting) and pedestrian flows. Mitigation measures can include removing or repositioning street furniture, increasing the footway width or measures to deter footway parking. Figure 8 shows examples, taken from Google Streetview, of cars parking on the footway in Rugeley. Clearly, such parking can be problematic for pedestrians that wish to walk side by side (such as parents with children), parents with large pushchairs (especially double-width push chairs) and mobility scooters.



Figure 8: Example of footway parking in Rugeley, reducing pedestrian width

Such parking not only inconveniences pedestrians, it is contrary to the overall message highlighted in many policy documents that walking is the most important mode of travel. Of course, this problem is not unique to Rugeley, and the DfT are currently consulting on options to tackle this problem nationwide.<sup>5</sup>

The next step could be to investigate opening new routes, or improving routes, particularly through parks, canals, areas of countryside, etc. Where there might be desirable cut through routes (often indicated with worn areas of grass), these can be formalised, paved and even lit. Such interventions are relatively low cost compared to general highway improvement works.

It is important to consider barriers to pedestrian movement. These might include busy roads, rivers, canals, etc. Crossing points in the right location, and on the pedestrian desire line, can be beneficial in terms of walking time and can lead to road safety improvements.

Pedestrian priority can be established with new surface treatments, or even small detail such as corner radii. Manual for Streets discusses the impact of tightening corner radii to reduce vehicle speeds and enable pedestrians to follow the desire line.

<sup>4</sup> <http://content.tfl.gov.uk/pedestrian-comfort-guidance-technical-guide.pdf>

<sup>5</sup> <https://www.gov.uk/government/consultations/managing-pavement-parking/pavement-parking-options-for-change>

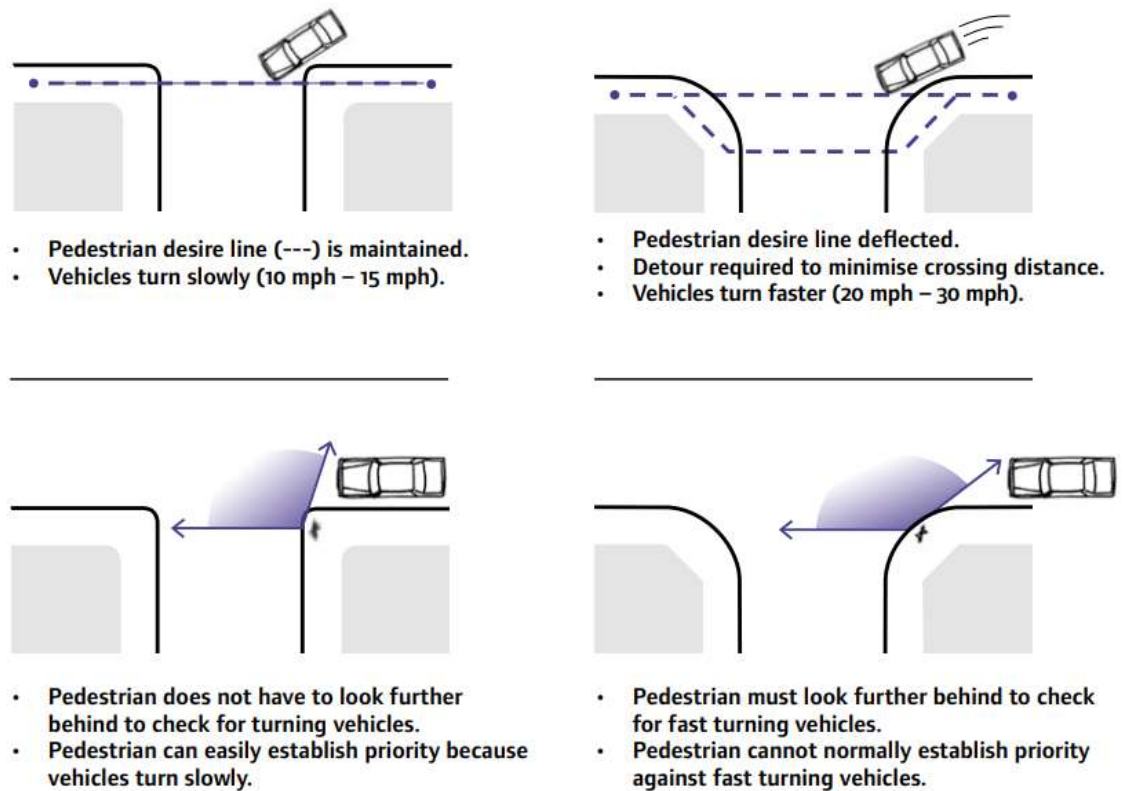


Figure 9: Extract from Manual for Streets

Such treatments are often combined with raised crossing points, to emphasise pedestrian priority, as shown:

Figure 10: UK example of raised, uncontrolled crossing point of a side road (source: 'The Alternative Department for Transport' website)<sup>6</sup>

<sup>6</sup> Source: <https://departmentfortransport.wordpress.com/2012/08/21/continuous-paths-across-minor-junctions/> (website is not associated with Department for Transport)



Even this, which is a UK example, could go further to encourage not just walking, but also cycling / scooting. In the Netherlands, the equivalent junction treatment might look like this:



Figure 11: Example of raised, uncontrolled crossing point of a side road (source: 'The Alternative Department for Transport' website)<sup>6</sup>

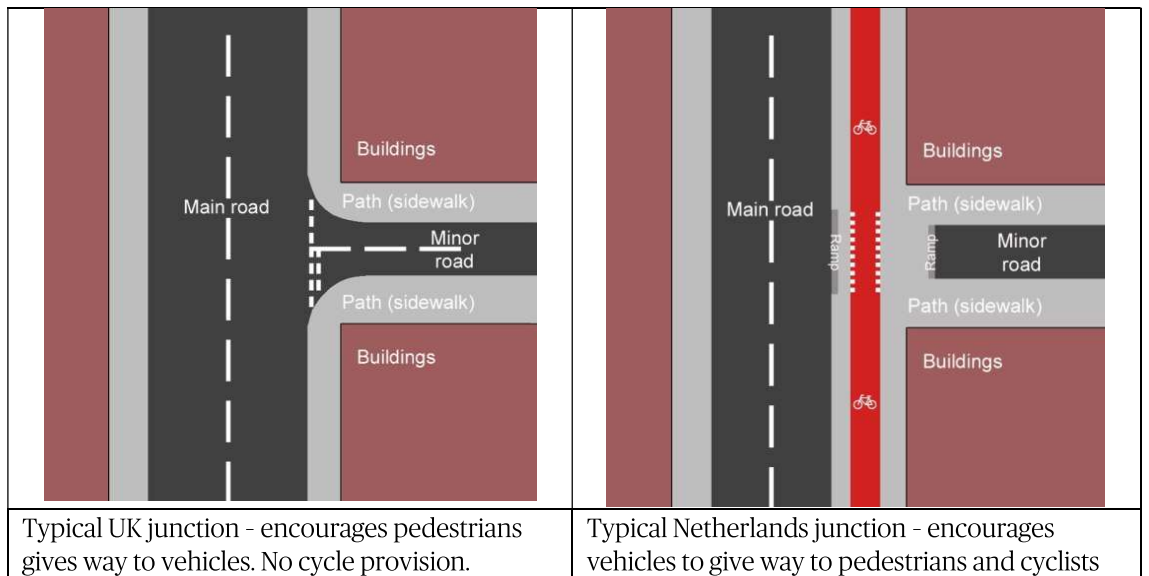


Figure 12: Difference between UK and Netherlands junction treatment (source: 'The Alternative Department for Transport' website)<sup>6</sup>

In the above example, not only is pedestrian and cycle priority emphasised, it also sends a clear message to motorists that turn onto the side road that they are entering a lower speed area, which is of benefit to pedestrians along the road.

It should be considered that pedestrians include all types of people, toddlers on scooters and bicycles, the elderly, people with physical mobility impairments, hearing problems, the blind and partially

sighted, those with cognitive impairments, joggers who are trying to beat their personal best on a running app, those with push chairs or riding mobility scooters.

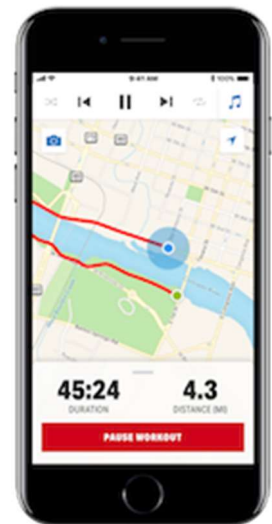
Some pedestrians may benefit from benches so that they can stop to rest along the journey, whilst others may appreciate the provision clean, public toilets may encourage them to walk.

It is noted that pedestrian improvements were identified and proposed as part of the Cannock Chase District Integrated Transport Strategy, as shown in Figure 3. This study has not undertaken an assessment of the detailed walking infrastructure within Rugeley, but it is suggesting that, if it is to be an exemplar Zero Carbon town, a far more extensive approach is needed which can blaze a trail for other towns to learn from and follow.

## Encouraging Walking with Smartphone Apps

There are a wide variety of smartphone apps which can be used to track time spent walking, distance, speed, calories burnt and other metrics for both walkers and joggers, and help with navigation. Such apps include:

- Active 10 (Public Health England app)
- MapMyWalk GPS
- Fitbit App Mobile Tracker
- Walkmeter GPS
- Footpath Route Planner
- Go Jauntly
- AlpineQuest Off-Road Explorer
- Nike Run Club
- OutDoors GPS
- ViewRanger
- World Walking
- Strava



Other apps actually reward users, for walking (although rewards, understandably are quite small). These include Sweatcoin, Vitality Rewards and Charity Miles (which donates to your chosen charity). For younger users (or even some adults) games such as Pokémon GO encourages users to collect virtual monsters by walking around their community.

There could be ways for local authorities, schools and businesses to work together to promote such apps, and incentivise and gamify walking within a local area.

# Cycling / Scooting

Alongside walking, cycling, scooting and other related human or low-powered wheeled activity offers a low carbon solution, as well as exercise benefits. This section considers opportunities to promote such activity.

There are many different types of cyclist, all of which have different needs, and required different types of bicycle, from light-weight racing bikes to electrically assisted cargo bikes. Figure 13 illustrates some different types of cyclists.

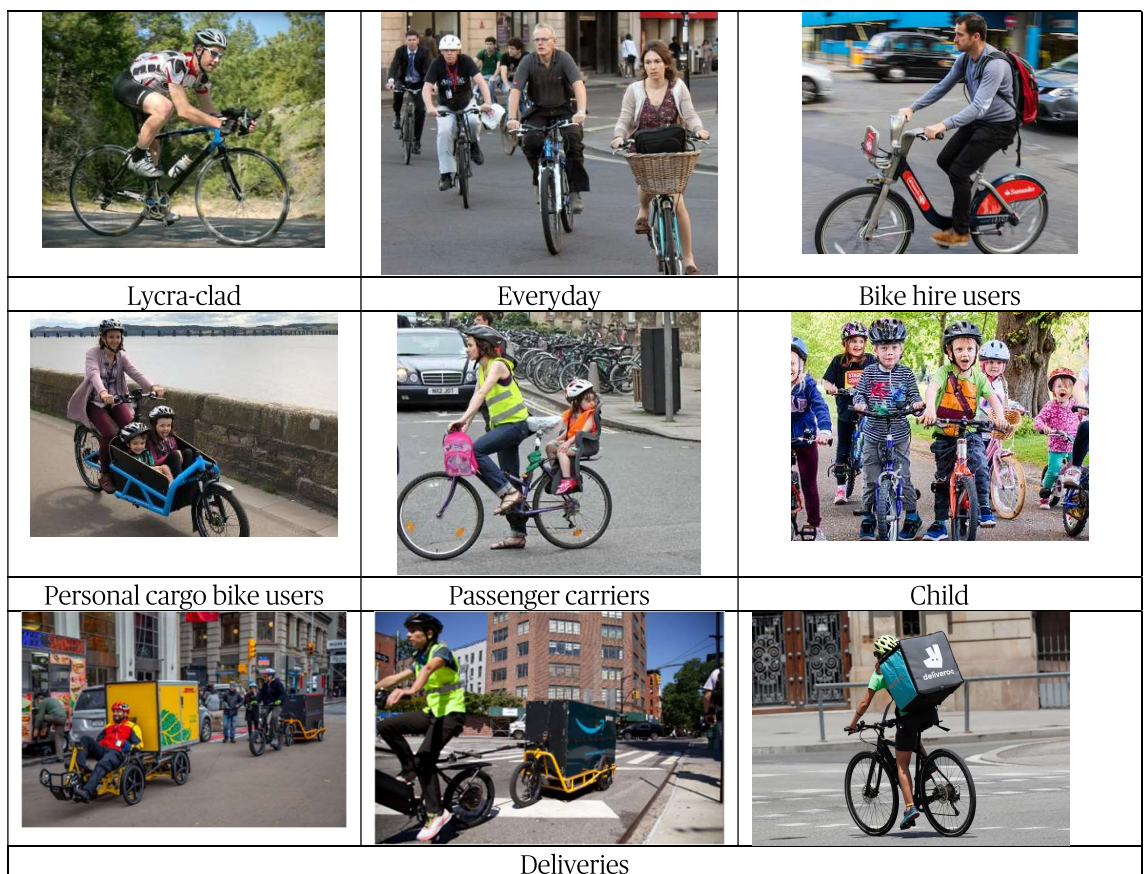


Figure 13: Different types of cyclist

Different types of cyclists have different needs. Lycra-clad cyclists may be prepared to cycle long distances, but only if they have secure bike storage for their generally more expensive bikes, and shower facilities at or near their destination. A good example of such a facility is shown in Figure 13 follows, taken from a shared office facility in London.



Figure 14: Example of high quality bicycle storage, shower and changing facilities (source: <https://republic.london/amenities/changing-facilities-bike-racks-repair/>)

There could be business models associated with the provision of such facilities in the right locations.

Whilst lycra-clad cyclists may prefer to cycle on road to maintain a higher speed, rather than use cycle lanes, for most other types of cyclist, cycle lanes are essential for encouraging usage. As stated in the DfT document referred to in Section 2:

"Evidence from the UK and abroad is clear. Physically segregated bike tracks on main roads, including at junctions, are the most important thing we can do to promote cycle use. They give people the confidence to cycle and dramatically increase the numbers of people cycling."

Cycling infrastructure can also make it easier for goods to be delivered by bicycle. Rugeley is home to the large Amazon Fulfilment Centre, a facility that typically employs 1,000 people, and double that in the run up to Christmas.<sup>7</sup> It would be worth early engagement with Amazon to discuss any aspirations they may have for staff travel behaviour changes, and even cycle delivery schemes within the town.

Pictured in Figure 15 is the Cargodale delivery service, set was set up by Beate Kubitz during the March 2020 COVID-19 lockdown, and effectively turned traditional, high-street shops into online businesses.

<sup>7</sup> <https://www.birminghammail.co.uk/news/midlands-news/what-really-happens-amazons-huge-17360326>

Beate reported that the electrically assisted cargo bike has many advantages over typical van deliveries, such as:

- Purchase, fuel and maintenance costs were less.
- The bike can negotiate certain rural country tracks and long driveways that vans would struggle with.
- The scheme used volunteers, and no car insurance or even driving licenses were required.
- The area had many keen local cyclists who were more than happy to volunteer. They may have been less keen to help with a van delivery scheme.
- People enjoyed less air pollution and noise resulting from less vehicular traffic. The cargo bike option complemented this.



Figure 15: Cargodale bicycle delivery service (source: [www.cargodale.co.uk](http://www.cargodale.co.uk))

What makes cargo bikes possible to transport large quantities of goods (or at least far less effort) is the assistance from energy within the batteries. Whilst this has a small, detrimental impact on the environmental credentials, the benefits are considered justifiable, especially if it enables journeys to be made by bicycle that would otherwise be made by car or van. There is a wide range of typical Electrically Assisted Pedal Cycles (EAPCs), with prices dropping below £1,000. However, they remain more expensive than traditional bikes, and more secure bike storage facilities may be needed to encourage their use. The key benefit is that they make uphill riding far less effort, and enable transportation of large loads.

In European cities, cargo bikes are commonly used for carrying children. In Copenhagen, it is estimated that a quarter of all families with two or more kids own a cargo bike.<sup>8</sup>

Alongside different types of cyclists and bicycles, there are new and exciting alternatives. One that has made large progress worldwide is electrically powered scooters, known as e-scooters. In many countries around the world they are legal and are used in large numbers, and the quick roll out has had many



<sup>8</sup> Source: <https://denmark.dk/people-and-culture/biking>

problems, with concerns around how the scooters are used, safety concerns both for riders and pedestrians and how the scooters are left on the street.

It remains illegal to use a privately-owned e-scooter anywhere other than on private land in the UK, however they have been used illegally on public roads and footways for some time. However, the Department for Transport has recently launched an initiative to trial rental e-scooters, which they say *'offer the potential for fast, clean and inexpensive travel that can also help ease the burden on transport networks and allow for social distancing'*<sup>9</sup>

Within the trial areas, it is proposed by the DfT to allow e-scooters to use the same road space as cycles and EAPCs. This means e-scooters would be allowed on the road (except motorways) and in cycle lanes and tracks, where possible.

The trial period is intended to last 12 months, and the ongoing legal and regulatory basis for e-scooters will then be considered by DfT based on findings from the trials.

There remains a number of questions over various aspects of e-scooters:

- To what extent will their illegal use in pedestrian areas be enforced. Cycling, also, remains illegal on footways and footpaths, but the police do not tend to issue many fines for such behaviour, and it is widely socially accepted for children to cycle within pedestrian areas. Much may depend on the style of riding, and the risk such riding is causing to pedestrians.
- How can the collection and management of rental scooters be managed. This is also an issue for bicycle hire schemes, but 'dockless' deployment of scooters can lead to pavements being littered with them, and they can even be used for antisocial behaviour, such as acts of vandalism.
- With regards to rental models for both scooters and EAPCs, there is also a need to collect, redistribute, and, where necessary, charge them. This will typically happen overnight. The carbon footprint of such activities needs to be taken into consideration.
- Many parents with young children that ride regular scooters will know that relatively small defects in the pavement can cause the small front wheel to jam, which can cause the child to faceplant the tarmac. With the deployment of higher speed electric versions, it could be increasingly important to ensure a high-quality road surface.

As with walking, many of the issues could be at least partially addressed with better infrastructure. On quieter roads, traffic calming could encourage more bicycles and scooters off the footway and onto the road, which would be of benefit to pedestrians, and could also increase safety for e-scooter riders who would benefit from a smoother road surface.

On busier roads, e-scooters and certain bicycle users will feel very vulnerable. Segregated cycle facilities are considered the primary solution.

The existing cycling map for Rugeley, taken from the Staffordshire County Council website, is shown:

<sup>9</sup> <https://www.gov.uk/government/publications/e-scooter-trials-guidance-for-local-areas-and-rental-operators/e-scooter-trials-guidance-for-local-areas-and-rental-operators>

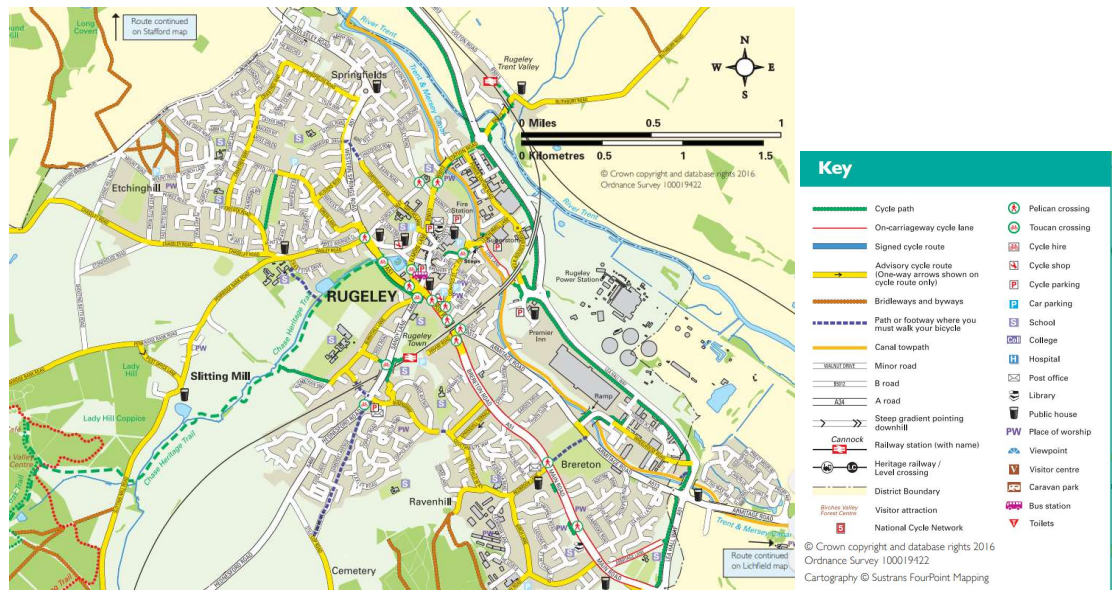


Figure 16: Rugeley Cycle Map (source: Staffordshire County Council)<sup>10</sup>

Figure 16 indicates a network which mainly comprises ‘advisory cycle routes’. Many of these routes appear to benefit from traffic calming, for example in the form of speed cushions, but some of these are not direct, and it may be questioned how suitable the advisory cycle routes are particularly for more vulnerable cyclists. Figure 17 shows section of Hagley Road, which would be a key cycle route for those travelling between the Etchinghill estate and the town centre:



Figure 17: Hagley Road, indicated as ‘Advisory Cycle Route’

The route benefits from traffic calming in the form of speed cushions and traffic is encouraged to slow by the markings, but the route is narrow, hilly and could be foliage growing into the highway can start make it feel narrower unless it is well maintained. A cyclist pedalling up the hill with a heavy goods vehicle looking to overtake may feel vulnerable, and it is understandable why they may choose to use the footway. In this type of situation, where there is a wide highway verge, a segregated cycle route could be considered, although such a scheme would need to be provided for long, continuous sections.

<sup>10</sup> <https://www.staffordshire.gov.uk/Transport/cycling/Documents/Cycling-in-Cannock-Chase-Issue-8.pdf>

There is a secondary school towards the end of this road, which could further justify investment in cycling infrastructure.

The purpose of highlighting this is not to criticise the efforts of the highways authority, but to suggest that a step change is needed in how cycling infrastructure is developed and funded, and to emphasise that such infrastructure could be vital for the quickly developing needs of e-scooters, and of benefit for cargo bike users.

In other European countries, cycling infrastructure is taken far more seriously. For example, in 2011/12 the Netherlands opened an elevated cycle roundabout which separates bicycles from road traffic at a key intersection. In Utrecht, cycling is very much the normal way to travel, as shown in Figure 18. In Copenhagen, arguably the most successful cycle city in the world, 62% of inhabitants' trips to work or school are by bike, and twenty-six per cent of all families with two or more kids have one. In these countries, not only are segregated bike lanes installed, they are prioritised for maintenance, street cleaning, pothole repairs and measures to avoid snow and ice.



Figure 18: Hovenring, Netherlands (left) and cyclists in Utrecht (right)

## Propensity to Cycle

The Propensity to Cycle Tool (PCT) was developed by a team of academics to assist transport planners and policy makers to prioritise investments and interventions to promote cycling. The PCT answers the question: 'where is cycling currently common and where does cycling have the greatest potential to grow?'

The PCT is a nationwide (England and Wales) web-based tool for estimating cycling potential and corresponding health and CO2 benefits, down to the street level. The PCT covers travel behaviour data for commuting and travel to school. Cycle commuting data is based on the 2011 Census and cycle to school based on the 2011 school cycling Census.



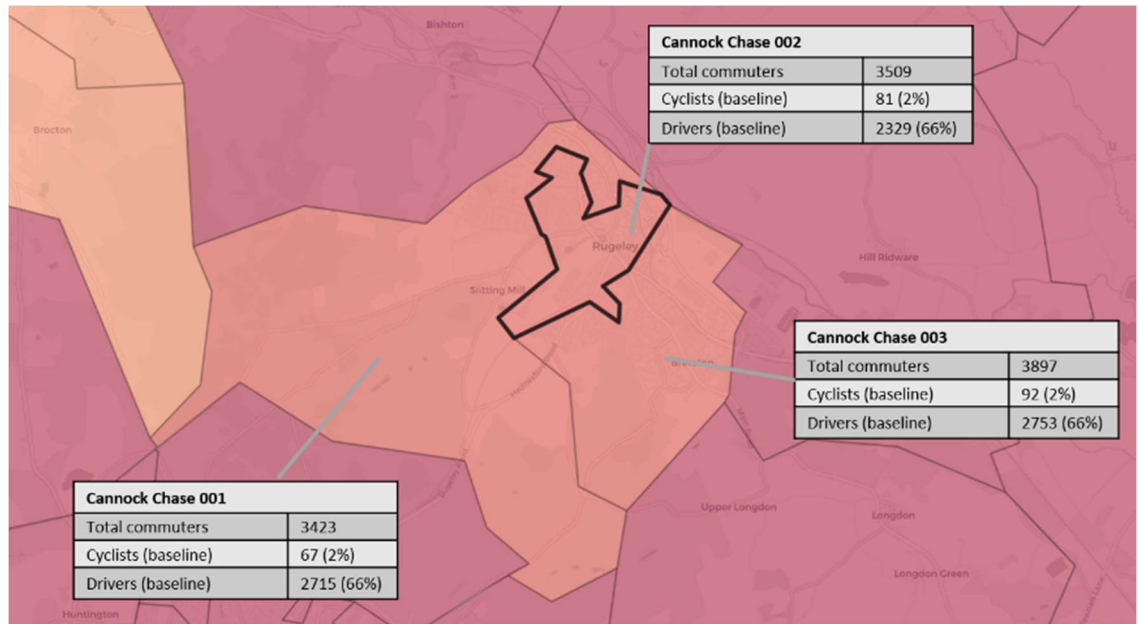


Figure 19: Census Data Cycle / Car Driver Flows (source: Propensity to Cycle Tool)

The database includes a number of scenarios, to illustrate what the change would be if cycling were to increase as it has in other areas. For example, in the “Go Dutch” scenario the tool looks at each trip in an area and estimates how likely a Dutch person would be to cycle that trip, using the formula calculated with Dutch data. For example, a 2km, 1% average gradient trip has a 46% probability of being cycled in the Netherlands. So, in the Go Dutch a probability of 46% probability would be assigned to all 2km 1% average gradient trips in the area.

The “Go Dutch” scenario for the main output area covering Rugeley indicates the following:

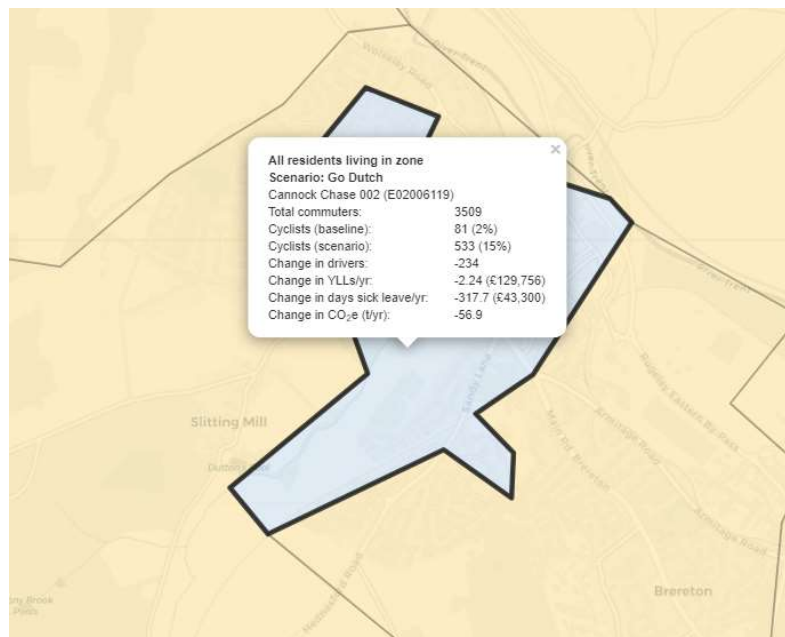


Figure 20: Potential Opportunities for Increasing Cycle Modal Share (source: Propensity to Cycle Tool)

This indicates that if patterns of cycling experienced in the Netherlands were replicated in Rugeley, cycling could increase from 2 to 15%, and CO<sub>2</sub> emissions could be reduced by 57 tonnes per year for this output area alone. Adding the neighbouring two output areas increases this CO<sub>2</sub> saving to 186

tonnes per year. Under the 'Ebike scenario, bicycle mode share is further increased to 21% for the above output area, with CO2 savings of 119 tonnes per year for this output area, and 277 tonnes per year for the three output areas combined.

This is just through commuting trips. Further savings could be made through trips for other purposes.

## **Funding Opportunities**

With reference to DfT's *Gear Change: a bold vision for cycling and walking*, introduced in Section 2, there could be opportunities to bid for Central Government investment in the cycling network as long as the Local Authority can demonstrate the vision, expertise and enthusiasm to radically improve conditions for cyclists.

# Demand Responsive Transport

Demand Responsive Transport (DRT) is a form of shared transport where vehicles alter their routes based on transport demand.

There are many different types of DRT, from private hire vehicles and taxis to vehicles that are specifically for those with particular accessibility needs. However, the type of service being considered in this report enables passengers to book a seat in a shared vehicle, usually a minibus, with other passengers heading in the same direction.

As stated within the Cannock Place Local Plan, DRT is seen as a potential solution to help fill a gap between more costly, non-shared services such as taxis and traditional fixed-route, scheduled bus services.

The main bus operator in Rugeley is Arriva, who have their own DRT offering in the form of ArrivaClick, which they describe as follows:

“ArrivaClick is our flexible, on-demand minibus service offering quick and convenient transport for multiple passengers heading in the same direction.

Using our app on iPhone or Android, simply register your details, select your pick-up and drop off points and we'll get you moving in no time.

You won't need cash either, just click, pay with the app and go!

## Travel in style

Think of us as a bus that's smart enough to come when you want it and where you want it.

Using ride-sharing software, we connect your journey with other passengers heading in a similar direction, allowing everyone to enjoy the convenience of taxi-style travel without the price tag.

Simply select your pick-up and drop-off points in the app and we'll connect you with the nearest ArrivaClick vehicle. You'll then be able to track your driver in real time, make your way to the pick-up point and pay with the app; no cash needed.

You'll always be guaranteed a comfortable seat in our luxurious Mercedes minibuses and can travel in style with:

- Free WiFi
- USB charging points for your phone, laptop or tablet
- Air conditioning
- Easy wheelchair and pushchair access”



Figure 21: ArrivaClick vehicle (source: Arriva.co.uk)

As stated within the Cannock Place Local Plan, DRT is seen as a potential solution to help fill a gap between more costly, non-shared services such as taxis and traditional fixed-route, scheduled bus services.

Another operator embracing DRT is Go-Coach, who operate in Sevenoaks. As experienced by most operators, Go-Coach experienced a 90% drop in passengers during lockdown, and took pro-active steps to react quickly. Although they had plans to introduce DRT, the COVID-19 lockdown restrictions accelerated their deployment of a service, which they developed with Via Van in just two weeks. The service has been well received by passengers, and has provided a wealth of data to the operator about where users really want to travel from and to. Further details can be found on the Via Van website.<sup>11</sup>

It is proposed to discuss with the Council, and ultimately with operators, whether DRT could be economically viable in Rugeley.

<sup>11</sup> <https://ridewithvia.com/resources/multimedia/less-is-more-how-one-town-is-growing-its-public-transport-during-a-pandemic/>

# Decarbonising Public Transport

There are a growing number of initiatives to move traditional buses to zero-emission operation.

As for all road vehicles, buses and coaches will need to transition to zero-emission operation. In terms of technology, there are two primary options for buses; either hydrogen fuel cell enabled buses, or 'pure' battery electric buses, and trials are ongoing in many parts of the UK. Two such trials in the West Midlands include:

- 20 Hydrogen double-decker buses, manufactured by Wright Bus, and purchased by Birmingham City Council as part of its Clean Air Hydrogen Bus Pilot
- 29 BYD ADL Enviro400 EV electric double decker buses purchased by National Express West Midlands.

The above two options, hydrogen fuel cell vehicles vs battery electric vehicles represent a technology battle that is ongoing, especially for larger commercial vehicles. Hydrogen has advantages in terms of being quick to refuel and replicating the refuelling experience of diesel, whereas batteries tend to offer greater 'windmill to wheel efficiency' and the possibility of vehicles charging at depots overnight.

For both options, the vehicle architecture is ultimately similar in that the drivetrain is electric. The difference is whether to store the on-board energy in the form of hydrogen, or electricity in batteries. But for either option, the benefits are significant. As well as the benefits in terms of reduced air pollution, they offer a quieter, smoother ride with less vibration, and can enable the passenger to feel like they are contributing more to the environmental push.

Hydrogen can be produced from an electrolyser, which splits water into hydrogen and oxygen and is considered the greenest form of hydrogen (known as 'green hydrogen'). Such a solution is attractive when there is an abundant supply of renewable energy, and in such circumstance, hydrogen can act as a storage vector for excess energy that is supplied.

For a fleet of battery-powered buses, there are tradeoffs to be explored between battery range, battery weight, charging power, number of available chargers, etc, and the whole system needs designing bespoke to the needs of the operator.

Whichever option is chosen, significant investment is required, and it is questionable whether buses in Rugeley would be first in line for such investment considering they are not in all operating for the whole day. Operators and Local Authorities may prefer to target cities with higher levels of air pollution and higher bus usage. However, where possible opportunities should be explored for building the enabling infrastructure.

# Shared Mobility Hubs

"A mobility hub is a recognisable place with an offer of different and connected transport modes supplemented with enhanced facilities and information features to both attract and benefit the traveller".

## Components of mobility hubs

Mobility hubs can be seen as an interface between the transport network and spatial structure of an area. Mobility hubs include a range of different components. This diagram illustrates some of the most commonly used components:

- A1: Mobility components: Public Transport**
- A2: Mobility components: Non - public transport**
- B: Mobility related components**
- C: Non-mobility & Urban realm improvement**

- A2: MOBILITY COMPONENT: SHARED MOBILITY**
- Car share: back to base, one way, electric.
  - Bike share: back to base, one way, electric.
  - Cargo bike share, cargo bike logistics store
  - Other future micro-mobility options: e.g. e-scooters, moped share
  - Ride sharing

### Branded pillar

Mobility hubs require a prominent sign or pillar with a common brand to make them visible to the public. The inclusion of a digital elements in a pillar can provide:

- Access to a local transport website for information on services
- A way finding option for local walking and cycling trips
- A journey planning service for multi-modal trips
- Registration and ticketing
- Customer services.

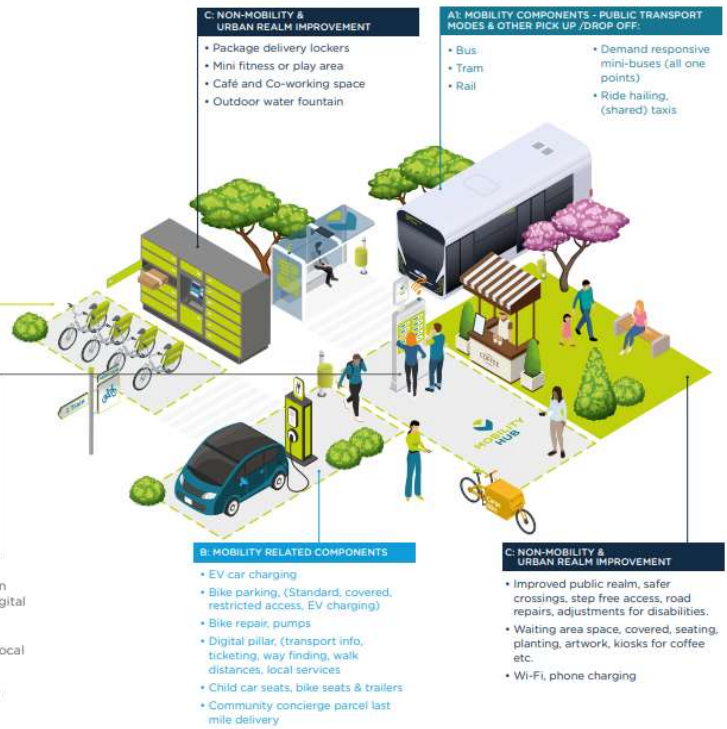


Figure 22: Shared Mobility Hub concept. Source: CoMoUK

The idea of shared mobility hub is promoted by CoMoUK, as illustrated with the quote and extract above. As shown in Figure 22, a mobility hub can facilitate a coming together of many mobility and non-mobility related components. As such, it is not a solution on its own, but can complement the provision of many of the ideas described in other sections of this report.

# Electric Vehicle Charging

We know that by 2040, and possibly sooner, it will be impossible to buy a vehicle powered by an internal combustion engine. There is a need to ramp up provision of public charging, particularly for those that can't charge at home.

Certain locations lend themselves well to provision of EV charging, particularly locations where people tend to park regularly, such as supermarkets, town centres, workplaces. Shared mobility hubs, as described in Section 0, could offer provision for residential areas.

The current public charging provision was investigated using ZapMap, as shown in Figure 23.

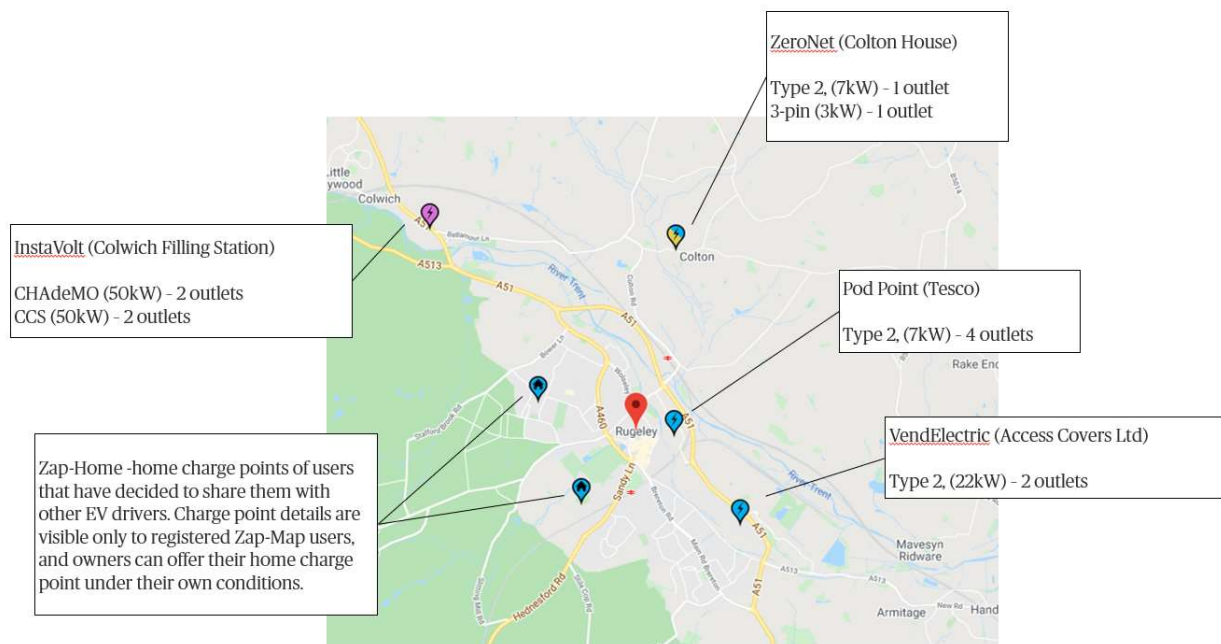


Figure 23: Current EV Charging Provision, Rugeley (source: ZapMap)

Figure 23 indicates that provision in Rugeley is limited, and it is understood that plans are in place to increase supply. EV charging needs to be smart, which involves provision of a two-way communications link, and potentially the ability to stagger charging during the day according to demand. Smart charging enables users to tell the charging point when they need their vehicle to be charged by, and the charging point can decide the charging profile in line with other grid requirements. This helps balance loads on the grid. One step on from smart charging is the concept of Vehicle to Grid (V2G), which involves energy being returned from the car battery to the grid when necessary.

When designing EV charge point installation, it is worth considering future-proofing of design to enable further outlets to be installed relatively cheaply in the future. This may include oversizing cabinets for switchgear, and installing extra ducting and cables, so that all that is needed is the final fix at a later stage.

Figure 24 illustrates an attractively landscaped design. Putting EV points along the landscaped section enables the cabling to serve twice as many spaces compared to putting it along a wall. If such landscaping is provided without cabling, it could relatively easily be added later.



Figure 24: Landscaping along the central strip between banks of parking spaces (source: Dr Keith Bevis, Harry Potter World car park)

A key consideration when providing EV charging is the constraints of the local electricity infrastructure, such as the substation and cabling. Earlier consultations with the Distribution Network Operator are required to discuss any potential upgrades that may be necessary. Alternatives to upgrades can also be considered, such as managing the load through smart charging and / or provision of local energy storage solutions that can help meet peak power demands.

The needs of taxis, private hire vehicles, car club vehicles and delivery vehicles should also be considered when designing EV charging infrastructure. Depending on the length of stay, certain types of vehicles may require faster charging, which is generally more expensive and increases stress on the grid.



# Conclusions and Key Recommendations

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The objective of WP4 of the Zero Carbon Rugeley project was to consider smart, shared and low carbon mobility options for Rugeley, and consider how these can be integrated into the energy system. This report has established the following:

- Zero Carbon Rugeley initiatives would align with both local and national policy. Reference is made to DfT's emerging Transport Decarbonisation Plan and guidance with respect to walking and cycling.
- Walking is the most environmentally friendly mode, and must be prioritised as such. A package of initiatives aimed at promoting walking should be developed, with suggestions put forward in this report.
- Provision of segregated cycle infrastructure, and other measures to promote cycling, are not only important for encouraging modal shift away from private car use, but can also assist with the inevitable growing use of e-scooters and cycle deliveries. Such infrastructure can also protect pedestrians, as cyclists and e-scooter users might otherwise choose to use the footway. It is recommended that the Local Authority look into funding opportunities that could be forthcoming in relation to DfT's recently published document: *Gear Change: a bold vision for cycling and walking*.
- Demand Responsive Transport is a potential solution to help fill a gap between more costly, non-shared services such as taxis and traditional fixed-route, scheduled bus services. Discussions should commence with operators to investigate what might be feasible in Rugeley.
- Opportunities for providing enabling infrastructure for zero-emission buses should be explored.
- The principles of shared mobility hubs, which facilitate a coming together of many mobility and non-mobility related components, should be promoted.
- EV charging provision should be increased throughout the town. This should also consider the needs of taxis, private hire vehicles, car club vehicles and delivery vehicles. Intelligent design may enable cost effective installation of EV charging points in the future.

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