Feasibility Study Final Report 2020 - 2021

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1. Executive Summary

In 2019 the Amey Consulting's Intelligent Mobility team were appointed by Staffordshire County Council (SCC) through the ADEPT Live Labs programme to complete an initial feasibility study (Phase One) exploring the requirements for a mobility hub. In 2020 a further feasibility study was commissioned to identify specific locations within Stafford for a mobility hub.

The Intelligent Mobility team brings together experts in strategic consulting, stakeholder engagement, transport planning and modelling, intelligent transport systems, operations, data analytics and systems integration to create a strong capability for the delivery of the feasibility study.

The report outlines the unique method followed by the Intelligent Mobility team to identify four viable locations for mobility hubs/nodes within Stafford. The feasibility report builds upon the work completed in the Phase One Feasibility Study where 6 locations were identified.

A data led methodology was established that considers key factors for the success of a mobility hub and the unique transport objectives of SCC. The feasibility study has considered existing research and mobility hub trials to inform our methodology and recommendations.

The report outlines the phases of the methodology in detail to allow SCC to see the justification for these locations. For the individual locations we have included initial suggestions for a transport solution mix that will support SCC in their transport objectives.

Our final recommendation identifies the preferred location and the next steps for the development of a mobility hub/node network across Stafford.

Through the development of our unique methodology we were able to develop a data driven toolkit. This toolkit has supported the development of the report, provided another lense through which to analyse our recommendations and will allow us to continue to support SCC and others develop mobility hubs.

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2. Introduction

Amey Consulting has defined mobility hubs as areas where a variety of transportation modes connect seamlessly in order to support the community, by offering a wide range of transport solutions to bridge the gap between rural and urban provided transport. As such, they present an opportunity to integrate mobility solutions that utilise new transportation technology to help enhance user experience and travel resiliency to help cover first and last mile travel as well as supporting traditional modes of transportation. Mobility hubs offer a unique opportunity to focus on place-making and transport, consumer and community demand drive transport and additional services available. Based on these definitions, the core components of mobility hubs include but aren't limited to:

- Being near a major transit station
- Providing a variety of sustainable transportation options
- Being surrounded by areas with high user requirement.

The definition and core components can be applied to a variety of sizes of mobility hubs, the smallest of which we have termed a node. The integration and approach to achieving this can and should also be applied to establishing a network of hubs and nodes. This use of "nodes", which are smaller in scale, but offer connectivity to larger, mobility hubs. Typically, nodes suitable for more rural areas with sparse population or have limited transportation services and connect to hubs where there is more land availability and service demand. We have used a data-led approach when analysing the size of hub required with a particular focus on the demand data.

During the course of the feasibility study we engaged with other organisation that are working to develop and support mobility hubs. The engagement examples are throughout this document in call out boxes.

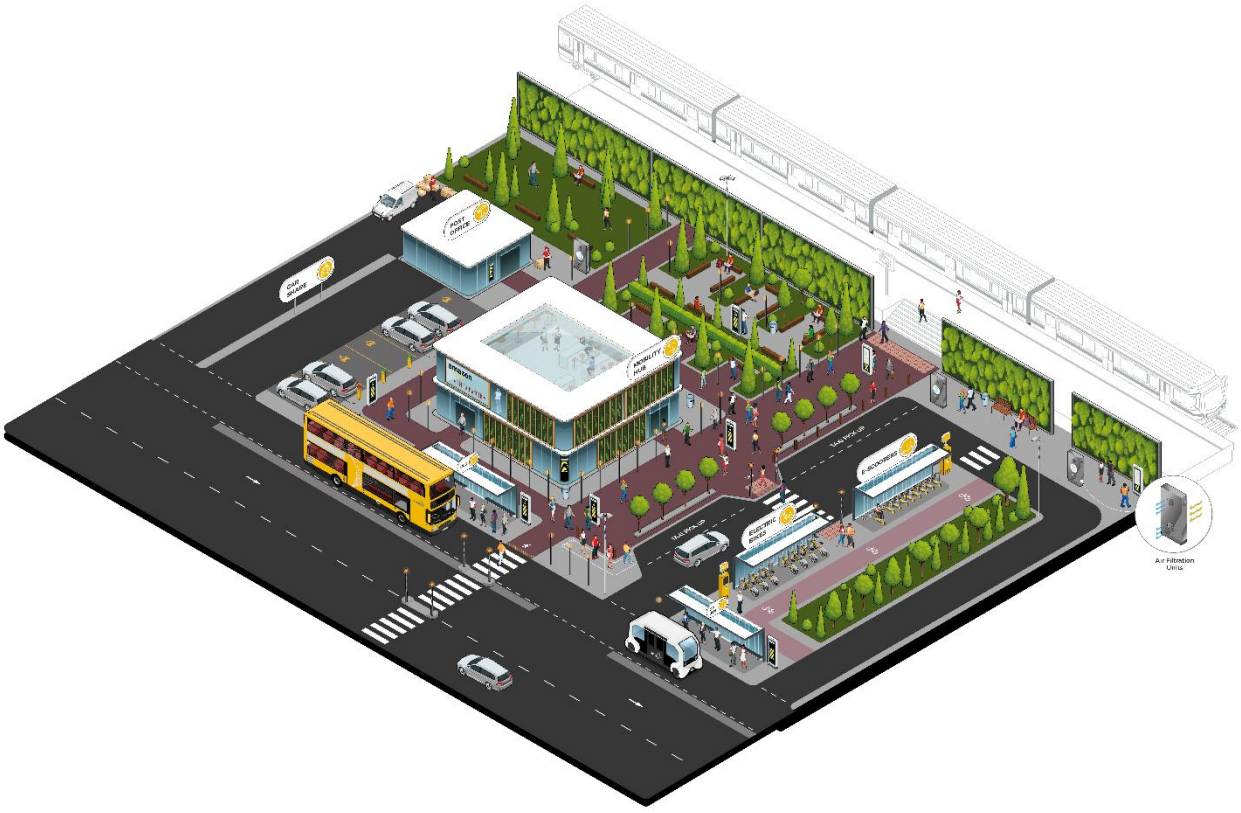


Figure 1 - Example of a mobility hub highlighting transport and other services available

3. Purpose, Scope and Objectives

The purpose of this report is to complete a detailed analysis and proposal of a single mobility hub location in Stafford, including the identification and recommendation of mobility solutions; understanding of customer needs and demands; and the infrastructure requirements to support this. The report will select a suggested location and recommendations for the next steps.

As part of the feasibility study to determine the best location for the deployment of a mobility hub/node SCC was engaged with to identify the key transport objectives for the council. SCC are committed to sustainability, demonstrated in their Corporate Climate Change Strategy and on going work supporting their implementation of theClimate Change Adaptation Plan. Furthermore, SCC declared a climate change emergency in 2019 and are actively engaging with sustainable transport options. For the deployment of a mobility hub/node, the following were identified as key objectives through a workshop with key SCC stakeholders:

- A reduction in the number of cars and car journeys
- An increase in active travel
- Encouragement of bus and train patronage (beyond the period where Covid is impacting on patronage), enhancing what is already there
- Tackling the Climate Crisis
- Improving air quality
- Creation of a shared local space, community buy in and delivery of social value
- Encouragement of EV adoption
- Movement towards shared transport
- Ensuring sustainability of the Hub from a commercial perspective
- New modes to plug transport gaps highlighted in Phase 1
- Outcome focused design

To achieve the above and ensure the feasibility study took advantage of research into shared mobility and mobility hub design, we created a methodology to enable SCC to follow an evidence-based approach to determining the best location for a mobility hub/node.

Through the feasibility study we developed a unique six stage method for location analysis. The method was data-led and at each stage we took into account SCC transport objectives in addition to the factors that ensure the success of a mobility hub or node.

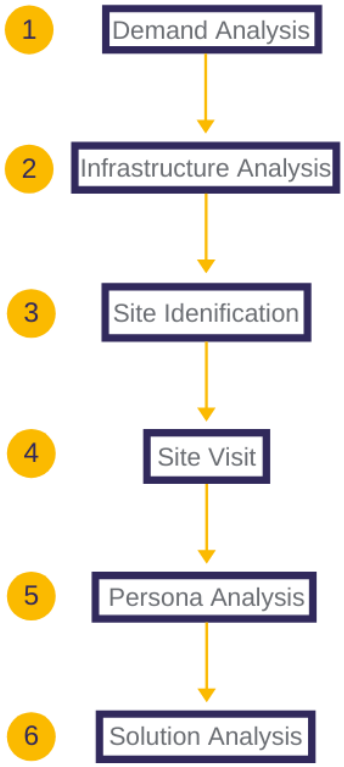


Figure 2 - Simple Outline of Methodology

4. Glossary of terms

Throughout this report, certain defined terms are used, as follows:

Buffer – Area within which a user would be willing to walk to access a transport mode

Location – Wider general space under consideration

Mobility Hub – Includes both transport modes, EV charging facilities, community space and additional services such as parcel pick-up locations. Depending on the size of site these can be large, medium or small with different numbers of services.

Mobility Node – Includes transport modes and EV charging facilities

Mosaic Data - Mosaic consumer classification provides an accurate understanding of the demographics, lifestyles and behaviour of all individuals and households in the UK.

Site – Specific locations which could hold a mobility hub or node

User – Those who be customers of the mobility hub services

5. Methodology

There is no defined industry recognised process for the identification and deployment of mobility hubs or nodes. In the UK, Collaborative Mobility UK (CoMoUK) has developed the Mobility Hub Guide[1] published in October 2020. The Intelligent Mobility team reviewed the existing research and guidance to support our methodology development.

Figure 3 shows a full breakdown of the process followed to deliver the two feasibility studies.

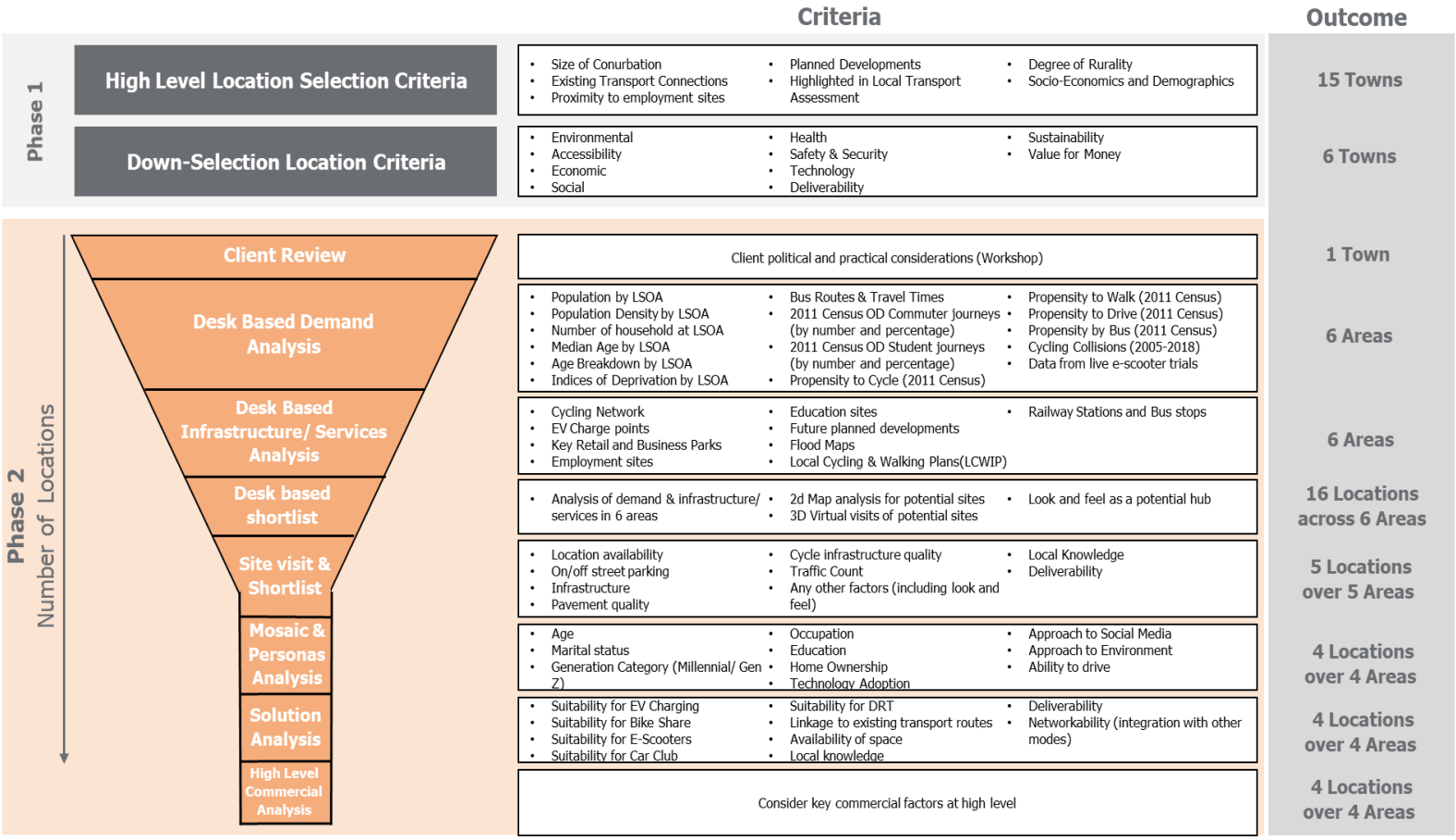


Figure 3 - Detailed outline phase one and two

[1] CoMoUK (2019). *Mobility Hubs Guidance* [online]. Available at: https://como.org.uk/wp-content/uploads/2019/10/Mobility-Hub-Guide-241019-final.pdf {accessed 13th April 2021]

The overarching guide to our methodology was creating a scoring matrix based on the data we had access to. From this we created a weighting system based on success factors for the mobility hub and the objectives of SCC. At each stage, data for the locations was added to the scoring matrix and the final stage was creating an overall weighted score. Depending on the objectives, the methodology could be used to assess the mobility services viability to meet these objectives.

This methodology can continue to be utilised as a basis for mobility solutions across Staffordshire.

Mobility Hub Guidance and Research

CoMoUK, as the charity that promotes the growth and benefits of shared transport, has become the accreditation body for mobility hubs. In addition to offering accreditation they work closely with SHARE-North who provide funding to regions across Europe for mobility hub development.

5.1. Demand Analysis

Key objectives for SCC was to achieve an increase in public transport use, active travel and a reduction in private car use. In order to analyse the demand we created a buffer of 1 mile around the individual locations. A 1 mile buffer was chosen as research and our experience indicate it is the distance a user would be comfortable and willing to walk (15 – 20 minutes) to access a mode of transport .

The demand analysis involved using a number of data sources to identify the best locations for a mobility hub or mobility node. Six locations were identified through a workshop with SCC based on their local knowledge of the areas and their internal priorities. For the initial locations we began analysis on a central point within the buffer. As we moved through the process individual sites were identified and demand analysis on the specific sites was then reviewed.

The primary tool to analyse this data was a mapping programme known as Geographical Information System (GIS). GIS is a well-known tool to import and analyse varied geospatial data. GIS allows layers of data to be created and mapped onto a specific region, for example population density. In this instance we were able to enhance the analysis through mapping varied sources and clear comparison across the locations.

The table below outlines the key data sets analysed, the source and the purpose of the data within the analysis. In our analysis we have used the relevant and appropriate data accessible and as much as possible taken into account the periods of restricted movement due to Covid-19. Access to active people movement data would in the future provide an opportunity to enhance the demand analysis through a combination of the below and the active data.

Data	Source	Purpose
Age Ranges	ONS	Establish number of target users
Population Density	ONS	Establish density would support a variety of modes
No properties in the 1 mile buffer	Ordnance Survey	Establish density would support a variety of modes
Bus routes and time to town	Travel Line	Establish locations have transport links that would support the introduction of new modes
Cycle routes	SCC website	Establish opportunity to promote active travel
No of commutes	Propensity to Cycle	Establish the number of journeys
Mode to commute	Propensity to Cycle	Establish number of target users
Mode to school	Propensity to Cycle	Establish number of target users
Propensity to drive	Propensity to Cycle	Establish number of target users
Propensity to cycle	Propensity to Cycle	Establish number of target users

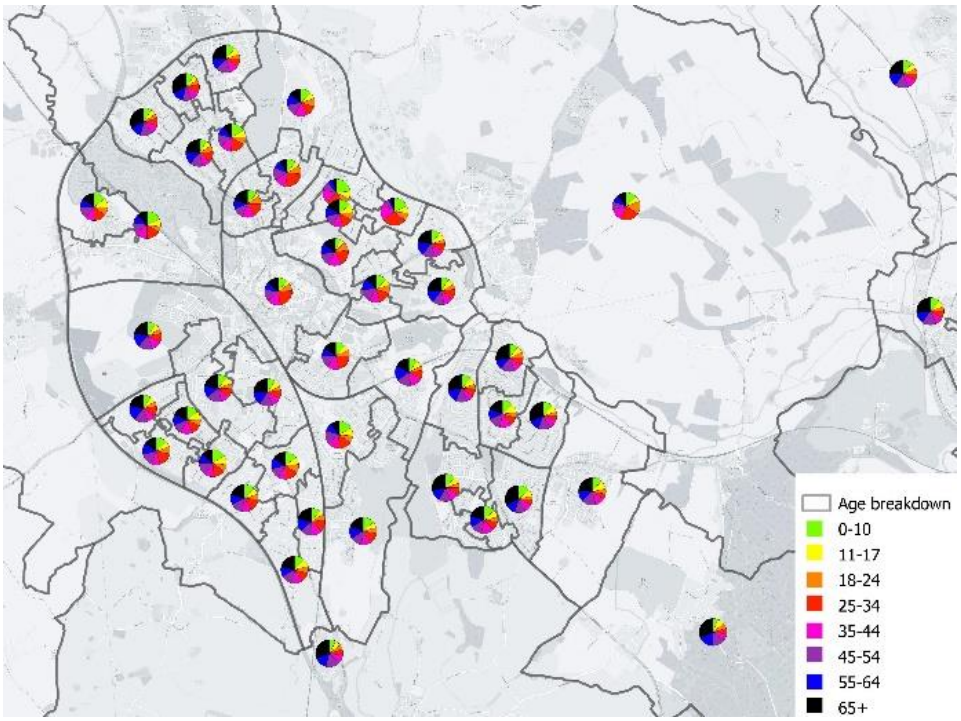


Figure 4- Age profile of resident in Staffordshire mapped into GIS

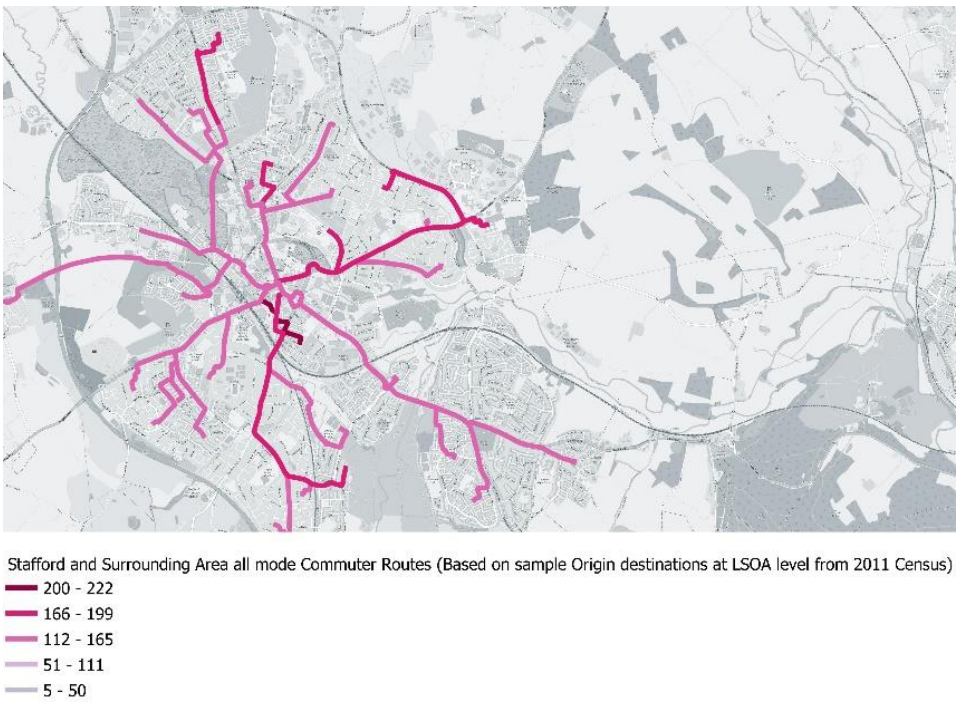


Figure 5 - Commuter journeys in Staffordshire mapped into GIS

From the demand analysis we understood the types of journey and mode. This and the high level demographic data allowed us to begin high level analysis of the opportunity for modal shift.

5.2. Infrastructure Analysis

Infrastructure data such as local cycle routes and EV charging were plotted through GiS. Through this we were able to understand the existing infrastructure that would support modal shift. In addition, key retail,

business park sites, planned developments, employment sites and education sites were plotted to understand site opportunities within the buffers and potential journeys in or out of the buffer.

Data	Source	Purpose
Electrical Access	SCC website	Evaluate opportunity to install EV charging
EV Chargers	Mapping	Evaluate charging requirements
Mobile Network	Signal Checker	Evaluate access to apps and possible MaaS platform
Retail Parks	SCC/District/Bourgh website/manual entry	Establish likely destinations in the surrounding area
Business Parks	SCC/District/Bourgh website	Establish likely growth in demand
Planned Developments	SCC/District/Bourgh website	Establish likely growth in demand
Employment Sites	Ordnance Survey	Establish likely destinations in the surrounding area
Education Sites	Ordnance Survey	Establish likely destinations with and out with the area

The infrastructure analysis improved our understanding of probability of modal shift to EV or active travel. It also provided us the mobile data to ensure operator utilisation would be appropriate in the rural location

5.3. Site Identification

To identify sites within the buffer, the analysis from stage one and two was utilised alongside GIS to map possible sites. Once potential sites had been identified in GIS we completed a virtual analysis of each location. Due to Covid-19 the virtual site visit was used to validate selections. For each of the sites we utilised our scoring matrix to produce a weighted score based on demand and infrastructure data.

	1	2	3	4	5	
Residential Density	10,000+		less than 5,000		5,000 - 8,000	50% of score
Age Ranges	Majority 55+	Two thirds over 44	25 - 34 ia half population	Two thirds under 44	Majority 25-34	
No properties in 1 mile buffer	4,000+	3,500 - 4,000	500 - 1,000	1,000 - 2,000	2,000 -3,500	
Bus routes and time to town	Less than 5 services 30+ min	5 - 8 services	9-12 services 21 - 30 mins	12 - 15 services	15+ Services 11-20 min	25%
Cycle routes	None on or off road		Access to off road through on-road		Direct access to off road	
Employer Locations	0		1		2+	10%
Shopping Locations	0		1		2+	
No of commutes	5 - 50	51 - 111	112-165	166 - 199	200 - 222	15% of score
Families	None		Children 0 -10		Children 11 - 17	
Education	None	Pre-school	Primary	Secondary	Further or University Education	
New Developments	None	General highway improvements	Mixed Development	Bus improvements	Housing/active travel improvements	
Mode of commute	Active Travel	Bus		Car Passenger	Car	
Mode to school	Active Travel		Bus	Car Passenger	Car	
Propensity to drive	31 - 40	40-50	50-60	60-70	70+	
Propensity to cycle	8 - 9	7 - 8	6 - 7	5 - 6	Less than 4	

Figure 6 - Example of weighted scoring matrix

5.4. Site Visit

Stage four involved conducting physical site visits which continued to validate our initial desk-based assessment. The site visit focused on the following areas:

- reviewing the land at each space in terms of size, location in terms local amenities and residents houses whether the space would be suitable to locate a hub/node,
- the availability of on/off street parking to enhance the understanding of car ownership and to support the targeting of households with two cars,
- a visual assessment of the location of on-site infrastructure (e.g. power to site, communications boxes),
- pavement and cycle infrastructure quality to support active travel, a high -level traffic count to indicate possible usage/local demand, deliverability in terms of how a hub might be deployed in the location.

While we have taken a data driven methodology to develop important insights and analysis to support our recommendations, the specific physical site visits gave us an opportunity to then re-assess the analysis, reviewing the infrastructure in person and completing a traffic count.

	1	2	3	4	5	
Buses	0		1		2+	
Available Mobility Hub Space	None	Utilising already allocated space	Possible Space		Easily Available	50%
Cars	Less than 2	02-May	5		10+	
Pedestrians	Less than 2	02-May	5		10+	
Parking	Multiple off-street parking available	Off street parking for one car	Mix of on and off street parking	Good on street parking	Limited private car parking (on-street)	30%
Bikes	0	1	2	3	4+	
Cycle Route	Very poor quality	Poor Quality	Average	Better than average	Ideal Quality	15%
Pavement	Very poor quality	Poor Quality	Average	Better than average	Ideal Quality	
Access to electricity	None	With large works availability	Possible Availability		Easily Available	5%

Figure 7 - Example of a weighting system for site analysis

5.5. Persona Analysis

Stage five involved the analysis of Mosaic data. Mosaic provides consumer demographic information for the UK's 51 million adults and 29 million households is collated from Experian, Census, Electoral Roll, Council Tax property valuations, house sale prices, self-reported lifestyle surveys, OFCOM data and other compiled consumer data. It classifies the population in to one of 15 Groups and 66 Types.

The analysis was completed in two phases. The first being an analysis of the groups found within the buffer areas to give insight into the make-up of locations and allow a baseline of types to be established. The second phase was to analyse the groups present within a buffer from the site. The levels of the groups most likely to initially use new mobility solutions was then fed into our recommendations on sites.

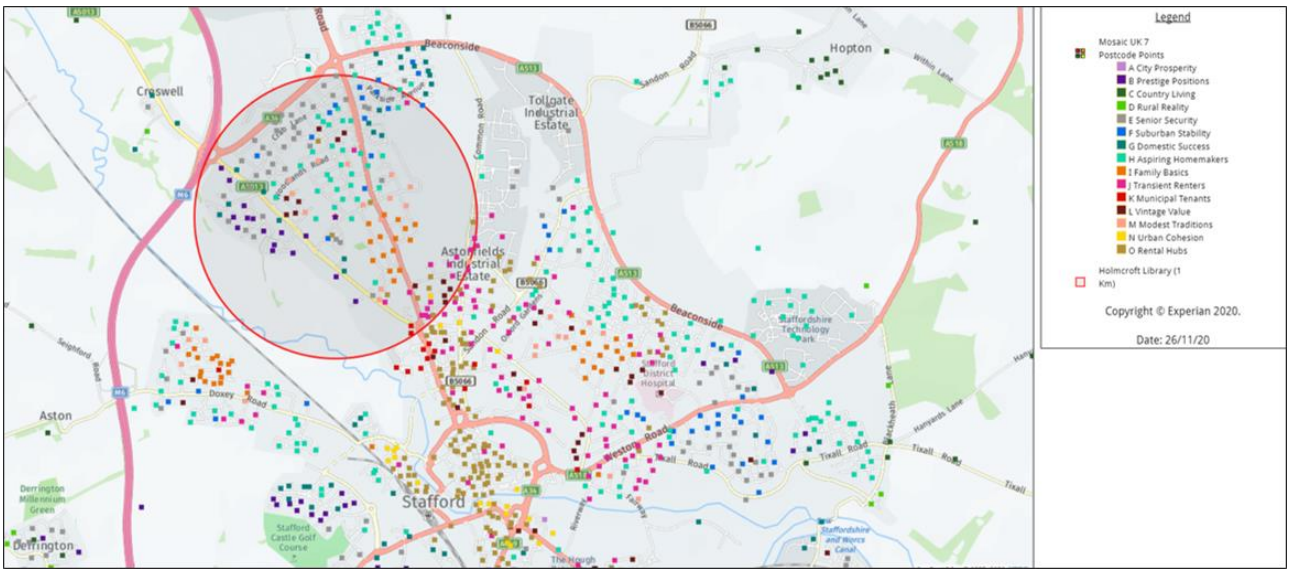
From our experience and analysing research completed by CoMoUK we identified the following high level criteria to support the targeting or relevant demographics:

- 18 – 35 – Engaged with new technology
- Millennials & Generation Z – First to uptake new technology
- Young professionals – Disposable income to use of new modes of transport
- Students aged 18+ - Journey types switchable
- Educated to third level - Open to switching to sustainable modes
- Early adopters of technology – New modes utilise new technology
- Environmentally conscious – Open to switching to sustainable modes

The Mosaic groups in Stafford were then analysed and target groups identified using the above and our expertise in modal shift. The four groups were:

- Rental Hubs - Educated young people privately renting in urban neighbourhoods
- City Prosperity Educated young people privately renting in urban neighbourhoods
- Aspiring Homemakers Educated young people privately renting in urban neighbourhoods
- Transient Renters Educated young people privately renting in urban neighbourhoods

The groups were mapped on GIS to analyse the geographic concentration in the proposed locations enhancing the understanding of user demand in each location.



8 - Example of mapped mosaic groups

5.6. Solution Analysis

Stage six involved a high-level analysis of the mobility solutions and services which could be deployed at each location to enable a successful functioning hub/node. The analysis reviewed the infrastructure and demand data collated however critically for the transport modes the likely users of each was factored in. Each location was assessed against several categories including:

- EV charging infrastructure
- Suitability for bike share
- Suitability for e-scooters
- Suitability for car clubs
- Suitability for demand responsive transport (DRT)
- Linkage to existing transport modes
- Available space to host a hub/node
- Local knowledge
- Deliverability of a hub/node in that location
- Networkability in terms of ease of connection with other modes

ADEPT E-scooter Live Trials

During the period of the feasibility study trials of e-scooters were carried out in Stafford and Newcastle-Under-Lyme. This provided an opportunity to utilise our methodology to support and identify new docking bay locations. In addition, journey data was added to GIS and used to further enhance our methodology with real-world testing.

The output of this analysis was additional information to help select which of the sites were suitable for a hub. The list below gives an indication of where information underpinning the analysis was derived from:

- EV Charging infrastructure: Greater Manchester EV charging network (Be.EV),
- Bike share: CoMoUK, Santander Bikes, NextBike
- E-Scooters: Stafford and Newcastle Under Lyme trials
- Car Clubs: CoMoUK
- DRT: Liftango, Arrivaclick, Oxford PickMeUp
- Deliverability: Deployment of Mobility hubs/Nodes elsewhere

The output from the solution analysis was an understanding of what transport modes would meet user demand and SCC transport objectives. The next crucial step for transport modes would be an analysis of the commercial requirements including utilisation.

6. Outputs

6.1. Final Site Selection

The key output from the feasibility study was the identification of a viable location for SCC to develop a mobility hub and subsequently deployment of a network of mobility hubs, inclusive of nodes. The final site selection was completed by creating a final score based on the analysis of, demand, infrastructure, site and Mosaic. The below table gives a summary of key findings from our analysis of each site which provide a key contribution to our recommendations for next steps.

Location	Demand Analysis	Infrastructure Analysis	Site Visit	Mosaic Analysis	Solution Mix
Holmcroft Library	Good density for new modes, age range fits criteria, large number of switchable trips	Access to bus and cycle routes, library car park as possible space	Pavement and cycle routes high quality	Key group for propensity to use new modes	Definite: Car club, bike share, EV charging, E-scooters Possible: Not currently viable: DRT
Stone Road	Higher density could cause too high a demand for new modes, age range fits criteria, large number of switchable trips	Access to bus and cycle routes, car boot lot as possible space	Pavement and cycle routes high quality	Key group for propensity to use new modes	Definite: Car club, bike share, EV charging, E-scooters Possible: Not currently viable: DRT
Radford Bank	Good density for new modes, age range does not meet criteria, large number of switchable trips	Access to bus and cycle routes, land behind bus stop	Cycle routes on-road	Key group for propensity to use new modes lower than the criteria	Definite: Car club, bike share, E-scooters Possible: DRT, EV charging Not currently viable:
Rising Brook	Higher density could cause too high a demand for new modes, age range fits criteria, number of switchable trips could lead to higher demand than can be met	Access to bus and cycle routes, green space in-front of parade of shops	Pavement and cycle routes high quality	Key group for propensity to use new modes lower than the criteria	Definite: Car club, bike share, DRT, EV charging, E-scooters Possible: Not currently viable:
Hall Close	Good density for new modes, age range fits criteria, large number of switchable trips	Access to bus and cycle routes, green space by a cycle route	Pavement and cycle routes high quality	Key group for propensity to use new modes	Definite: Car club, bike share, E-scooters, DRT, EV charging Possible: Not currently viable:

6.2. Toolkit

The second key output from the feasibility study has been the development of a toolkit to support the future deployment of mobility hubs. The aim of the toolkit is to outline the method and to facilitate its use by others for the identification of viable locations and sites.

While developing our detailed methodology we reviewed how this could be developed into a toolkit which could be followed to support further location selection across Stafford and wider across Staffordshire county.

We have simplified our methodology into five steps, at each step the reasons for this type of analysis are stated and data sources suggested.

Eastgate

SCC is exploring options for a regeneration programme at Eastgate at the Borough and County Council offices. The regeneration programme has a focus on environmental and sustainability benefits in the area.

The Intelligent Mobility team supported SCC in creating a proposal for how a central mobility hub could be developed as part of the regeneration programme.

The feasibility study and regeneration programme support SCC in their initial steps i developing a mobility hub and node network. Which supports their wider objectives to reach net zero and decarbonisation

The toolkit puts the user's transport objectives at the centre of each stage ensuring that the mobility hub can support with modal shift, EV uptake or provision of low cost transport.

The final stage of the toolkit explores the next steps in the development of a mobility hub. The central next step is the development of a business case to support commercial and transport objectives.

The full toolkit can be found in the appendix.

7. Recommendations

From our assessment our recommendation is to proceed with Holmcroft Library as the initial location for a small-scale mobility hub.

The location demand analysis particularly highlighted this location as the most viable. The population in the local area has 30% of the target ages. Taking into account the objective of achieving modal shift this location has car as the predominant mode to commute, 68% of commutes are made by car. Closely linked to modal shift is the access to cycle infrastructure and bus routes both of which would also support local residents to shift from private car to sustainable and active modes.

In addition, the Mosaic analysis shows that the profile of residents living and travelling locally are a key target group. Residents and those coming into the area during the day are 18% aspiring homemakers. In addition half the residents are economically active making it likely they have access to a smart phone and are more likely to have access to income to use on transport. Our analysis suggests that this would be a site suited to a car club, bike share, EV infrastructure and e-scooters which would offer variety in transport options.

Alongside further work required to deploy a mobility hub at Holmcroft Library, it would be beneficial to engage with CoMoUK to establish the requirements for accreditation of the node prior to final decisions on services are made. Throughout the process the deliverability of a proposed location was considered and at Holmcroft Library the council land, parade of shops and green space all suggest realisable delivery.

Within the feasibility study we have recommended a specific location in Holmcroft Library, from our analysis a mobility hub at this location we believe there is a great opportunity to support modal shift from private car and therefore support SCC in achieving the aims of their Corporate Climate Change Strategy and broader transport objectives for the county . In addition to this, our recommendations for SCC would be to consider how a hub at Holmcroft Library would sit within a transport network including multiple interconnected mobility hubs and nodes as part of a county wide mobility ecosystem.

Inphase one of our feasibility study we examined the context and future of mobility hubs in Staffordshire, while a diverse county most of the population lives in rural areas. SCC has an opportunity to take a phased approach to the implementation of a mobility hub/node network to address the transport challenges across the county. Our recommendation would be to ensure a strategic implementation plan is developed for mobility hubs within key locations for example Stafford and utilise nodes to connect rural areas. Within this strategic implementation plan we would recommend considering and analysing the long-term transport objectives both locally and nationally and review the development of a future mobility strategy for SCC.

There is a huge opportunity to realise benefits across local communities and economies within Staffordshire in relation to the deployment of mobility hubs/nodes. Throughout the feasibility study and within the methodology we took into consideration the impacts a mobility hub/node could achieve for SCC. The five core benefits that we would recommend SCC target with implementation of either a singular mobility hub/node or a network would be:

- Improving rural to urban transport connectivity
- Supporting cleaner transport use to help reduce private car usage
- Promoting social value through community initiatives
- Supporting localised economy
- Increasing community inclusivity

We would recommend that the mobility hub/nodes become a part of a SCC Future Mobility Roadmap to allow for EV charging, new mobility modes such as active travel, public transport and local services to support specific community needs.

8. Next Steps

In phase one and two of the feasibility studies, the Intelligent Mobility team have analysed the benefits a mobility hub/node network could provide to Staffordshire in conjunction with developing a unique data-led methodology for site identification and providing an initial site to explore co-location of transport and future deployment of charging infrastructure.

The analysis completed has shown the importance of data-led analysis that is able to take into account the user/customer and criticially develop insights into behaviour to support the commercial viability of deploying new services. In addition, the analysis has highlighted the importance of a varied mix of modes across a transport network and how they can operate and support each other. A mix of modes firstly supports the widest user base and secondly would likely provide a robust commercial case for investment. It's critical that this methodology is utilised throughout future planning of mobility hub locations to ensure a standardised evaluation process is followed, but also so that as mobility hubs are deployed they can be evaluated for their performance in achieving the objectives originally set out.

As outlined in the phase one feasibility study and above we would expect the benefits of a mobility hub/node to impact and support improved sustainability across the county. In particular; improved rural connectivity, modal shift from private cars, increased active travel and use of public transport, growth of local economy, decarbonisation and reduced congestion. To establish how to achieve these benefits to their fullest potential we would suggest the crucial next step will be a pilot mobility hub as part of the development and implementation of a future mobility roadmap for SCC.

Specifically, through a pilot programme there would be the capacity to monitor impacts of interventions and through an evaluation process, test the core benefits of a mobility hub/node:

- Improving rural to urban transport connectivity
- Supporting cleaner transport use to help reduce private car usage
- Promoting social value through community initiatives
- Supporting localised economy
- Increasing community inclusivity

From this pilot programme we would evaluate and where necessary re-evaluate to ensure a fully deployed network meets SCC objectives.

One of the key outcomes following a successful deployment of a pilot mobility hub would be the preparation of a detailed investment and business case to enable the deployment of a full mobility hub.

An example of the activities required would be the following:

- Options appraisals of transport and service mix to be provided
- Detailed commercial analysis
- Investment appraisal
- Economic appraisal
- Stakeholder engagement
- Detailed design and costing for any build requirements
- Operational plan
- Brand analysis for Stafford wide mobility hub network

In conjunction to this, SCC should consider the development of a future mobility strategy which includes a roadmap for the development initiatives to support the broader objectives of Staffordshire. The deployment

of a network of hubs and nodes across Staffordshire will support in achieving the wider county objectives as part of the overall future mobility strategy.

Add a section as to outline why mobility hubs should be further investigated / what potential benefits could the introduction have to the mobility ecosystem.

Appendix A: Index of Resources

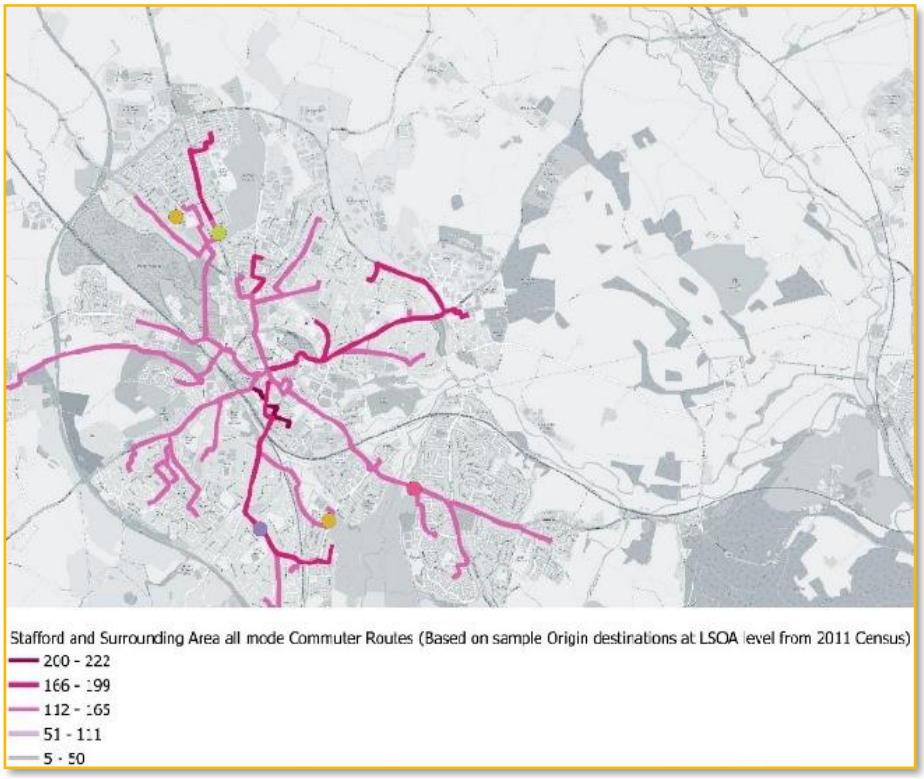
CoMoUK Accreditation Example

Context & considerations	A1 - Mobility components: Public transport	A2 -Mobility components: Non public transport	B - Mobility related components	C -Non-mobility & Urban realm improvement
Suburbs / Mini hubs Lower density of people with higher private car ownership, mobility hubs can be designed to address local issues e.g. car club spaces to take away issues of over-crowded streets, bike share or secure cycle parking for flats without space for bike storage or DRT to supplement restricted bus services.	• Local bus • DRT feeder service	• Back to base car club bay with smaller vehicles	• Secure cycle parking • Bike repair stand / pump • EV charging bays	• Traffic calming & street repairs • Parklet • Community exercise equipment
Small market town, village hubs The extra space in these types of areas can be used to provide a wider range of services as long as there is critical mass to ensure there is viability. Assess local needs such as the limited public transport with pools of shared e-bikes or 2+ ride share stops.	• Regional rail or tram • Local bus • DRT feeder service • Taxi	• Back to base car club bay with choice of van / estate car • Back to base bike share • E-cargo bike share / trailers	• Bike repair stand / pump • EV charging bays	• Covered waiting area • Package delivery lockers
Tourism hubs Focus on services with easy registration for visitors which can then provide a seasonal boost to the viability of service for rural residents. Ideally well integrated with journey planning and wider ticketing services (e.g. combined travel with destination entry). While tourism areas are often in rural areas, they can also be areas of high demand where having a tangible, focal point for sustainable modes especially for visitors unfamiliar with the area. Could also apply to tourist destinations in more urban areas.	• Regional rail or tram • Local bus • DRT feeder service	• Back to base car club bay with choice of van / estate car • One-way, shuttle or back to base bike share • E-cargo bike share / trailers	• Secure cycle parking • Digital pillar, (transport info, ticketing, way finding, walk distances, local services).	• Covered waiting area • Improved public realm • Art / planting / play equipment • Package delivery lockers

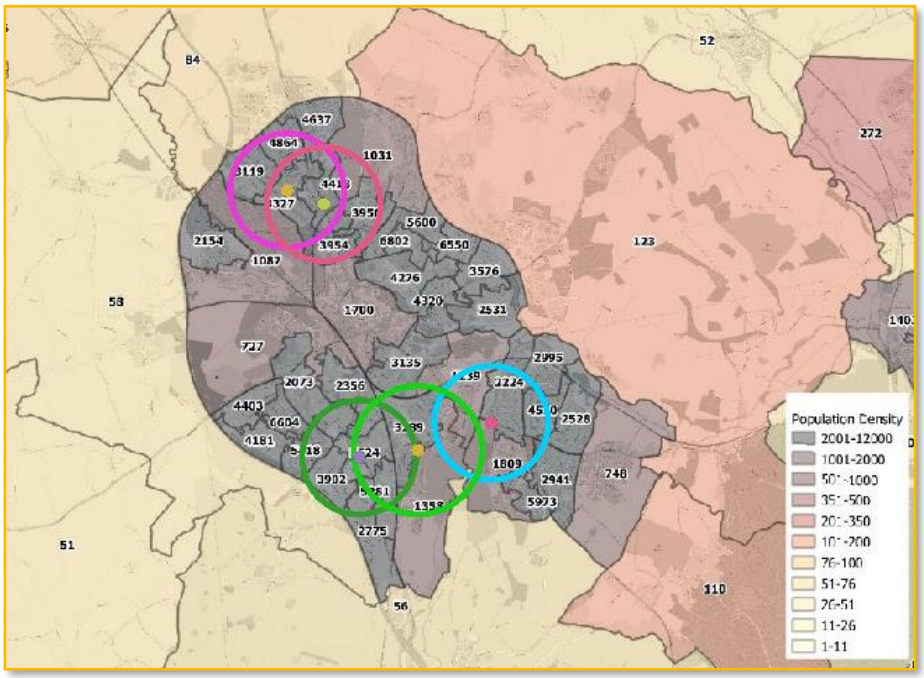
		City Centre	Transport Corridor	Business parks	Suburban	Rural	Tourism
CoMoUK bronze accreditation	All essential elements						
CoMoUK silver accreditation	All essential elements plus...	3 desirable elements	3 desirable elements	3 desirable elements	2 desirable elements	1 desirable element	1 desirable element
CoMoUK gold accreditation	All essential elements plus...	5 desirable elements	5 desirable elements	5 desirable elements	3 desirable elements	2 desirable elements	2 desirable elements

Appendix B: Detailed Outputs by Methodology Stage

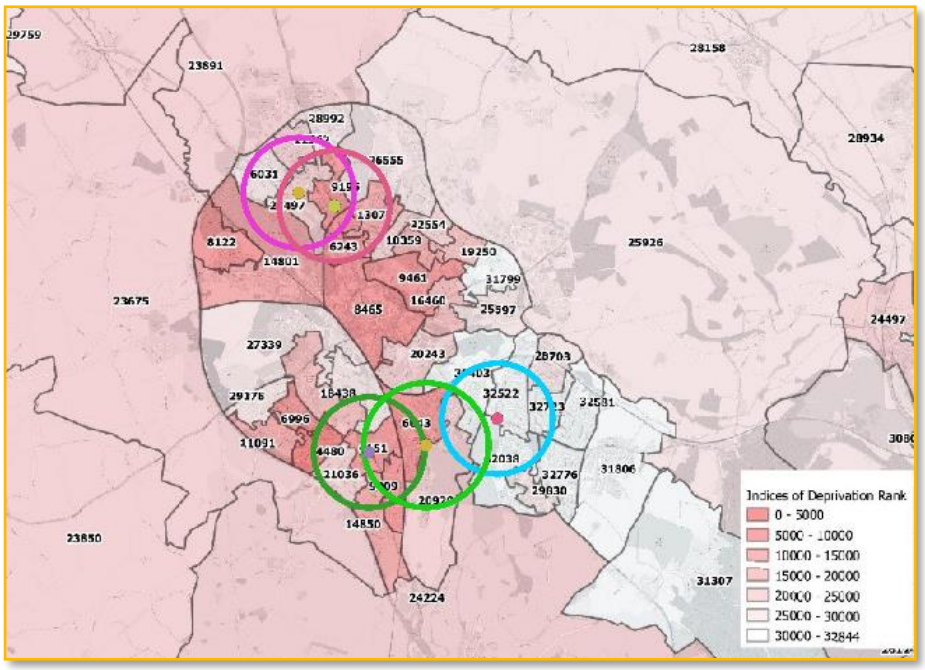
Stage One



Example 1 - Commuter journeys through GIS the origin and destinations for all modes of commute were mapped at LSOA level from the 2011 census. Suggested locations were then mapped to allow analysis of the number of commuter journey to and from the area.

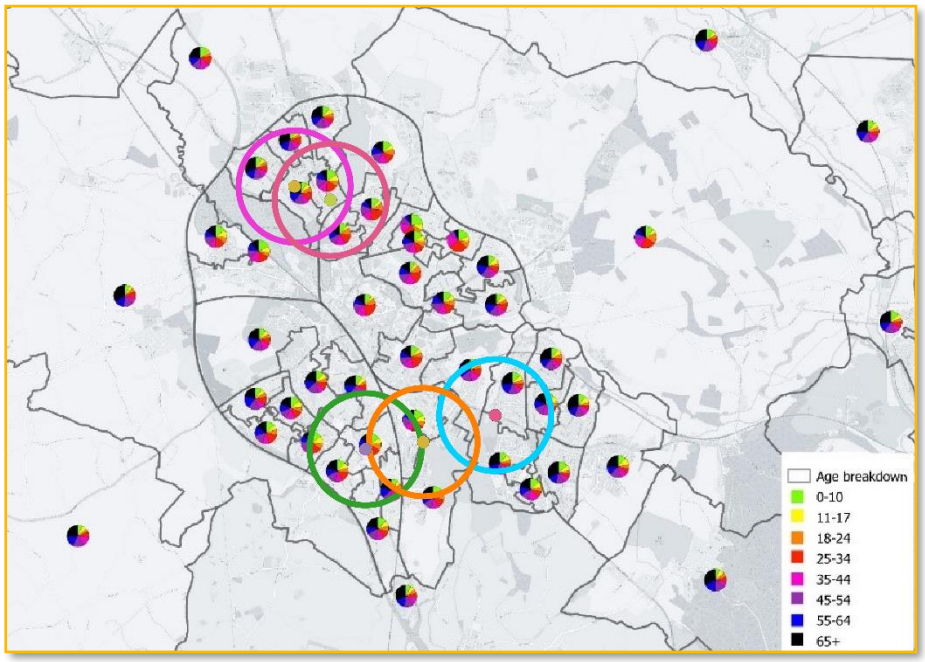


Example 2 - Population density was mapped as this is a critical success factor in shared transport and new mobility modes. The population density is broken down by LSOA and number of people per square metre.

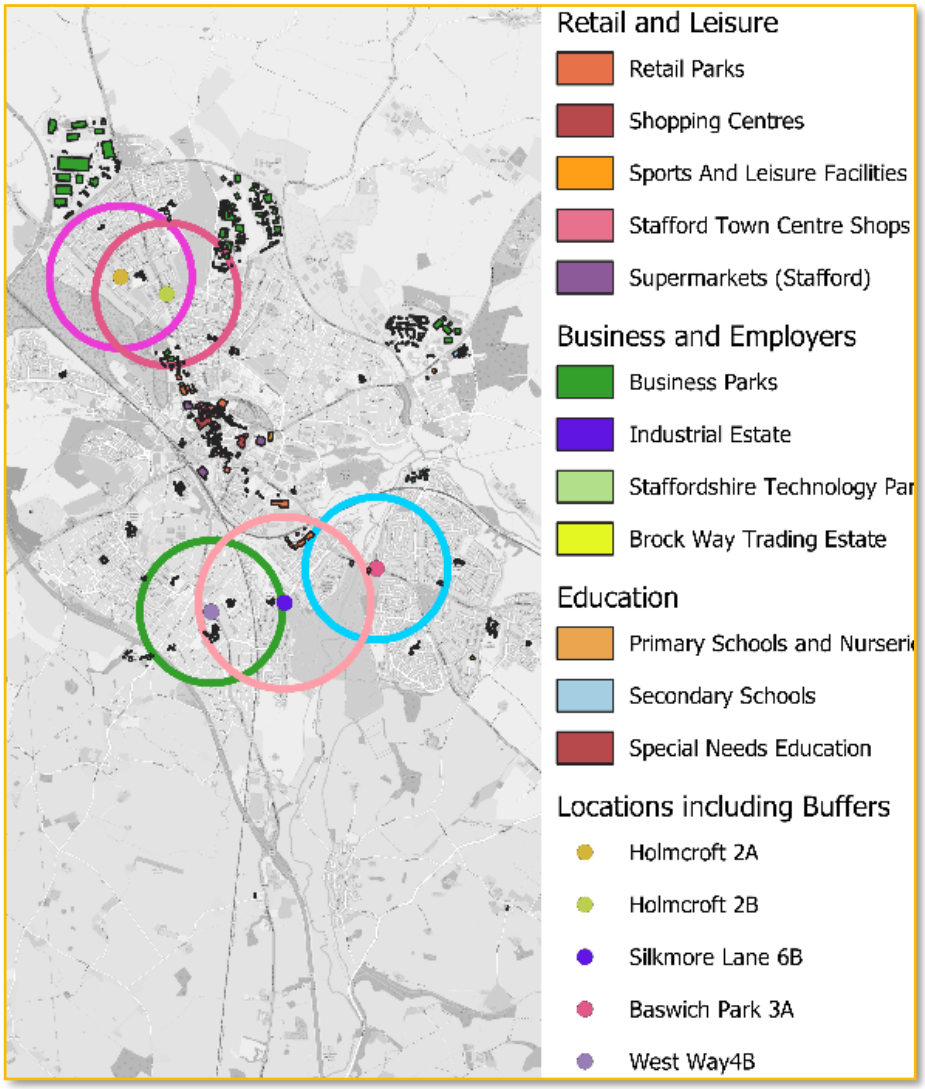


Example 3 - Indices of deprivation were mapped to support providing provisions to address transport poverty.

Stage Two

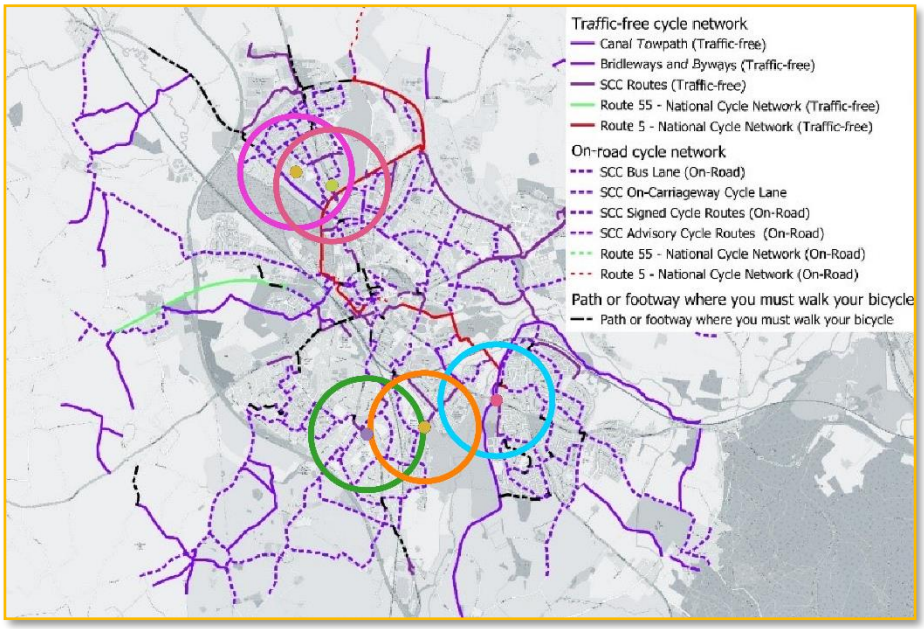


Example 4 - Research has shown that those aged between 18 - 35 are more likely to utilise new transport modes. Therefore we mapped age breakdowns from 2019 by LSOA, allowing us to identify easily areas with target age ranges.



Example 5 - Destinations for travel were critical for understanding people movement. Key destinations were retail and shopping, employers and schools.

Stage Three



Example 6 - On-road and off-road cycle routes were mapped taken from the Staffordshire County Council website. Access to cycle routes encourages uptake of micro mobility such as e-scooters and active travel.

	1	2	3	4	5	
Residential Density	10,000+		less than 5,000		5,000 - 8,000	
Age Ranges	Majority 55+	Two thirds over 44	25 - 34 ia half population	Two thirds under 44	Majority 25-34	50% of score
No properties in 1 mile buffer	4,000+	3,500 - 4,000	500 - 1,000	1,000 - 2,000	2,000 -3,500	
Bus routes and time to town	Less than 5 services 30+ min	5 - 8 services	9-12 services 21 - 30 mins	12 - 15 services	15+ Services 11-20 min	25%
Cycle routes	None on or off road		Access to off road through on-road		Direct access to off road	
Employer Locations	0		1		2+	10%
Shopping Locations	0		1		2+	
No of commutes	5 - 50	51 - 111	112-165	166 - 199	200 - 222	15% of score
Families	None		Children 0 -10		Children 11 - 17	
Education	None	Pre-school	Primary	Secondary	Further or University Education	
New Developments	None	General highway improvements	Mixed Development	Bus improvements	Housing/active travel improvements	
Mode of commute	Active Travel	Bus		Car Passenger	Car	
Mode to school	Active Travel		Bus	Car Passenger	Car	
Propensity to drive	31 - 40	40-50	50-60	60-70	70+	
Propensity to cycle	8 - 9	7 - 8	6 - 7	5 - 6	Less than 4	

Example 7 - In order to standardise analysis a weighting and scoring system was created and applied to each location.

Location	Residential Density	Age Ranges (Largest two proportions) + average age	No of properties 1 mile buffer = no households	Average	Area Weight	Availability Car/Van	Bus routes + time to town	Cycle routes	Average	Area Weight	Employer Locations	Shopping Locations	Average	Area Weight	Families	Education	New Developments	Mode of commute	Mode to school	No. Commutes	Propensity to drive (commute)	Propensity to cycle (commute)	Average	Area Weight	Weighted Score	Weighted Score
Oxford Gardens	1.00	0.80	0.60	0.80	0.40	0.20	1.00	0.40	0.53	0.13	0.60	0.20	0.40	0.04	1.00	0.60	0.80	1.00	0.20	1.00	0.60	0.80	0.75	0.11	0.69	55.2
Pearl Brook Avenue	1.00	0.60	0.40	0.67	0.30	0.40	1.00	1.00	0.80	0.20	1.00	1.00	1.00	0.10	0.60	0.60	0.80	1.00	0.20	0.80	0.40	0.80	0.65	0.10	0.70	56.0
Tixall Road	0.20	0.40	0.20	0.27	0.13	0.20	0.40	0.60	0.40	0.10	1.00	0.20	0.60	0.06	0.60	1.00	1.00	1.00	0.20	1.00	0.80	0.80	0.80	0.12	0.41	32.8
Off West Way	1.00	0.20	0.60	0.60	0.30	0.40	1.00	0.40	0.60	0.15	0.20	0.20	0.20	0.02	0.60	0.80	0.40	1.00	0.20	0.80	0.80	0.20	0.60	0.09	0.56	32.8
Linksfield Grove	1.00	0.40	0.40	0.60	0.30	0.40	1.00	0.40	0.60	0.15	1.00	0.20	0.60	0.06	0.60	0.80	1.00	1.00	0.20	1.00	0.80	0.40	0.73	0.11	0.62	32.8
Doxey 5C	0.20	0.40	0.6	0.4	0.2	0.2	0.8	0.4	0.5	0.1	0.2	0.2	0.2	0.02	0.6	0.6	0.2	1	0.4	0.6	0.8	0.8	0.6	0.1	0.43	34.4
Silkmore Lane 6A	0.20	0.20	0.6	0.3	0.2	0.2	0.8	0.4	0.5	0.1	0.2	1	0.6	0.06	0.6	0.2	0.2	1	0.4	0.6			0.5	0.1	0.42	33.5
Avon Rise 9B				0.4	0.2	0.3	0.6	0.4	0.4	0.1	0.2		0.2	0.02				1					1.0	0.2	0.48	38.3
Off-Stone Road 8A				0.3	0.2	0.4	0.6	0.3	0.4	0.1	0.2		0.2	0.02				1					1.0	0.2	0.43	34.3
Baswich Park Development 3B	0.60	0.40	0.4	0.5	0.2	0.4	0.8	0.4	0.5	0.1	0.2	1	0.6	0.06	0.6	0.2	0.2	1	1	1	0.8	1.0	0.7	0.1	0.54	42.8
Linksfield Grove 7A	1.00	0.40	0.4	0.6	0.3		0.4	0.4	0.4	0.1	0.2	0.2	0.2	0.02	0.6	0.8	1	1	0.2	1	0.8	0.4	0.7	0.1	0.53	42.3
Doxey 5B	0.40	0.40	0.6	0.5	0.2	0.2	0.8	0.4	0.5	0.1	0.2	0.2	0.2	0.02	0.6	0.6	0.2	1	0.2	0.6	0.8	0.8	0.6	0.1	0.46	36.8
Linksfield Grove 7B	1.00	0.40	0.4	0.6	0.3		0.4	0.4	0.4	0.1	0.2	0.2	0.2	0.02	0.6	0.8	1	1	0.2	1	0.8	0.4	0.7	0.1	0.53	42.3
Avon Rise 9A				0.4	0.2	0.3	0.3	0.4	0.3	0.1	0.2		0.2	0.02				1					1.0	0.2	0.45	36.3
Off West Way 4A	1.00	0.20	0.6	0.6	0.3		0.4	0.4	0.4	0.1	0.2	0.2	0.2	0.02	0.6	0.8	0.4	1	0.2	0.8	0.8	0.2	0.6	0.1	0.51	40.8
Off Holmcroft Road 2A	0.80	0.40	0.4	0.5	0.3	0.4	0.6	0.4	0.5	0.1	0.2	0.2	0.2	0.02	0.6	0.8	0.2	1	0.2	1	1.0	0.8	0.7	0.1	0.51	40.7
Silkmore Lane 6B	0.20	0.20	0.6	0.3	0.2	0.2	0.8	0.4	0.5	0.1	0.2	1	0.6	0.06	0.6	0.2	0.4	1	0.4	0.6		0.6	0.6	0.1	0.43	34.7
Off West Way 4B	1.00	0.20	0.6	0.6	0.3		0.4	0.4	0.4	0.1	0.2	0.2	0.2	0.02	0.6	0.8	0.4	1	0.2	0.8	0.8	0.2	0.6	0.1	0.51	40.8
Off Holmcroft Road 2B	0.80	0.40	0.4	0.5	0.3	0.4	0.6	0.4	0.5	0.1	0.2	0.2	0.2	0.02	0.6	0.8	0.2	1	0.2	1	1.0	0.8	0.7	0.1	0.51	40.7
Baswich Park Development 3A	0.60	0.40	0.4	0.5	0.2	0.4	0.8	0.8	0.7	0.2	0.2	1	0.6	0.06	0.6	0.2	0.2	1	1	1	0.8	1.0	0.7	0.1	0.57	45.5

Example 8 - Once scored weighting calculations were completed in excel to generate an overall score.

Stage Four

	1	2	3	4	5	
Buses	0		1		2+	
Available Mobility Hub Space	None	Utilising already allocated space	Possible Space		Easily Available	50%
Cars	Less than 2	02-May	5		10+	
Pedestrians	Less than 2	02-May	5		10+	
Parking	Multiple off-street parking available	Off street parking for one car	Mix of on and off street parking	Good on street parking	Limited private car parking (on-street)	30%
Bikes	0	1	2	3	4+	
Cycle Route	Very poor quality	Poor Quality	Average	Better than average	Ideal Quality	15%
Pavement	Very poor quality	Poor Quality	Average	Better than average	Ideal Quality	
Access to electricity	None	With large works availability	Possible Availability		Easily Available	5%

Example 9 - In order to analyse locations after site visits a weighted scoring system was generated with focus on deliverability based on available space, access to public transport and results from the traffic survey.

Traffic Survey

Start Time 03.10PM

End Time 03.40PM

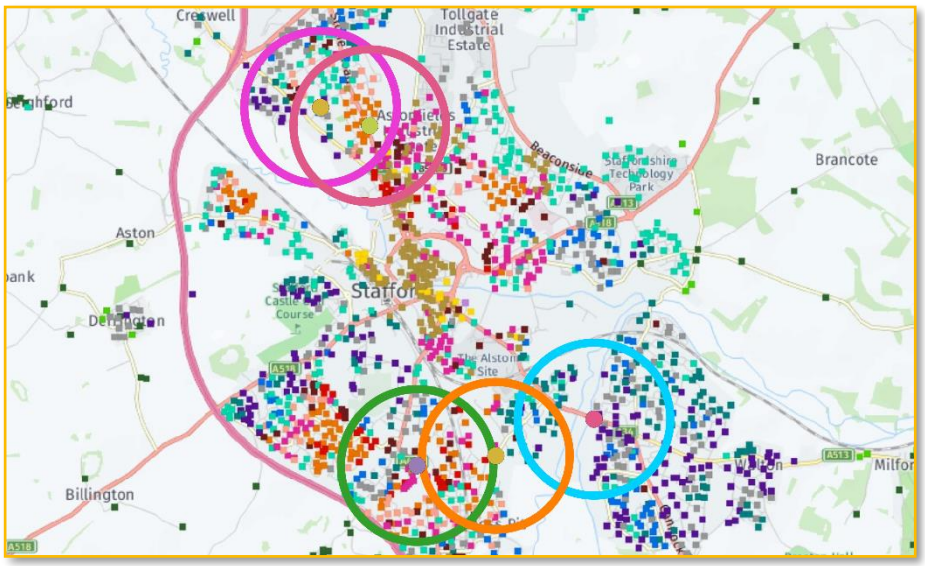
Location Avon Rise – 9A – Birkdale Drive

Weather Sunny

Traffic	Tally	Total
Bike	I	
Bus		
Car	IIIIIIIIIIIIIII	
Van	IIIII	
Lorry		
Pedestrian	II	

Example 10 - At each location a basic traffic count was completed with a focus on modes used but also noting the time and weather.

Stage Five

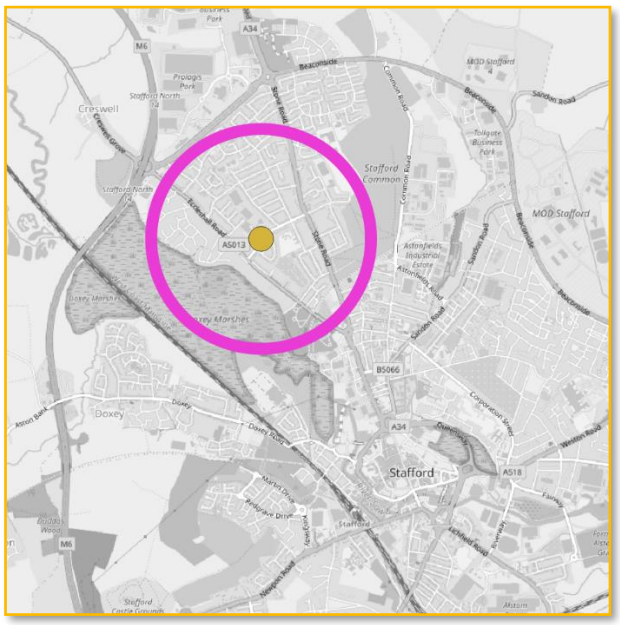


Example 11 - Mosaic mapping highlighted the groups found in each area with reports giving a full breakdown of the suggested locations.

Appendix C: Detailed Location Analysis

Holmcroft 2A - Holmcroft Library

The potential location identified at Holmcroft Library is the library carpark for a small-scale mobility hub.



Location Demand Analysis

	Data	Analysis
Population Density	8,362 residents in mile radius 3,704 households in mile radius	A good density for uptake of new mobility options.
Age Split	0-10 - 9% 11-17 - 7% 18-24 - 7% 25-34 - 13% 35-44 - 10% 44-54 - 14% 55-64 - 14% 65+ - 23%	Proportion of ideal age range. As well as those who will be moving into the ideal age range.
Commuter Journeys	112 (Each represents 5 commutes taken from 2011 census)	A balanced number that supports modal shift when taking into account the high propensity to commute by car.
Points of Interest (retail, education or employment)	Primary, secondary	Travel required out of the area to reach retail parks and employers. Car club, bike share or e-scooters could be used for these journeys.
Mode of Commute	Car, foot	Modal shift ideal here.
Mode to School	Foot, car, other	Modal shift ideal here.
Access to Bus Routes and Time to Down	2 10-15 mins	Multi-modal journeys ideal here.

Cycle Routes	2 off-road Multiple on-road	Off-road cycle tracks key to encourage new/returning cyclists or for other modes of micro mobility.
Propensity to Drive (commute)	68% (percentage of commutes by car)	Multi-modal journeys ideal here.
Propensity to Cycle (commute)	5% (percentage of commutes by bike)	Multi-modal journeys ideal here.

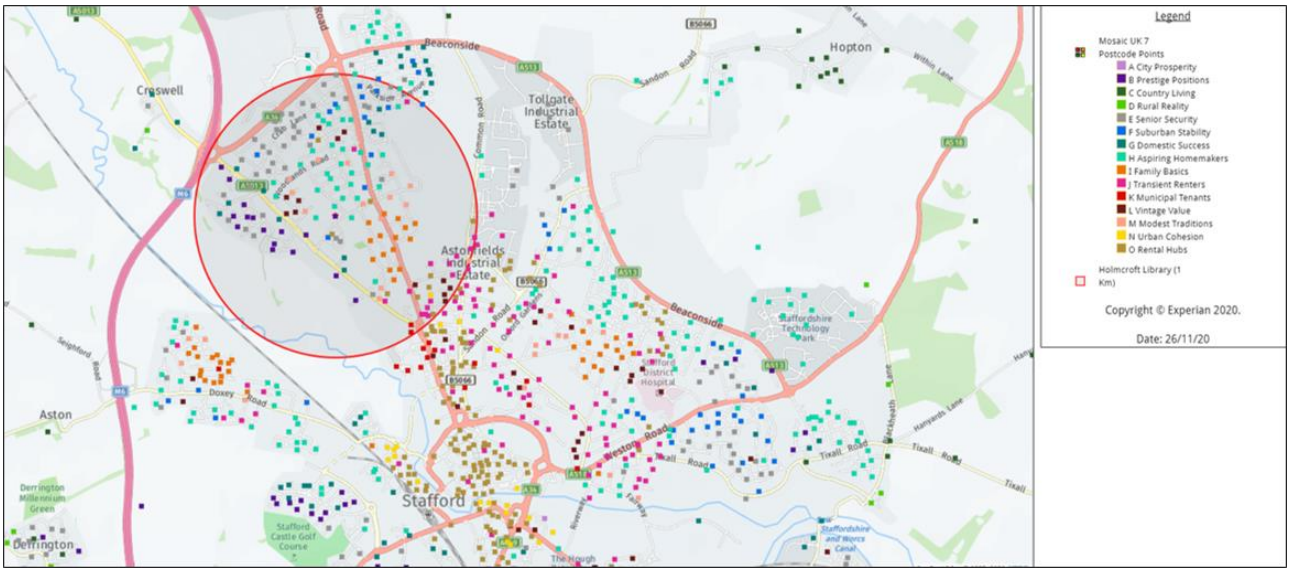
Site Visit

A car park location for a smaller mobility node or green space that could house a medium sized mobility hub including additional non-transport features. Images taken on the site visit are below.

Infrastructure Analysis

	Data	Analysis
Access to Electricity	Lighting Units	Should allow for installation of facilities such as lamp post charging points (3 – 7 kW). Depending on spare capacity (or renewable energy generated onsite), faster charging infrastructure could be installed.
Mobile Connections	Data and enhanced data for all major network providers	Connections key for accessing services and potential for mobility as a service platform.

Mosaic Analysis



	Data	Analysis
Economically Active	4,215	Critical to ensure likely access to smartphones, disposable income and ability to travel.
Expected population increase by 2024	1.77%	Growth for maintained and enhanced use of a mobility hub.
Resident Profile	19.5 % Aspiring Homemakers	Key group for propensity to use new modes.
Day Time Profile	18.3% Aspiring Homemakers	Key group for propensity to use new modes.

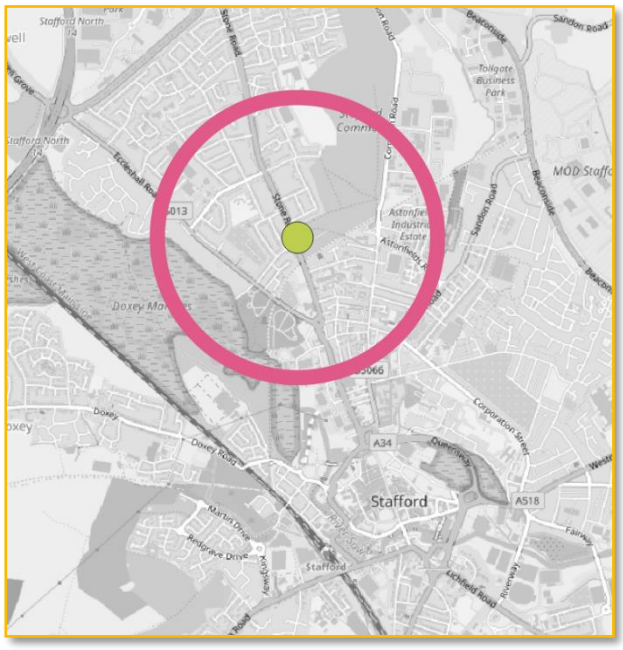
Solution Mix

Mode	Included at Site	Analysis
Car Club	✓	Location would benefit from a car club to allow longer distance journeys to be shifted away from private cars.
Bike Share	✓	Including both pedal and e-bikes to support modal shift. The access to off-road cycle routes supports new cyclists. Bike share models offer affordable transport supporting accessible transport.
DRT	×	Due to the number of buses and short time to town DRT may not be essential at this location.
EV Charging	✓	Improving charging infrastructure supports the uptake of EVs and an EV car club.
Electric Scooters	✓	Access to electric scooters can provide a variety of modal choices. It should be noted that e-scooter costs

	to the user are higher than that of bike share.

Holmcroft 2B - Stone Road

The potential location identified at Stone Road was a car boot sale location which could offer development potential for a medium scale mobility hub



Location Demand Analysis

	Data	Analysis
Population Density	11,431 residents in mile radius 4,995 households in mile radius	Number of residents higher than ideal for new mobility solutions as possibility of higher demand.
Age Split	0-10 - 9% 11-17 - 7% 18-24 - 7% 25-34 - 13% 35-44 - 10% 44-54 - 14% 55-64 - 14% 65+ - 23%	Proportion of ideal age range. As well as those who will be moving into the ideal age range.
Commuter Journeys	112 (Each represents 5 commutes taken from 2011 census)	A balanced number that supports modal shift when taking into account the high propensity to commute by car
Points of Interest (retail, education or employment)	Primary, secondary	Travel required out of the area to reach retail parks and employers. Car club, bike share or e-scooters could be used for these journeys.
Mode of Commute	Car, foot	Modal shift ideal here.

Mode to School	Foot, car, other	Modal shift ideal here.
Access to Bus Routes and Time to Down	4 10-20 mins	Depending on route could be ideal for multi-modal journeys however important to note would be times where on the edge of likely modal shift.
Cycle Routes	2 off-road Multiple on-road	Off-road cycle tracks key to encourage new/returning cyclists or for other modes of micro mobility.
Propensity to Drive (commute)	68% (percentage of commutes by car)	Multi-modal journeys ideal here.
Propensity to Cycle (commute)	5% (percentage of commutes by bike)	Multi-modal journeys ideal here.

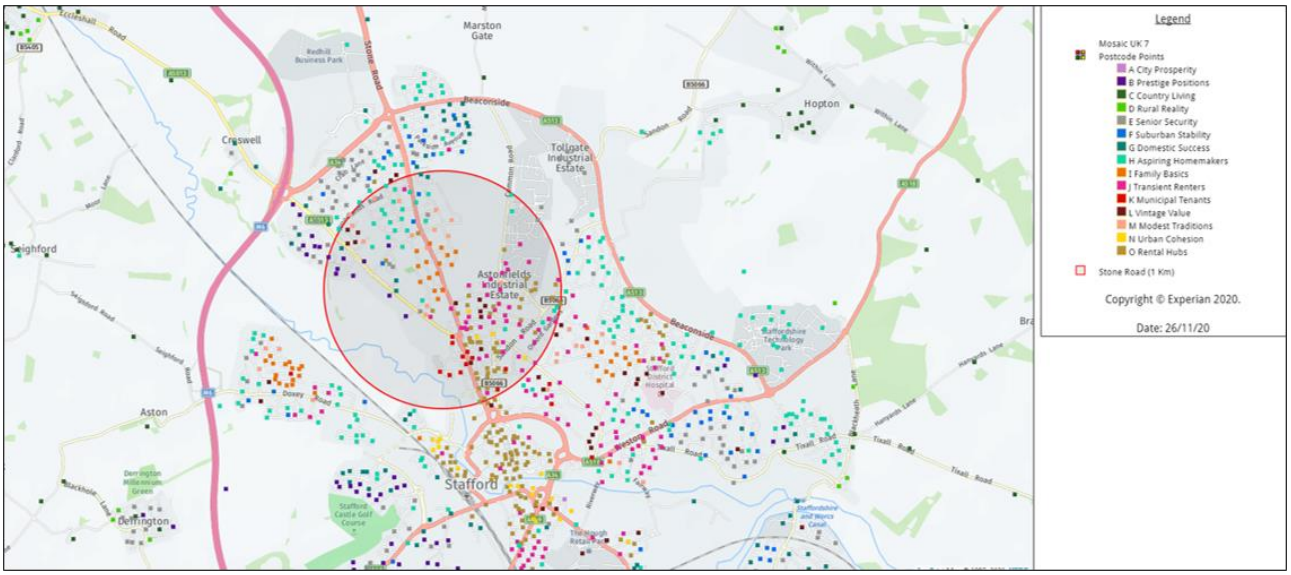
Site Visit

At Stone Road a potential location was identified where car boot sales had been held. Images taken on the site visit are below.

Infrastructure Analysis

	Data	Analysis
Access to Electricity	Lighting Units	Should allow for installation of facilities such as lamp post charging points (3 – 7 kW). Depending on spare capacity (or renewable energy generated onsite), faster charging infrastructure could be installed.
Mobile Connections	Data and enhanced data for all major network providers	Connections key for accessing services and potential for mobility as a service platform.

Mosaic Analysis



	Data	Analysis
Economically Active	5,152	Lower level which could impact access to disposable income and technology.
Expected population increase by 2024	1.98%	Growth for maintained and enhanced use of a mobility hub.
Resident Profile	15.1 % Aspiring Homemakers 14.2 % Transient Renters	Key groups for propensity to use new modes.
Day Time Profile	15.1% Aspiring Homemakers 15.9% Transient Renters 8.5% Rental Hubs	Key groups for propensity to use new modes.

Solution Mix

Mode	Included at Site	Analysis
Car Club	✓	Location would benefit from a car club to allow longer distance journeys to be shifted away from private cars.
Bike Share	✓	Including both pedal and e-bikes to support modal shift. The access to off-road cycle routes supports new cyclists. Bike share models offer affordable transport supporting accessible transport.
DRT	×	Due to the number of buses and short time to town DRT may not be essential at this location.
EV Charging	✓	Improving charging infrastructure supports the uptake of EVs and an EV car club.
Electric Scooters	✓	Access to electric scooters can provide a variety of modal choices. It should be noted that e-scooter costs to the user are higher than that of bike share.

Baswich Park 3A - Radford Bank

The potential location identified at Radford Bank was opposite Meadow Ridge behind the bus stop.

Location Demand Analysis

	Data	Analysis
Population Density	8, 915 residents in mile radius 3,695 households in mile radius	A good density for uptake of new mobility options.
Age Split	0-10 - 13% 11-17 - 10% 18-24 - 6% 25-34 - 9% 35-44 - 14% 45-54 - 15% 55-65 - 12% 65+ - 20%	Proportion both over and under ideal age range making it a less than ideal location.
Commuter Journeys	336 (Each represents 5 commutes taken from 2011 census)	A large number of commutes that could put pressure on a mobility hub initially especially when taking propensity to drive into account.
Points of Interest (retail, education or employment)	Supermarkets, retail park	Retail and shopping centres within the buffer which would likely mean journeys into the area rather than out.
Mode of Commute	Car,	Modal shift ideal here.
Mode to School	Car, foot	Modal shift ideal here.
Access to Bus Routes and Time to Down	3 20-30 mins	Number of bus routes ideal however time to town at edge of what is likely to shift from car.
Cycle Routes	Multiple on-road	On-road are not ideal for encouraging new cyclists but can allow quicker journey times for confident cyclists.

Propensity to Drive (commute)	77% (percentage of commutes by car)	Multi-modal journeys ideal here.
Propensity to Cycle (commute)	4% (percentage of commutes by bike)	Multi-modal journeys ideal here.

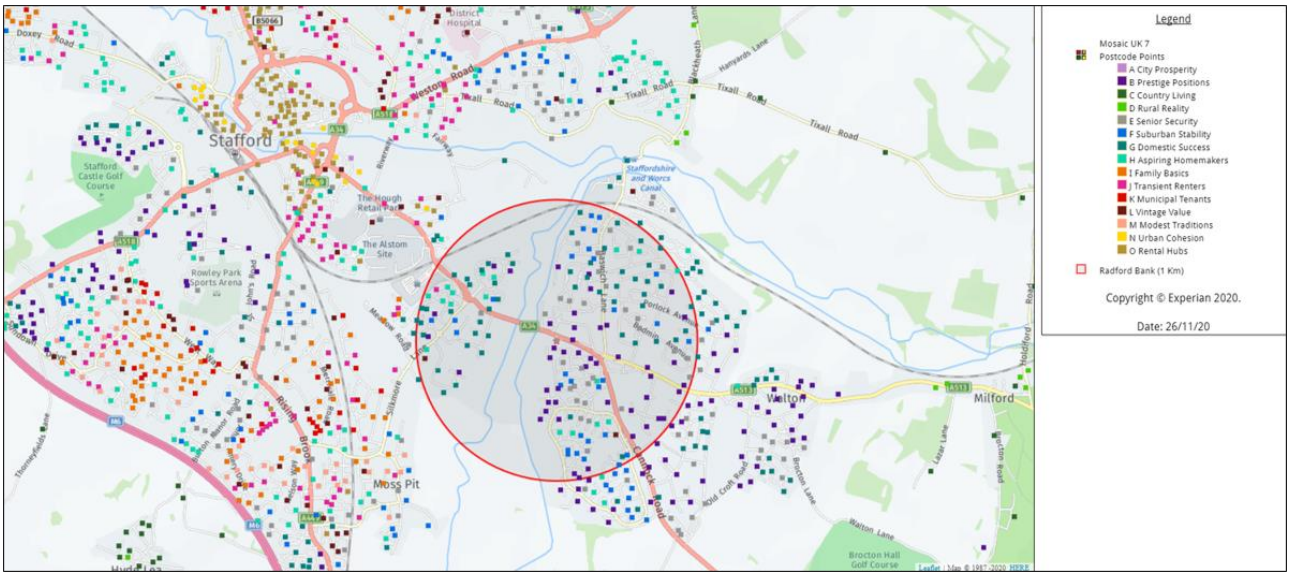
Site Visit

At Radford Park a potential location was identified in the form of empty green space. Potential for land development would need to be explored but there would be space for a larger mobility hub with additional services. Images taken on the site visit are below.

Infrastructure Analysis

	Data	Analysis
Access to Electricity	Lighting Units	Should allow for installation of facilities such as lamp post charging points (3 – 7 kW). Depending on spare capacity (or renewable energy generated onsite), faster charging infrastructure could be installed.
Mobile Connections	Data and enhanced data for all major network providers	Connections key for accessing services and potential for mobility as a service platform.

Mosaic Analysis



	Data	Analysis
Economically Active	4,710	Critical to ensure likely access to smartphones, disposable income and ability to travel.
Expected population increase by 2024	1.60%	Growth for maintained and enhanced use of a mobility hub.
Resident Profile	10.5 % Aspiring Homemakers	Key groups for propensity lower than ideal.
Day Time Profile	10.3% Aspiring Homemakers 1.8% Transient Renters 0.1% Rental Hubs	Key groups for propensity lower than ideal.

Solution Mix

Mode	Included at Site	Analysis
Car Club	✓	Location would benefit from a car club to allow longer distance journeys to be shifted away from private cars.
Bike Share	✓	Location would benefit from a car club to allow longer distance journeys to be shifted away from private cars.
DRT	✓	Due to the number of buses DRT may not be essential at this location but the distance from town means it should be a considered mode.
EV Charging	✓	Improving charging infrastructure supports the uptake of EVs and an EV car club but due to retail and supermarket sites it may be possible to utilise these locations.
Electric Scooters	✓	Access to electric scooters can provide a variety of modal choices. It should be noted that e-scooter costs

	to the user are higher than that of bike share.

Off West Way 4B - Rising Brook

The potential location identified at Rising Brook was near the parade of shops at Burton Square.

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Location Demand Analysis

	Data	Analysis
Population Density	11,431 residents in mile radius 4,995 households in mile radius	Number of residents higher than ideal for new mobility solutions as possibility of higher demand.
Age Split	0-10 - 14% 11-17 - 10% 18-24 - 7% 25-34 - 12% 35-44 - 14% 45-54 - 12% 55-65 - 12% 65+ - 19%	Larger number than ideal of the population outside the targeted ages.
Commuter Journeys	560 (Each represents 5 commutes taken from 2011 census)	A large number of commutes that could put pressure on a mobility hub initially especially when taking propensity to drive into account.
Points of Interest (retail, education or employment)	Primary and Secondary Schools	Journeys out of the area would be required to reach points of interest offering an opportunity for modal shift.
Mode of Commute	Car, foot	Modal shift ideal here.
Mode to School	Foot, car	Modal shift ideal here.

Access to Bus Routes and Time to Down	2 15 - 20 mins	Multi-modal journeys ideal here.
Cycle Routes	Multiple off-road	Ideal for encouraging new cyclists or micro-mobility.
Propensity to Drive (commute)	66% (percentage of commutes by car)	Multi-modal journeys ideal here.
Propensity to Cycle (commute)	4% (percentage of commutes by bike)	Multi-modal journeys ideal here.

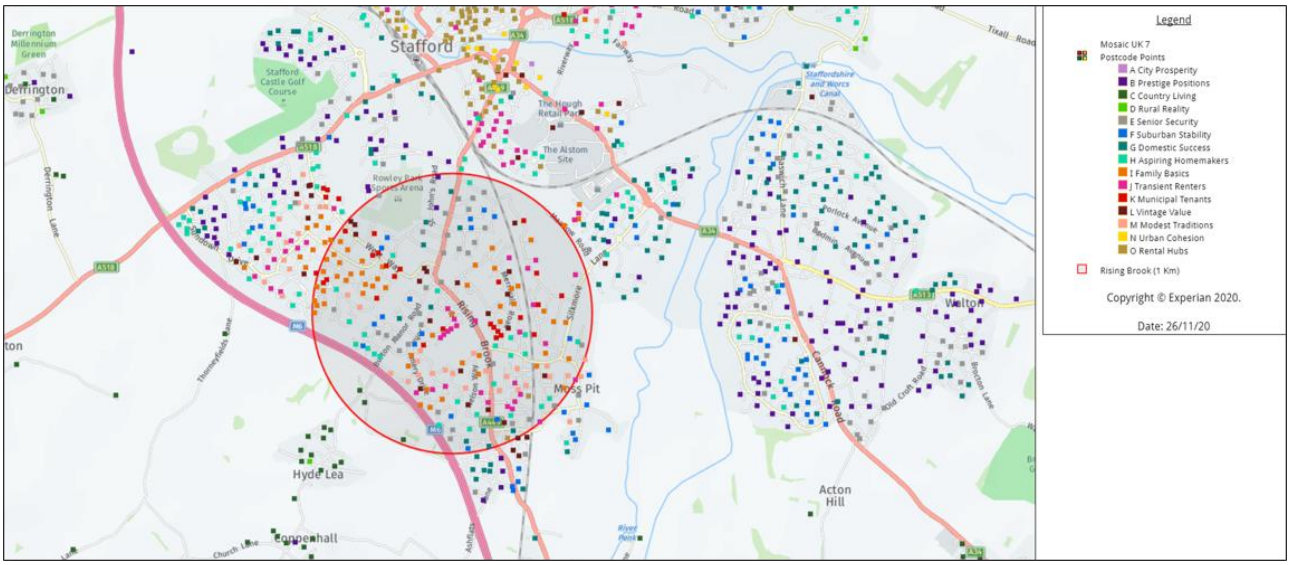
Site Visit

At Rising Brook green space was identified in front of the parade of shops and had cycle and pedestrian routes already. Space available would be well suited for a mobility node. Images taken on the site visit are below.

Infrastructure Analysis

	Data	Analysis
Access to Electricity	Lighting Units	Should allow for installation of facilities such as lamp post charging points (3 – 7 kW). Depending on spare capacity (or renewable energy generated onsite), faster charging infrastructure could be installed.
Mobile Connections	Data and enhanced data for all major network providers	Connections key for accessing services and potential for mobility as a service platform.

Mosaic Analysis



	Data	Analysis
Economically Active	2,414	Lower level which could impact access to disposable income and technology.
Expected population increase by 2024	1.18%	Growth for maintained and enhanced use of a mobility hub.
Resident Profile	10.2 % Aspiring Homemakers 10.7 % Transient Renters	Key group for propensity to use new modes are at lower than ideal levels.
Day Time Profile	10.5% Aspiring Homemakers 10.1% Transient Renters	Key group for propensity to use new modes are at lower than ideal levels.

Solution Mix

Mode	Included at Site	Analysis
Car Club	✓	Location would benefit from a car club to allow longer distance journeys to be shifted away from private cars.
Bike Share	✓	Including both pedal and e-bikes to support modal shift. The access to off-road cycle routes supports new cyclists. Bike share models offer affordable transport supporting accessible transport.
DRT	✓	While there are a number of routes the longer time to town would lend the location to DRT services. The lack of points of interest would add possible journey demand for DRT.
EV Charging	✓	Improving charging infrastructure supports the uptake of EVs and an EV car club.
Electric Scooters	✓	Access to electric scooters can provide a variety of modal choices. It should be noted that e-scooter costs

	to the user are higher than that of bike share.

Silkmore Lane 6B - Hall Close

A bus stop, green space and large pavement area offer potential for a small-scale mobility hub.

Location Demand Analysis

	Data	Analysis
Population Density	8,047 residents in mile radius 3,394 households in mile radius	A good density for uptake of new mobility options.
Age Split	0-10 - 14% 11-17 - 8% 18-24 - 7% 25-34 - 14% 35-44 - 12% 45-54 - 14% 55-65 - 15% 65+ - 21%	Proportion of ideal age range. As well as those who will be moving into the ideal age range.
Commuter Journeys	112 (Each represents 5 commutes taken from 2011 census)	A balanced number that supports modal shift when taking into account the high propensity to commute by car
Points of Interest (retail, education or employment)	Retail park, supermarkets, shopping centres	Retail and shopping centres within the buffer which would likely mean journeys into the area rather than out.
Mode of Commute	Car	Modal shift ideal here.
Mode to School	Foot, car	Modal shift ideal here.
Access to Bus Routes and Time to Down	4 20 mins	Number of bus routes ideal however time to town at edge of what is likely to shift from car.

Cycle Routes	2 on-road	On-road are not ideal for encouraging new cyclists but can allow quicker journey times for confident cyclists.
Propensity to Drive (commute)	68% (percentage of commutes by car)	Multi-modal journeys ideal here.
Propensity to Cycle (commute)	3% (percentage of commutes by bike)	Multi-modal journeys ideal here.

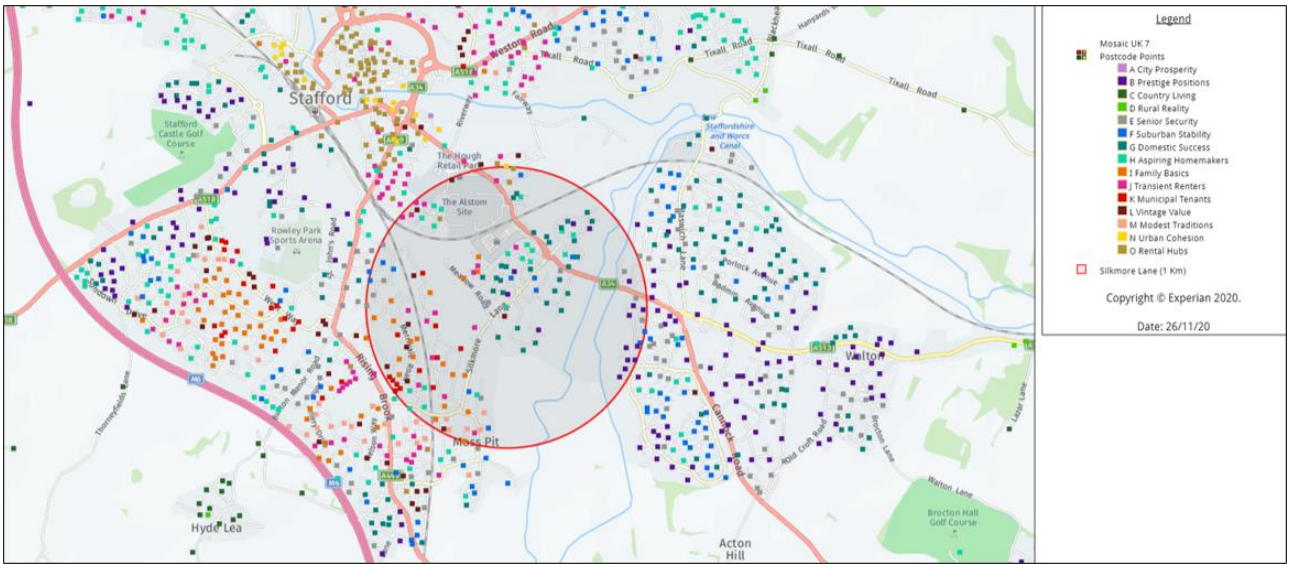
Site Visit

At Silkmore Lane a potential location was identified in the form empty green space next to the pavement and with access to an established pedestrian route. The amount of space and location would make it suitable for a small mobility node. Images taken on the site visit are below.

Infrastructure Analysis

	Data	Analysis
Access to Electricity	Lighting Units	Should allow for installation of facilities such as lamp post charging points (3 – 7 kW). Depending on spare capacity (or renewable energy generated onsite), faster charging infrastructure could be installed.
Mobile Connections	Data and enhanced data for all major network providers	Connections key for accessing services and potential for mobility as a service platforms.

Mosaic Analysis



	Data	Analysis
Economically Active	4,215	Critical to ensure likely access to smartphones, disposable income and ability to travel.
Owner occupied houses	67%	
Expected population increase by 2024	1.77%	Growth for maintained and enhanced use of a mobility hub.
Resident Profile	13.1 % Aspiring Homemakers 11,3% Transient Renters	Key group for propensity to use new modes.
Day Time Profile	12.9% Aspiring Homemakers 12.9% Family Basics 10.1% Transient Renters	Key group for propensity to use new modes.

Solution Mix

Mode	Included at Site	Analysis
Car Club	✓	Location would benefit from a car club to allow longer distance journeys to be shifted away from private cars.
Bike Share	✓	Including both pedal and e-bikes to support modal shift. The access to off-road cycle routes supports new cyclists. Bike share models offer affordable transport supporting accessible transport.
DRT	✓	While there are a number of routes the longer time to town would lend the location to DRT services.
EV Charging	✓	Improving charging infrastructure supports the uptake of EVs and an EV car club.

Electric Scooters	✓	Access to electric scooters can provide a variety to modal choices. It should be noted that e-scooter costs to the user are higher than that of bike share.

Appendix D: List of Data Sources

- Staffordshire County Council Website
- Propensity to Cycle Tool
- OS Maps National Cycle Network
- Ordinance Survey
- National Charge Point registry
- Environmental Agency Flood Map for Planning
- Office for National Statistics 2011 Census
- Bike Data – Cycle Streets
- Experian Mosaic

Appendix E: Toolkit

Document Control Sheet

Project Name:	Staffordshire County Council
Project Number:	Project Number
Report Title:	Mobility Hub Toolkit
Report Number:	Report Number

Issue Status/Amendment	Prepared	Reviewed	Approved
Issue 1	Name: Rachael.North@amey.co.uk Signature: Date:	Name: David.Trousdale@amey.co.uk Signature: Date:	Name: Luke Ward Signature: Date:
	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:
	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:
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1. The Purpose of the Toolkit

This toolkit has been developed to support local authorities, small and medium-sized enterprises (SMEs) and organisations exploring mobility hubs as a transport solution. The toolkit has been created by Intelligent Mobility (IM) within Amey Consulting who have developed a methodology to identify the most suitable locations for a mobility hub through a data led approach.

The toolkit takes the user through several steps covering the key factors for a successful hub; demand, users and infrastructure. However, within these factors the individual users' transport objectives are key and reflected on in the method to ensure the mobility hub supports these. The toolkit should be used as a starting point to locate and test possible sites. This toolkit is intended to enable the user to select potential locations for mobility hubs. It is not intended to act as the business case underpinning their deployment but rather the basis for development of a business case as the information gathered can be used to develop key elements of it.

When using this toolkit, the client for whom the hub/node is being developed for should be involved at every stage of the process as they will prioritise key factors or criteria in selecting the location. However, the toolkit is not intended to act as a stakeholder engagement guide as there are already recognised approaches as part of project management methodologies to ensure this is done effectively.

2. Mobility hubs and nodes

There are a variety of definitions for a mobility hub. We have defined them as a location where a variety of transportation modes connect seamlessly in order to support the community, bridging the gap between rural and urban transport. As such, they present an opportunity to integrate mobility solutions that utilise new transportation technology to help enhance user experience and travel resiliency to help cover first and last mile travel as well as supporting traditional modes of transportation. Based on these existing definitions, the core components of mobility hubs include being near a major transit station, providing a variety of sustainable transportation options, and being surrounded by areas which enable sustainable passenger patronage (e.g. locations with high residential and employment density).

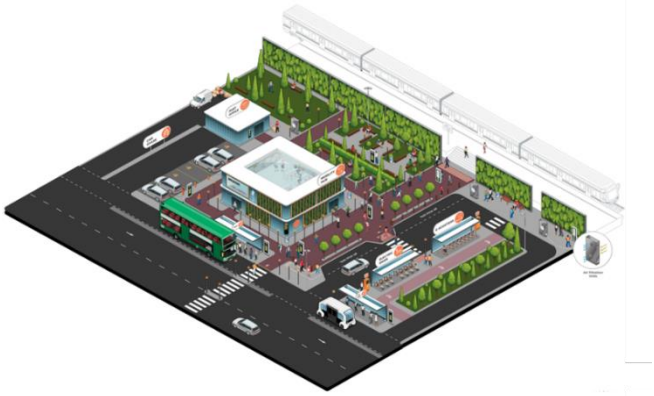
This definition expands further than a singular hub. By developing a connected and integrated mobility hub there is the opportunity to adapt this approach to a network through the use of "nodes", which are smaller in scale, but offer connectivity through linking transport services to the hub. Typically, nodes are in more rural or less populated areas with limited transportation services and provide the purpose of connecting to hubs where there is greater service availability.

The development of a mobility hub also offers the opportunity to create a place for communities to connect, interact and access amenities. These communities become better connected in turn supporting local economies and improving social value. This view puts mobility hubs at the centre of the future of towns, cities and communities where sustainable transport is just one part of an existing ecosystem.

In the initial stages of planning for a mobility hub or node several possible locations should be identified. This is for two reasons; first, analysis is required to choose suitable locations and secondly in order to create a viable transport network multiple hubs and nodes will be needed.

Mobility hubs offer an opportunity to provide multi-modal transport solutions in addition to other services. This makes them unique in their ability to support in meeting varied objectives from a local and national perspective. For example, a hub and node network could support:

- A reduction in private car use
- An increase in active travel
- An increase in public transport patronage by enhancing the offering
- Improvement in air quality
- An increase in EV adoption
- Utilisation of new modes to plug transport gaps
- Support the local community



This toolkit considers the varied objectives of clients while ensuring location selection takes into account the known success factors for a mobility hub or node.

Figure 9- Example Mobility Hub

3. Location Analysis

The following method is based on two assumptions. First, that at the initial stage there will be multiple locations under consideration. Second, that the toolkit user would be considering the long-term growth of the transport network with some focus on the replacement of private cars with other modes.

There are five steps to follow which ensure that the location output at the end has a robust and data led justification. Throughout these steps the analysis and consideration of locations should refer back to the client's individual objectives.

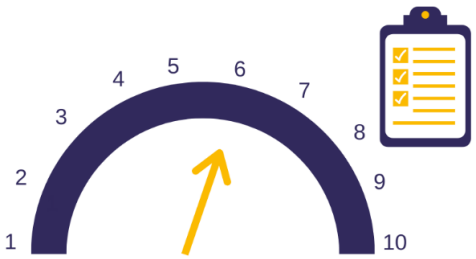
An outline of the steps are:

- Scoring Matrix – Development of a system that allows comparison across locations based on objectives and success factors.
- Demand Analysis – Analysis of the travel demand in the individual locations.
- User Demand – Analysis of the types of users required and found within the locations.
- Site Analysis – Analysis following a site visit.
- Final Selection – Analysis and scoring to identify the final location/s.

We have ensured that if the individual steps are followed this will enable data driven comparison of selected locations enabling confidence in the final selection.

3.1. Scoring Matrix

The initial phase is to develop a scoring matrix or system for the locations. This will be unique to each client as the scoring should be directly related to the objectives of the mobility hub. For example, if active travel is the key objective then the number and quality of cycle routes will need more consideration than access to EV charging infrastructure.



To create the scoring matrix, outline the data and factors that will be analysed (e.g. population number, mode of commute, target users in the area, existing transport infrastructure). Once this is done a scoring mechanism must be chosen (e.g. 2 major employers would score 1, 6 major employers would score 3). At this stage it is critical to return to the overarching objectives and weight the scoring based on the individual factors important in achieving the client's objectives.

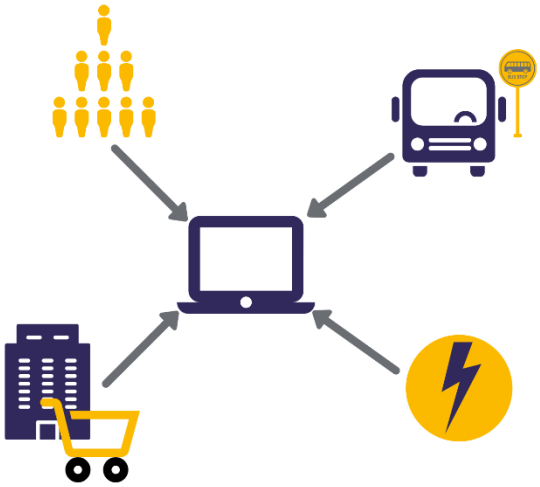
Completing the scoring matrix prior to detailed analysis ensures the selection of the site is data driven and avoids bias.

3.2. Location Demand

A common objective for a mobility hub is to encourage modal shift away from private car use and to either public, shared or active transport. In addition, to achieve a viable mobility hub the transport demand in a location is key. Transport demand is determined by analysing what is driving current people movement patterns and modes. A central factor to this, particularly when focusing on modal shift, is analysing the distance users of the hub would need to travel to access the it. Research has shown that most possible users would be willing to walk between and 5 – 10 minutes to reach a mode of transport that is not their

private car (CoMoUK 2020)[2]. We suggest that this would be considered as an underlying factor in the success of the mobility hub and is not dependent on wider transport objectives.

Other considerations when assessing demand would include:



- Population Density – are there enough residents to drive demand of services?
- Number of destinations within the local area (employers, shops, education) – what types of journeys are residents or visitors to the area making.
- Bus routes and stops – is there a wider transport network for varied modal choice.
- Cycle routes – is active travel catered for and safe.
- Current modes of transport by potential users – are residents predominantly car owners.
- Access to EV charging – are residents adopting EVs.

This data can be accessed through a variety of sources such as census data, local survey data or the propensity to cycle tool[3]. In some instances local authorities might be able to provide real world people movement data derived from a number of sources (e.g. mobile network data). Once the data has been collected there are several ways that this can be collated and analysed. Mapping tools such as Geographic Information System (GIS) are useful for being able to plot this data onto local maps. However, if tools such as this are not available then a spreadsheet could be used to compare the different data sets across locations. Bespoke modelling tools are also available to make sense of the data.

3.3. User Analysis

Location demand provides insight into the types of journeys being made and general demographic information about potential users in the area. User analysis focuses on highlighting and identifying residents' preferences and, in a given location, takes into account residents most likely to use a mobility hub but also who should be targeted for encouragement to use new modes of travel.

Understanding those most likely to be the first users of new offerings such as mobility hubs is the first step in user analysis. Some of the key attributes have been identified as:

[2] CoMoUK (2020). *Car Club Annual Survey for Scotland – 2019/20 Full Report* [online]. Available at https://como.org.uk/wp-content/uploads/2020/04/CoMoUK_FullCarClubAnnualSurvey19-20-Final.pdf [accessed: 13th March 2021]

[3] https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjUn9a3pPvvAhWJunEKHUX3DkUQFjAAegQICBAE&url=https%3A%2F%2Fwww.pct.bike%2F&usg=AOvVaw2dTz_e21XDeOagxgk8qCZA

- 18 – 35 – the age range most likely to use new modes
- Millennials & Generation Z – the type most likely to use new modes
- Young professionals – disposable income for new modes
- Students aged <25 – interest to try new technology
- Early adopters of technology – interest to try new technology
- Environmentally conscious – interest to try new sustainable modes

In addition to identifying potential hub users who fulfil the above criteria, unique profiles of potential users should be developed to whom specific solutions can be targeted.

While some of this data could be gathered through demographic data, the aim of user analysis is to dive into qualitative data to explain the types of people near to the hub and their thoughts on new transport modes. There are sources of this type of data that can be purchased such as Experian Mosaic data which uses credit information to produce profiles for those in specific areas. However, if this level of investment is not possible then local surveys and profiling could be completed in-house.

Once profiles of potential users have been completed the next step is identify a method to analyse the number of these profiles in the locations. If using a paid for service this detailed breakdown of percentages of those profiles in the location can be requested. If utilising surveys in-house then deciding on a method to assign density to responses based on individual profiles and number of responses is key.

User analysis should take into account the overarching transport objectives as the concentration of the target user group will ultimately impact on the ability to deliver against the client's transport objectives.

3.4. Site Analysis

The first three sections focus on desk-based analysis however there is a limit to what can be achieved as part of this process. Our recommendation would be to complete some form of site visit. At this stage a detailed site analysis is useful for considering factors such as:

- Quality of pavement and cycle routes – are these going to enable new users to comfortably use them.
- Traffic – bus availability, car journeys in and out of the area that could be switched, cyclists already comfortable in the area.
- Infrastructure – Likely access to electrical supply for EV charging or mobile phone signal to access booking systems.
- Available space – Where is it located in terms of houses, is it likely to be large enough for a hub or a node.

The majority of this could be completed through a brief visual inspection but a traffic count is also worth consideration to give a sense of whether the demand analysis conducted as part of the desk-based stage is reflective of real-world transport patterns.

3.5. Final Selection

At this stage data collection and analysis for the individual stages is combined. For each individual location, data gathered is fed into the scoring matrix. An example completed matrix is shown below:

Score	Number of Large Employers	Weighting
1	1-2	25%
2	3-5	
3	6-8	
4	9	
5	10+	

Table 2 - Example employer scoring matrix

Location	No. Employers	Score
One	1	1
Two	6	3

Table 1 - Example of scoring table

In completing the scoring matrix, it is also recommended that as much descriptive information is provided so that those assessing it can understand the analysis that was conducted. Source data should also be referenced for transparency and clarity. Each individual location and factor across the stages should be scored based on the criteria and weighting developed at the start of the project.

Where scores are similar across locations, further analysis based on local knowledge or local transport strategies may be needed.

Following completion of this analysis, the client and relevant stakeholders should be involved in a workshop to present the findings. This allows for final feedback on the proposed locations. Further information may be provided at this stage by the client to help come to a conclusion.

4. Next Steps

Once shortlisted the next steps in developing a mobility hub should be considered which will include further analysis. We recommend the principal next step should be the development of a business case on the support of a mobility hub.

As part of this, analysis should include:

- Transport modes – modes available at the hub and commercial viability of these.
- Services – benefits of offering additional services and commercial viability of these.
- Transport objective – likelihood and scenarios required to meet this.
- External factors – the speed at which transport sector evolves, changing policies.
- Risks – planning permissions, funding availability.