

**cenex**



Lowering your emissions  
through innovation in transport  
and energy infrastructure

# Taxi Engagement: One to One Operator Engagement Summary



**June 2023**

**Prepared for:**

Stuart Davis  
SWARCO

---

**Prepared by:**



Connor Allen  
Technical Specialist

---

**Approved by:**



Steve Carroll  
Head of Transport

---

**Company Details**

Cenex Consultancy Services  
Holywell Building  
Holywell Park  
Ashby Road  
Loughborough  
Leicestershire  
LE11 3UZ

Registered in England No. 12370236

Tel: 01509 642 500  
Email: info@cenex.co.uk  
Website: www.cenex.co.uk

**Terms and Conditions**

These conditions, together with a formal acceptance of this proposal, shall constitute the entire agreement between Cenex Consultancy Services and the Client and shall take precedence over any conditions proffered by the Client, whether before or after the date of the covering letter.

Any variations to the scope will be agreed with the client after discussing the changes to time and costs. If the timing changes from that shown, then the costs may also change.

If a decision is made to terminate the commission, Cenex Consultancy Services will invoice for all costs incurred on the project up to that point plus all reasonable close-down costs associated with termination.

The prices remain valid for three months from the date shown.

Cenex Consultancy Services shall exercise all reasonable skill and care in the performance of our services and we shall be liable only to the extent we are in breach of such obligation. Cenex Consultancy Services shall not in any circumstances be liable in contract, or otherwise for (a) any loss of investment, loss of contract, loss of production, loss of Document Revisions time or loss of use; and/or (b) any consequential or indirect loss sustained by the Client.

These conditions are not intended to confer on any third party any benefit or any right to enforce any term of the agreement between Cenex Consultancy Services and the Client.

---

**Document Revisions**

No.	Details	Date
1	Initial version	19/05/2023
2	Version for web	07/06/2023

## 1 Introduction

Across three dates in April 2023, Cenex visited the key operational locations for taxis and private hire vehicles within Stoke on Trent, Newcastle under Lyme and Stafford in the Staffordshire area. At each location, Cenex engaged in one-to-one sessions with the trade in order to capture driver concerns and barriers to the uptake of battery electric vehicles (BEVs). This also included seeking feedback on current and proposed charging infrastructure, and priorities for drivers going forward to maximise uptake.

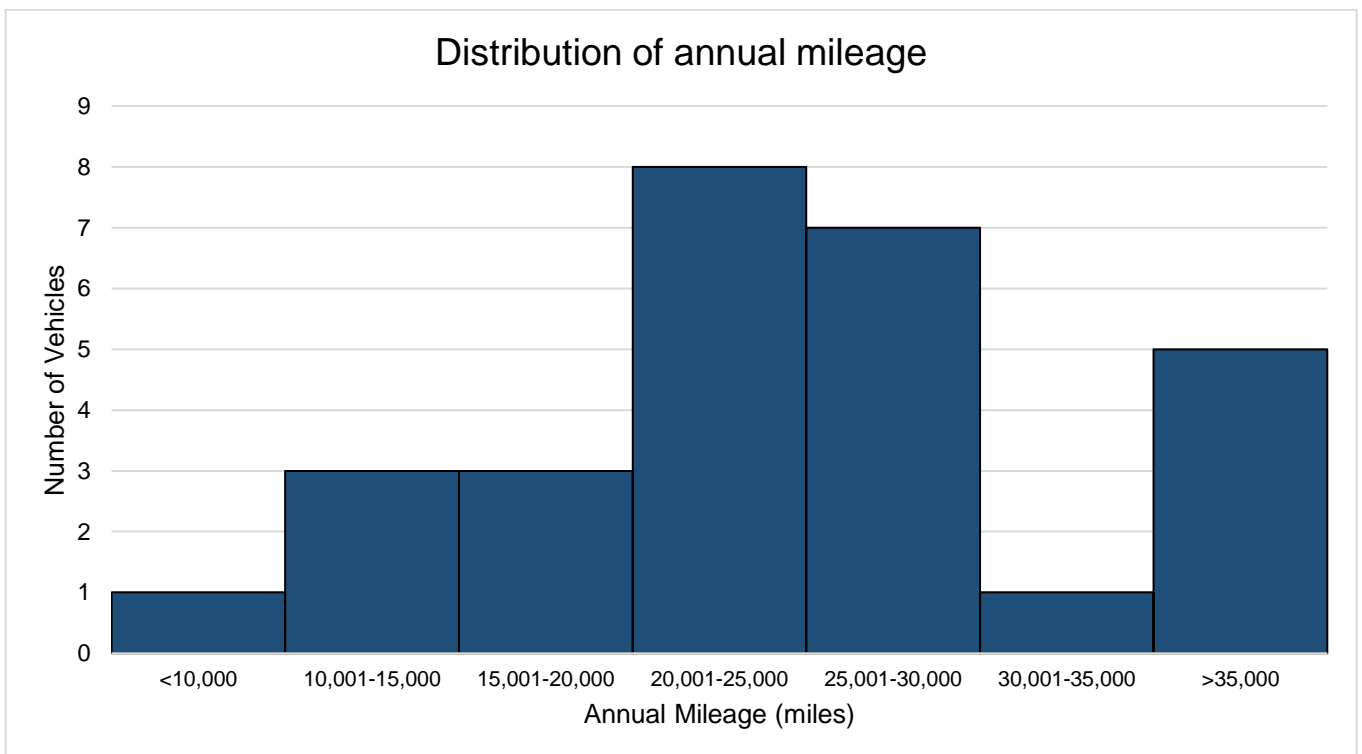
This report focusses on providing the insights and information gained from these conversations with the taxi/private hire vehicle drivers. This includes both answers to fixed questionnaire questions and also general comments and opinions made by the operators during the interviews.

Overall, there were fifteen questions asked to a total of 29 vehicle operators (7 within Newcastle under Lyme, 13 within Stoke on Trent, 9 in Stafford). This included both open-ended and fixed response questions, with operators encouraged to openly share their opinions wherever possible.

## 2 Taxi Operations

### 2.1 Typical Vehicle Mileages

When reviewing the interviewed drivers' operations and mileages, it was found that there is substantial variation from user to user. The chart below shows the annual mileage distribution of the interviewed operators. The difference in mileages can be seen here, where a number of vehicles are driving further than 35,000 miles per year, whilst one vehicle travelled less than 10,000. In fact, drivers stated vehicles can travel anywhere from less than 20 miles in a day, all the way to one driver stating that their vehicle can be used for up to 800 miles in a day, due to multi-shifting and vehicle sharing.



### 2.2 Vehicle Roles

These large differences in distances can be attributed to the different roles that taxis perform within an area. Within the interviewed operators, there were those performing the following duties:

- **Airport Drop offs:** These drivers regularly undertake long journeys and typically work full time as taxi drivers. Typically, these drivers will do a minimum of 100 miles per day with longer days (~400 miles) on Fridays and Saturdays. This can make range the key constraint for adopting electric vehicles.

- **Local Full Time:** These drivers tend towards shorter local journeys (50 to 150 miles is the typical daily mileage). However, they are required to operate at any time throughout the day and this can mean that there are not planned downtime periods where charging could be completed.
- **Local Part Time:** These drivers complete relatively few miles per day, ranging between 20 and 70 miles. Typically, these drivers are most concerned about the economics of the vehicles they operate and generally purchase four to five year old vehicles to use until they are no longer allowed by the taxi licensing authority.

In addition to the three main categories of drivers, the following were also mentioned in the one-to-ones:

- **Wheelchair accessible vehicles (WAVs) and people carriers:** There were a number of drivers operating these types of vehicles, capable of carrying six or more passengers. These drivers could also fall into any of the above categories. Currently it is generally considered that BEV alternatives to WAVs come with an excessive price premium. This is particularly of note for those working as part time drivers.
- **Multi Shifted Vehicles:** A small number of drivers reported very high mileages for the vehicles they use, and this was due to the vehicles being multi-shifted and used by two or more drivers. Therefore, range is a big concern for these users when considering BEVs.

### 2.3 Driver experience

Within the one-ones conducted, there was a range of experience between drivers, from 5 years of taxi driving experience all the way up to 45 years. The average time the interviewed operators have spent as taxi drivers in each location is shown in the table below, demonstrating that typical taxi operators have significant experience in the industry.

	Newcastle	Stoke	Stafford	Total
<b>Average Time as Taxi Driver (Years)</b>	15	21	16	18

### 2.4 Priorities of drivers when purchasing a vehicle

As part of the questionnaire, the drivers were asked to consider various priorities when purchasing a vehicle and rank them as “important”, “a consideration” or “not important”. Following this, the following priority list could be drawn:

Rank	Priority
1	Capital Cost
2	Vehicle Age
3	Fuel Economy
4	Whole life cost
5	Maintenance Cost
6	Vehicle Make/Model
7	Vehicle Emissions

This priority list shows that currently, there is not any real consideration for a vehicle’s emissions and therefore in order to increase further uptake of electric vehicles, there may need to be a mindset change amongst taxi drivers. It also highlights that drivers are not considering whole life cost as a high priority and therefore will miss out on the economic benefits available. This shows that education and planning could help with the transition to battery electric.

### 2.5 Other Insights

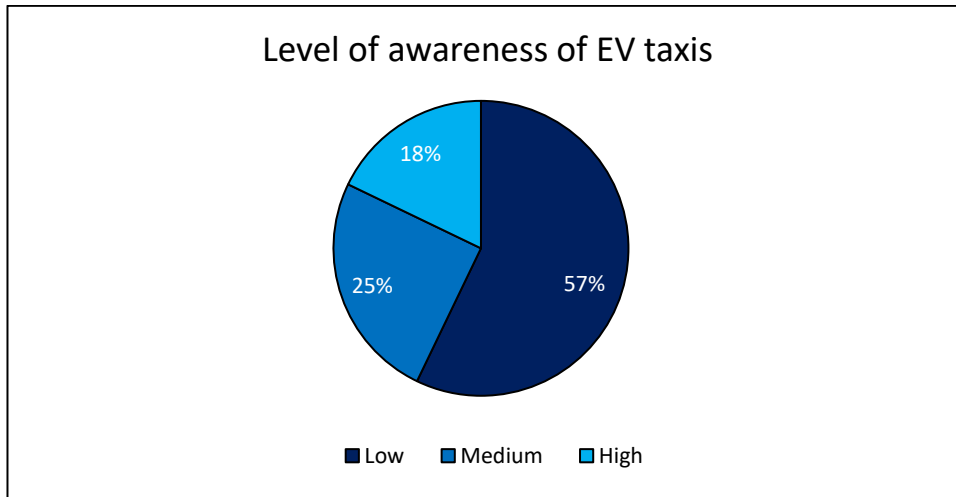
It was also found that the majority of taxi drivers in the area own their vehicles, making up 83% of the operators.

Additionally, there was often a language barrier when communicating with several drivers. Due to this, several drivers were operating a ‘buddy system’ where one driver would begin a conversation with the interviewer, but another driver would be summoned or would rapidly intervene to support the

conversation. Therefore, future engagement could seek to identify these local champions, as these individuals will be the final decision makers for several other drivers.

### 3 Opinions of BEVs

Generally, there was a mixed response to the transition of taxi vehicles to BEVs and this could largely be down to the lack of knowledge and awareness that is currently present in the industry. In fact, within the interviewed sample, 57% of operators said they had either low or zero knowledge on BEV taxis. This is demonstrated in the chart below.



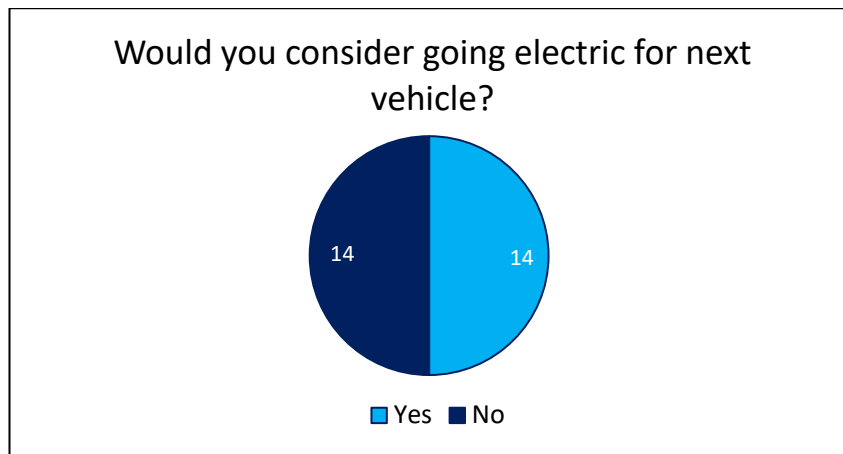
This perceived lack of awareness regarding the use of battery electric vehicles as taxis was also apparent through comments made by the operators in the one-to-ones. For example, within various interviews, some drivers stated that running a BEV is too expensive, but some stated it is beneficially cheap when compared to a conventional vehicle.

However, it was typical concerns that were most prominent in the interviews, such as range anxiety, with those having to complete longer journeys stating that there are no BEVs on the market that offer the required range. Even those operating lower typical daily mileages of approximately 150miles were concerned that on the worst days (cold weather, head winds, high number of passengers) that current BEVs would struggle to achieve the required journeys. Drivers also understood that OEM reported ranges were seldom realistic.

Economic concerns were prominent in discussions, especially if expensive public charging would be required. There were also worries regarding the potential loss of revenue from downtime due to requiring the vehicle to charge, particularly those operating locally as a full-time job.

Additionally, there were particular concerns with battery life and the cost and availability of replacement batteries. OEM warranties on BEVs were mentioned to be generally 100,000 miles and drivers are concerned that this can easily be completed in only three years of operation and therefore the prospect of requiring to replace the battery every three years at a cost of £3,000 to £15,000 (as stated by drivers) each year is greatly concerning.

Despite the concerns and reservations, it appears that taxi drivers remain reasonably open minded regarding the introduction of electric taxis. This was demonstrated by 50% of the interviewees stating that they would consider an EV for their next vehicle. This may be helped by the fact that 46% of drivers stated that they know someone who currently operates an EV taxi.



## 4 Opinions on Charging

### 4.1 Chargepoint Locations

During the interviews conducted by Cenex, drivers were shown a map of the area and asked to both comment on the current locations of the SWARCO chargepoints and where they feel there should be additional chargers.

As is to be expected, several drivers selected locations that were personally very useful for themselves (e.g., outside their own home) but also at other key locations where they regularly waited for new fares (either on the ranks for Hackneys, or at the dispatch office for private hire vehicles). However, there were several drivers who commented that a handful of rapid chargers were of limited use and that in fact a large number of charge points offering a combination of slower and fast charges is required, spread across the entire catchment area.

Maps showing the locations that operators marked as potential beneficial charger locations are shown in the Appendix.

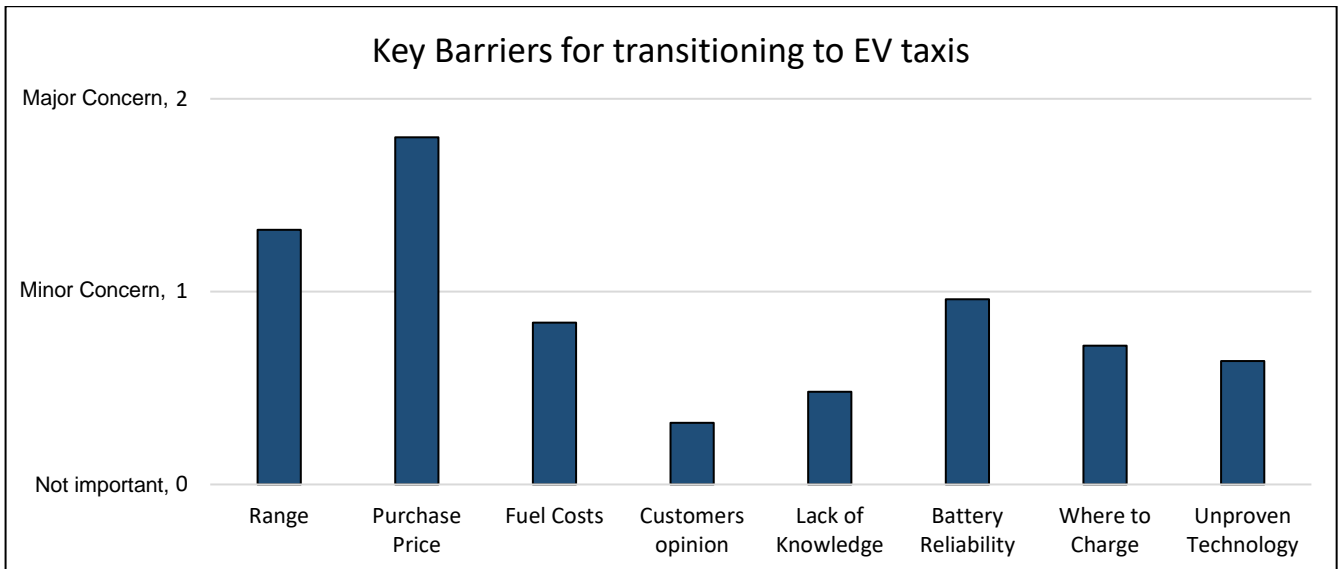
### 4.2 Home Charging

It was also stated by several drivers that they would have no access to designated parking for their vehicles overnight. Therefore, a large number of these drivers have dismissed the idea of owning an electric vehicle due to the fact that they do not feel that rapid charging throughout the day is economically viable. Without the ability to slow charge overnight (as they live in a block of flats or a terrace house), they do not feel they can make the switch to BEVs without a reduction in their income.

## 5 Key Barriers to Transition

Drivers were given a list of potential barriers to transition their vehicle to an electric equivalent and asked to rank them as either a "Major concern", scoring two, a "Minor Concern", scoring one or "Not Important", scoring a zero. These scores were then averaged across all categories and all drivers to demonstrate which concerns were the highest priority for drivers and which were not of particular concern.

The chart below shows the result of this investigation:



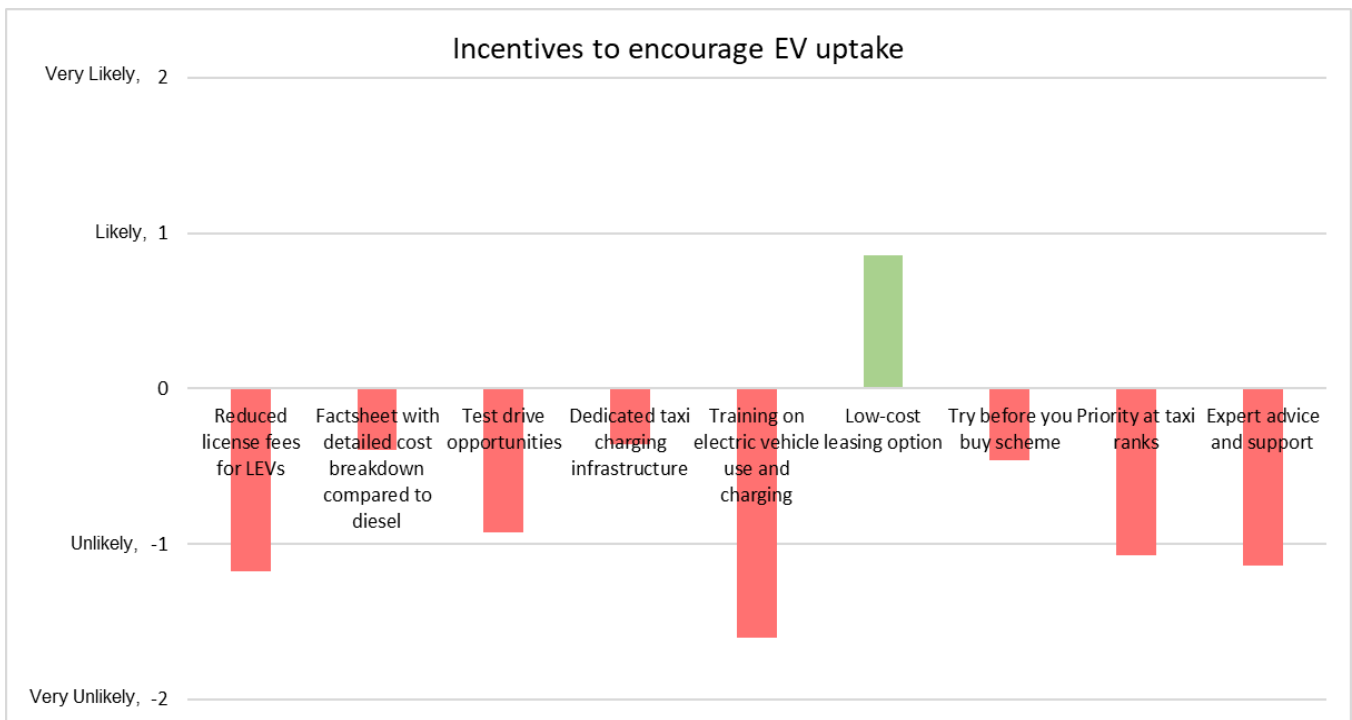
The chart demonstrates that taxi drivers currently believe that the most significant barrier to transitioning to a BEV taxi is the purchase price, followed by range and battery reliability. Whilst they are less concerned about their customers opinion and whether they have a lack of knowledge on the topic.

Since range and battery reliability are only perceived barriers to electrifying, there could be increased uptake with improved BEV education. The purchase price barrier could be tackled through the provision of interest free or low interest loans for zero emission taxis.

## 6 Potential Incentives to Aid Transition

Similarly to the investigation into key barriers, a scoring system was determined from the driver’s responses when asked to rank various potential incentives that could help aid the transition to EVs as “Very Likely” (Score: 2), “Likely” (Score: 1), “Unlikely” (Score: -1), “Very Unlikely” (Score: -2).

The results of this are shown below, where the green bar represents an incentive that on average drivers felt would likely help aid the uptake of EV taxis, whereas the red bars represent incentives that drivers on average felt would be unlikely to aid the transition.



From this investigation, it was demonstrated that the drivers felt that on average the only incentive that could increase the uptake in EVs is introducing a low-cost leasing option. They also felt that the least

effective method, of the options provided, would be training on EV use, and reducing licensing fees for LEVs. There were, however, a few incentives that drivers were less sure on and received more mixed results, suggesting several drivers felt that they could be useful. These were such as the factsheet with cost breakdowns, dedicated taxi charging infrastructure and a try before you buy scheme.

## 7 Key Points Summary

In conclusion, the following key points were noted as part of this one-to-one engagement study.

- There were a total of 29 vehicle operators interviewed (7 within Newcastle under Lyme, 13 within Stoke on Trent, 9 in Stafford).
- Within the interviewed operators, there were those performing the following duties:
  - o Airport Drop offs: Longer journeys, full time workers
  - o Local Full Time: Shorter journeys, any time of day operation, full time workers
  - o Local Part Time: Shorter journeys, economically constrained, part time workers
- The average driver experience of those interviewed was 18 years.
- The key priorities for drivers when purchasing vehicles are currently, capital cost, vehicle age and fuel economy.
- 83% of drivers interviewed own their vehicles.
- Generally, there was a low awareness of EV taxis, 57% of those interviewed stated they had either low or zero knowledge.
- 50% of drivers said they would consider an EV for their next vehicle.
- 46% of drivers know someone who currently operates an EV taxi.
- Generally, a larger number of chargepoints spread out across the region is thought to be required.
- Several drivers dismissed the idea of owning an electric vehicle due to having no opportunity to install a home charger (e.g., no driveway, rental property).
- Main perceived barriers to adopting EV taxis are purchase price, vehicle range and battery reliability.
- Main perceived most helpful incentives to encourage EV uptake were low-cost leasing options, dedicated taxi charging infrastructure and a factsheet with a detailed cost breakdown compared to diesel.

## 8 Case Study

Aerobright Taxis are a private hire organisation based in Stafford. They operate 36 vehicles including six BEVs and were interviewed to provide specific insights into how they have found using the battery electric vehicles and the SWARCO chargepoints in the Staffordshire area.

The organisation first purchased a fully electric vehicle two years ago due to the potential cost savings and environmental benefits of doing so. Following this, they are now planning to adopt as many BEVs as possible going forward. This is due to the fact that they have found that running BEVs works very well for a large number of drivers and can make large cost savings (up to £9,000 per annum).

However, they also noted that the uptake of BEVs is not beneficial for all drivers at present, such as those without home charging capability, where using public rapid chargers means that operations are not cost effective. It was also suggested that whilst some drivers are able to manage their time well, others require simple, clear instructions to use BEVs successfully for short local journeys only. Overall, the organisation would recommend the switch to BEVs to other companies, stating that they should “Go for it! You can save a lot of money if you avoid rapid chargers”.

The interviewed organisation suggested the best way of helping other taxi operators go electric would be to install reliable slow chargers in public spaces, available at low costs for taxi operators. This is because it would help those who currently cannot use a home charger keep costs down. Also, increasing the BEV

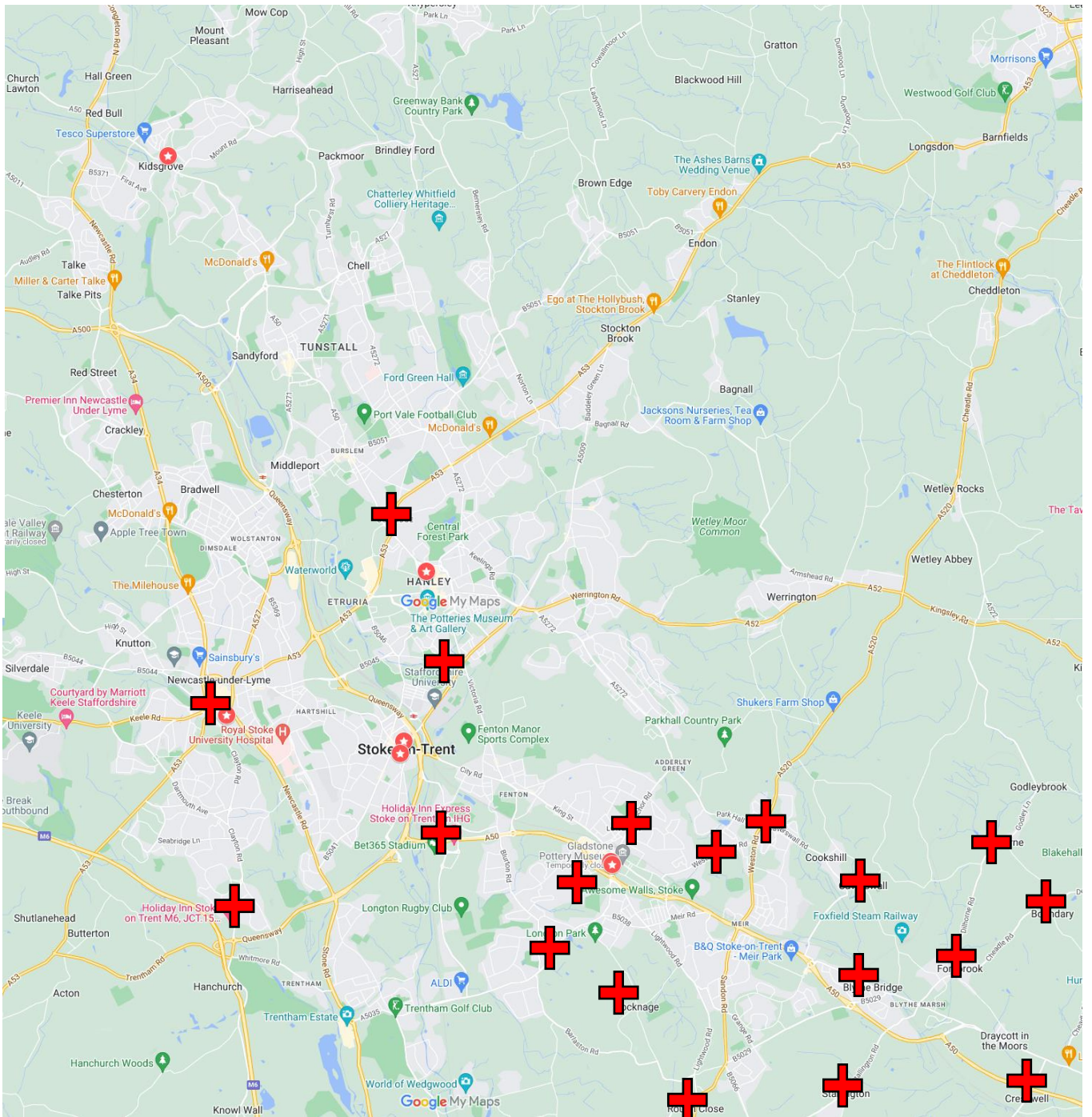


## SWARCO SOTCC Taxi Engagement

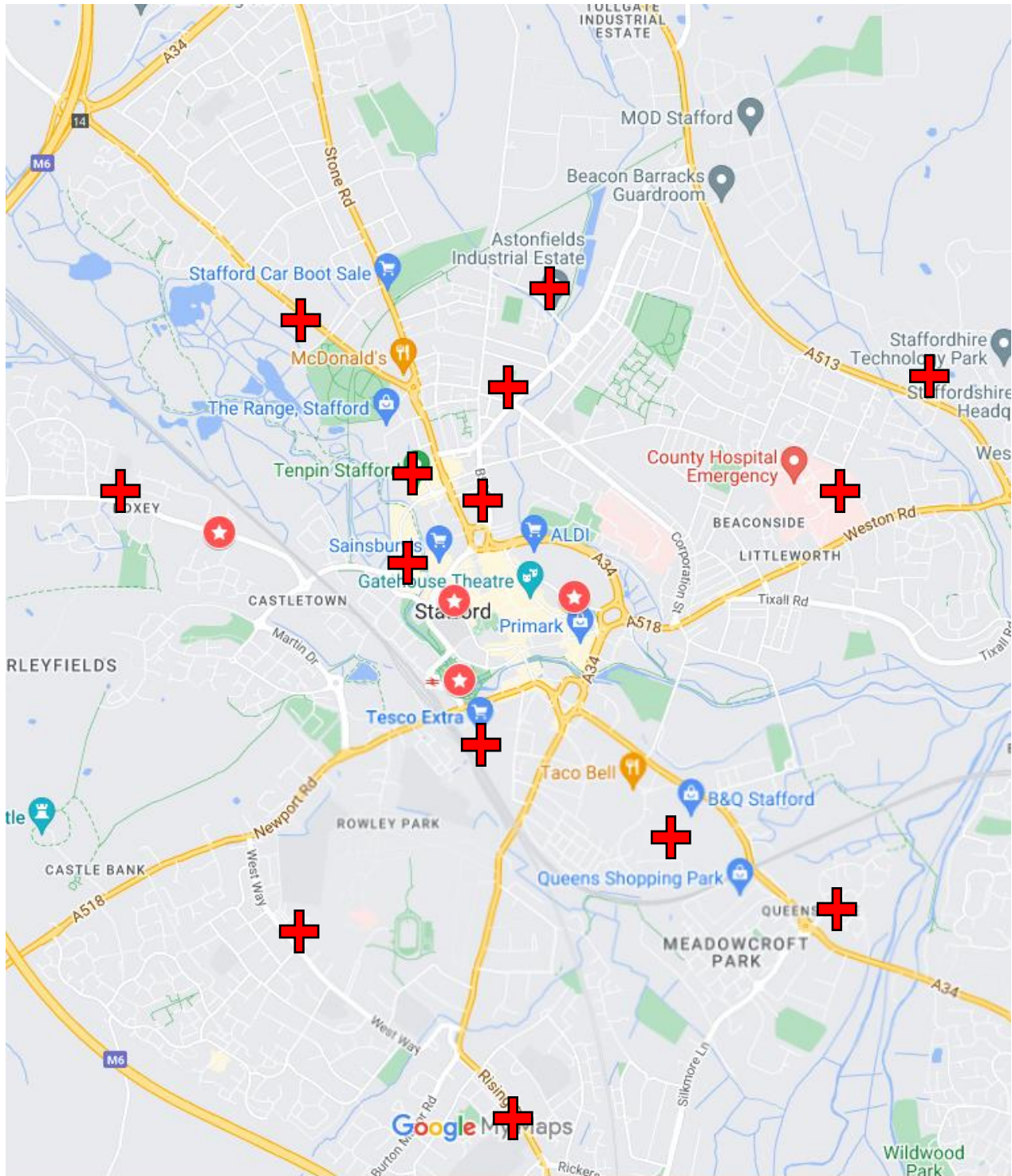
license limit to twelve years may increase uptake as used electric vehicles are currently more expensive the conventional alternatives and most drivers will be buying vehicles that are around five years old.

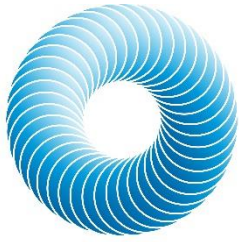
## 9 Appendix – Chargepoint locations

### 9.1 Stoke on Trent & Newcastle Under Lyme



## 9.2 Stafford





# **cenex**

**Lowering your emissions  
through innovation in transport  
and energy infrastructure**

 **Transport**

 **Energy  
Infrastructure**

 **Knowledge  
& Enterprise**

Cenex Consultancy Services  
Holywell Building,  
Holywell Park,  
Ashby Road,  
Loughborough,  
Leicestershire,  
LE11 3UZ

**Tel:** +44 (0)1509 642 500  
**Email:** [info@cenex.co.uk](mailto:info@cenex.co.uk)  
**Website:** [www.cenex.co.uk](http://www.cenex.co.uk)  
**Twitter:** @CenexLCFC  
**LinkedIn:** Cenex