

# Stevenage Borough Local Plan

**Transport Technical Paper**

**December 2016**

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# 1 INTRODUCTION

## Context

1.1 Stevenage Borough Council submitted its Local Plan to the Secretary of State in July 2016 and a public examination is to be held to consider the soundness of the plan. This Transport Technical Paper has been prepared to:

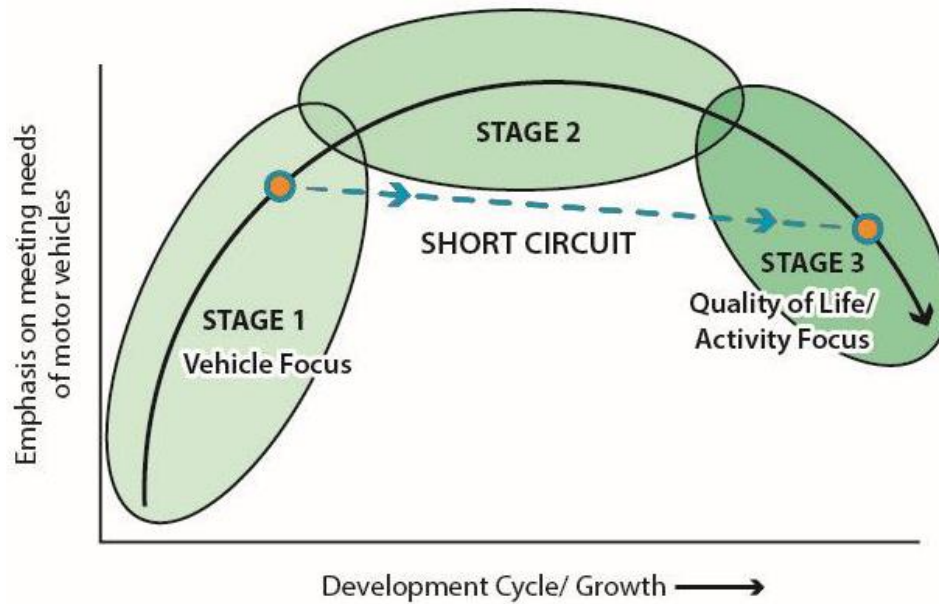
- Set out the transport vision for Stevenage;
- Provide an overview of the proposed approach to Mobility in order to facilitate the delivery of the Stevenage Local Plan growth; and
- Summarise the measures that will be undertaken to deliver the Mobility Strategy for Stevenage, and which informs the Infrastructure Delivery Plan (IDP).

## Vision

1.2 Stevenage Borough needs and wants social and economic growth. It needs more homes, more jobs and more leisure facilities.

1.3 It plans to achieve this alongside better community integration, easier mobility for a wider society and managing road congestion. The strategy is to align Stevenage with Stage 3 European cities, where growth, increased mobility and reducing travel inconvenience are firmly linked. In this way, commuter traffic growth is no longer a function of increasing population or activity.

Figure 1.1 - Stages of a European City Growth<sup>1</sup>



- 1.4 The overarching Transport Strategy set out in this paper demonstrates that this is achievable for Stevenage and is a firm expectation. The Strategy, in line with national planning policy, relies upon the assumption that as growth proceeds, the balance of mobility shifts away from driving cars and towards mobility through technology (virtual mobility), active travel (walking and cycling), public transport and car-pooling (sharing journeys).

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<sup>1</sup> <http://www.create-mobility.eu/create/project>

## 2 MOBILITY OVERVIEW

- 2.1 Good Mobility is a critical characteristic for the successful economic and social growth of Stevenage in this Plan period and beyond. Mobility means access to day to day destinations and facilities, including schools, friends, shops, leisure and work. People live in towns, such as Stevenage, because of the opportunities available within a short distance.
- 2.2 The Stevenage Borough Council strategy is to support and encourage increasing Mobility by sustainable and inclusive modes. It is to support a mode shift over time from car driver to more space efficient, socially inclusive and less polluting forms of Mobility, and not simply to supply extra road capacity for the benefit of car borne commuters in peak periods.
- 2.3 In this respect, Stevenage Borough Council embraces national planning policy and is consistent with the emerging 'Hertfordshire Transport Vision' (ED128).
- 2.4 Stevenage is named as a 'Sustainable Travel Town' in this draft Vision document, where a Sustainable Travel Town focuses on reducing the need to travel overall and increasing the proportion of journeys made by sustainable modes (on foot, by bicycle, by public transport, or via schemes such as cycle hire and car clubs). The initiatives include walking, cycling and shared mobility infrastructure and enhancements, together with behaviour change schemes.<sup>2</sup>
- 2.5 The Vision expects a step change in uptake of sustainable modes. It also advises that it is likely that some highway capacity would need to be reallocated for use by pedestrians, cyclists and bus users.
- 2.6 It states the benefits such as a reduction in private vehicle use for shorter trips within the towns, enhanced public realm in the town centres, and increased proportion of trips made on foot, by bicycle or by public transport, with associated benefits to public health and air quality.
- 2.7 With the head start of excellent existing infrastructure, Stevenage embraces this approach, and is very well placed to achieve these benefits.

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<sup>2</sup> Draft Hertfordshire Transport Vision 2050 p25

## Types of Mobility

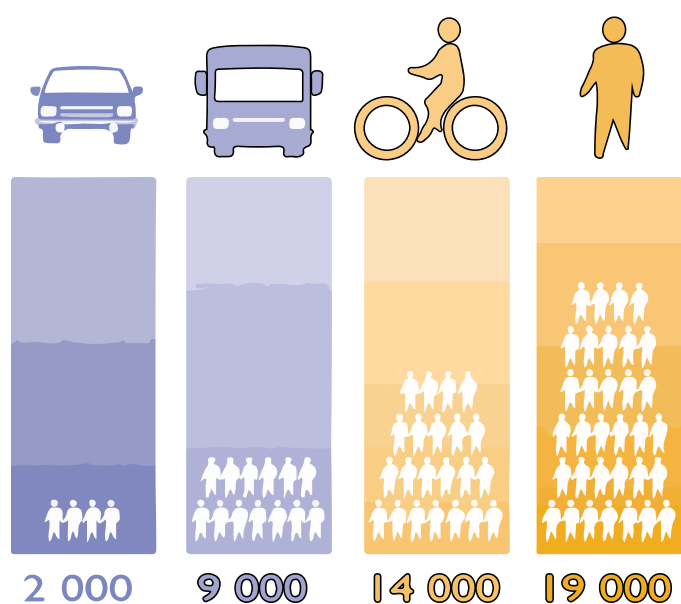
### Virtual Mobility

- 2.8 Virtual Mobility may not involve any physical travel. It is access through technology and includes the likes of video conferencing, working from home or a local work hub, internet shopping and the like.
- 2.9 Technology already plays an important role in Mobility, but the scale of change in the coming years will be substantial. Stevenage Borough Council will embrace this, and design and plan with this in mind.

### Active Travel

- 2.10 Active travel is walking and cycling. These are the highest capacity forms of transport, where capacity is defined as people per unit area. **Figure 2.1** below illustrates the person capacity per 3.5m wide carriageway lane per hour for various modes of travel.

**Figure 2.1 – Person Capacity Per Carriageway Lane per hour<sup>3</sup>**



- 2.11 Active travel transport is a particularly efficient and desirable way of getting around. It makes best use of available space, something that will become increasingly important with the growth of the town.

<sup>3</sup> Ticket to the Future: 3 Steps to Sustainable Mobility - UITP, International Association of Public Transport, Brussels 2003

- 2.12 It contributes to better health, something that is strongly encouraged by the NHS to combat obesity and non-communicative disease and which minimises the public health burden. It encourages community interaction and active environments at a pedestrian scale, which in turn contributes to inclusiveness across a wide sector of society.
- 2.13 There is the potential for excellent active travel infrastructure in Stevenage, for relatively limited investment.

### **Car Pooling**

- 2.14 Car-pooling is multiple occupancy car travel. Technology, and in particular smart phone apps, make this a mainstream form of Mobility. Car-pooling is already a material travel option, adopted by employment parks and business, specifically for travel to and from work. The current development of real time car-pooling apps, make car-pooling an option comparable with walking, cycling and driving.
- 2.15 Car-pooling is a socially inclusive form of motorised mobility. It is effectively private public transport, with a far wider coverage than can be achieved economically or sustainably by buses and trains. It provides an extra layer of opportunity for people that choose not to use a car, or who, for instance, aspire to own only one car where otherwise they may have owned two. It reduces individual travel costs, and contributes to community integration. It reduces car trips and car parking demands.
- 2.16 With the concentrated areas of employment in the town, as well as common origins and destinations, there is significant potential for car-pooling to have a positive effect on car trips, car parking and air quality in the town.

### **Public Transport**

- 2.17 Bus and rail use in Stevenage is the same as the national average (13%). Bus and rail are both highway capacity mobility networks that enable the efficient movement of people. Hybrid buses provide a good alternative to diesel and have the proven reliability required by operators to ensure good levels of service and associated air quality benefits.
- 2.18 Just as car-pooling does, public transport performs a social inclusion function as well as a sustainability function, and it is one of the real and practical choices for mobility in, to and from the town.



## **Private Car**

- 2.19 Use of the private car is relatively easy in Stevenage most of the time. It is currently one of the options for mobility in the town, and the most significant in terms of proportion of movement.
- 2.20 Single occupancy car use is one of the least efficient forms of mobility in terms of space, energy and pollution. There is finite space for roads and junctions in the town, and it is likely that, as for other UK towns and cities, this will limit movement at the busiest times of the day, notably the peak of the commuter periods.
- 2.21 Stevenage Borough Council expects car use to remain relatively easy in the town throughout the Plan period and beyond, for most of the time. However, for car use to remain relatively convenient at the height of the commuter peak periods more people will need to choose other options including virtual travel, active travel, car-pooling or public transport.
- 2.22 It is not the approach of Stevenage Borough Council to predict and provide road capacity at the expense of good community, public realm, health, social inclusion, air quality and sustainable mobility.

## **Goods Movement**

- 2.23 There has been a significant increase in recent years in light goods vehicle (LGV) movement, particularly associated with home deliveries. This is particularly in urban areas where the 'last mile of travel' is inefficient and cumbersome.
- 2.24 The aim is to minimise this by taking advantage of emerging initiatives and approaches to home deliveries. In particular, Stevenage Borough Council will work with new and existing residential developments and employment centres to encourage the uptake of micro consolidation centres (localised drop off points for parcels and packages), and keep abreast of the new methods and technologies for the 'last mile of travel', some of which are being thought of as up to 15 times more efficient than the current LGV use.

### 3 TRAVEL BEHAVIOUR

- 3.1 Whilst it is important to have an understanding of how people are currently travelling in Stevenage and where there is potential to change behaviour, it is perhaps more important to look at how broader society is already changing in terms of travel behaviour and what the future is likely to hold for the next generation of young people in Stevenage who will become adults during the Local Plan period.

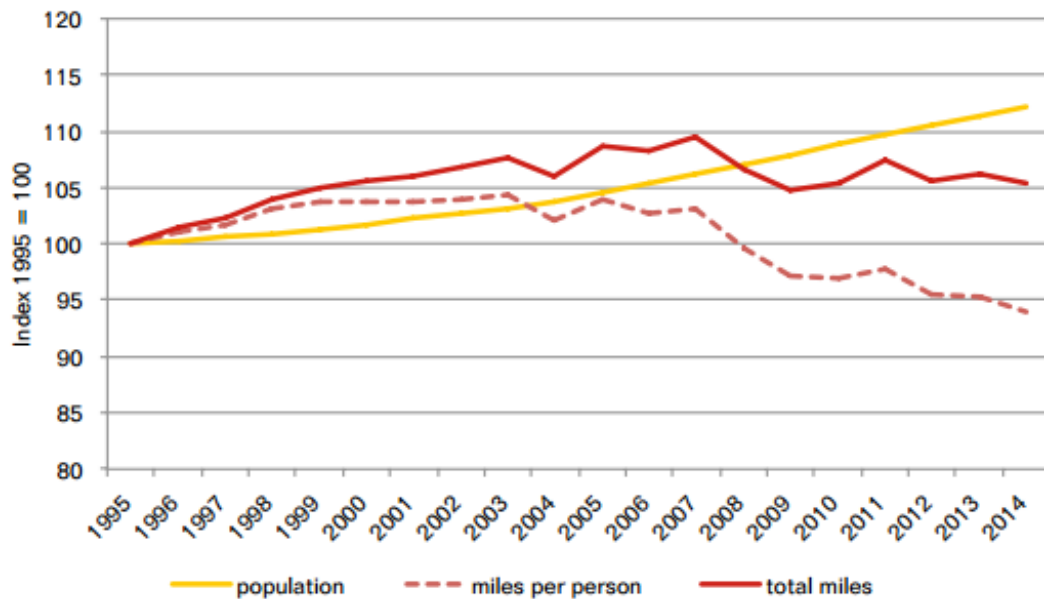
#### National Trends in Travel Behaviour

- 3.2 The Independent Transport Commission (ITC), is one of Britain's leading research charities with a mission to explore all aspects of transport and land use policy. It has just published a report on 'Recent trends in road and rail travel: What do they tell us? 1995-2014', December 2016 (ED129). The main purpose of the research was to identify travel trends rather than the causes behind them, but indications are that *"attitudinal factors are becoming increasingly significant as drivers of travel. The ITC's 2015 attitudinal research indicated that cars are increasingly viewed as 'appliances not aspirations', especially by young people, while public transport is being seen more favourably."*
- 3.3 Some of the key findings of the research are:
- Overall, the total miles travelled by English residents reached a peak in 2007 before falling sharply at the time of the Great Recession of 2008-09, and subsequently stabilising at this lower level. This was in spite of a significant population increase of 12% over the period 1995-2014. As a result, per capita travel in terms of distance has been decreasing significantly over the past decade and is now 10% lower than in the mid-2000s.<sup>4</sup>

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<sup>4</sup> Executive Summary Recent trends in road and rail travel: What do they tell us? 1995-2014, Independent Transport Commission

**Figure 3.1 – Total Miles (personal travel), population and miles per person England<sup>5</sup>**



- The historic correlations between incomes/costs and travel are weakening. Rail travel per person has continued to rise in spite of above-inflation fare increases, while car driving per adult has declined in spite of motoring costs remaining stagnant.<sup>6</sup>
- We are witnessing an inter-generational divide in travel behaviour trends. Young adults in Great Britain, men in particular, are the group where car use per adult is falling fastest. The same phenomenon has been seen in other industrialised countries.<sup>7</sup>

3.4 These findings assist policy makers in determining their investment priorities to facilitate the delivery of growth in housing and jobs. Of particular relevance to the Stevenage strategy for growth and infrastructure investment is one of the concluding remarks in the research report:

*“The findings also indicate the importance of joining up policy making in transport with other policy areas. A key current issue surrounds housing construction, given the widely-accepted need for increased housebuilding to keep up with demand for accommodation and deflate the house price bubble. However, the location of these new developments will have a major impact on future patterns of travel demand, and in determining the extent to which this is car*

<sup>5</sup> Figure 2.1 Recent trends in road and rail travel: What do they tell us? 1995-2014, Independent Transport Commission

<sup>6</sup> Executive Summary Recent trends in road and rail travel: What do they tell us? 1995-2014, Independent Transport Commission

<sup>7</sup> Executive Summary Recent trends in road and rail travel: What do they tell us? 1995-2014, Independent Transport Commission

*based. Careful site selection and adequate investment in accessibility by public transport and on foot and cycle should be a priority in new developments, especially outside those areas where current provision is good, such as in London.”<sup>8</sup>*

## **Travel Behaviour in Stevenage**

- 3.5 Stevenage was designed for the bicycle. The cycle network was built as an intrinsic and key part of the New Town plan, not an afterthought. The town was also designed for the car, with a high capacity road network.
- 3.6 Utilisation of the cycle infrastructure was very positive when Stevenage was first built, with reportedly a quarter of the total daily work and school commute being by bicycle<sup>9</sup>. However, today less than 3% of Stevenage residents cycle to work, about the same as the national average<sup>10</sup>. The Stevenage Cycle Strategy (2002) points towards one significant reason for this:
- “The quality of the road network also plays its part. Stevenage has a fast, high capacity road system, which makes it easy to make journeys by car. Residents have largely been insulated from the effects of traffic growth and congestion and generally there is little incentive for people to use modes other than the private car.”<sup>11</sup>*
- 3.7 As well as this, the fundamentally excellent active travel (walking and cycling) network is not at it best. Disincentives to its use include a lack of suitable maintenance, lack of lighting, some discontinuity, poor wayfinding and a general lack of use.
- 3.8 Greater use engenders a more active and pleasant environment, which in turn encourages greater use. At the moment, use of the active travel network does not reach that critical mass.
- 3.9 Given the high performing road network, Stevenage has not yet reached the levels of congestion experienced in other towns within the UK in commuter peak periods and car drivers have not yet had to act as significantly to minimise their inconvenience by changing mobility methods. Therefore, this effect on behaviour (this being one of potentially many)

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<sup>8</sup> Paragraph 8.4 Recent trends in road and rail travel: What do they tell us? 1995-2014, Independent Transport Commission

<sup>9</sup> Cycleways of Stevenage, SDC, 1975

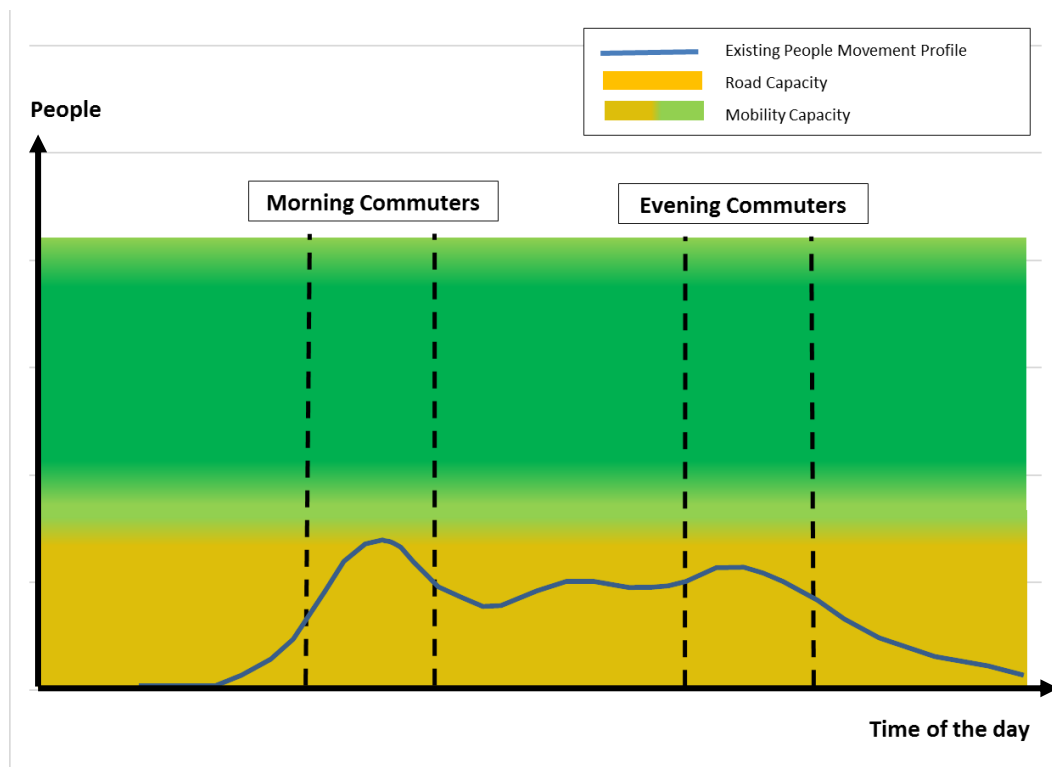
<sup>10</sup> Census 2011 Journey to Work Stevenage and England Residents

<sup>11</sup> Page 6 Stevenage Cycle Strategy, 2002

has not been substantial. The use of the road network still produces pronounced peak periods, retaining substantial road capacity for car movement across most of the day.

- 3.10 **Figure 3.2** illustrates the typical weekday pattern of car movement on a town centre commuter route overlaid on the estimate of road capacity and mobility network capacity for the route. For the purpose of this graph, it has been assumed that carriageway capacity is limited to the peak observed traffic flow (i.e. no existing spare capacity on the road) and that there is a typical Stevenage cycleway provided off- road.

**Figure 3.2 – Capacity of Mobility Network on Stevenage Commuter Route**

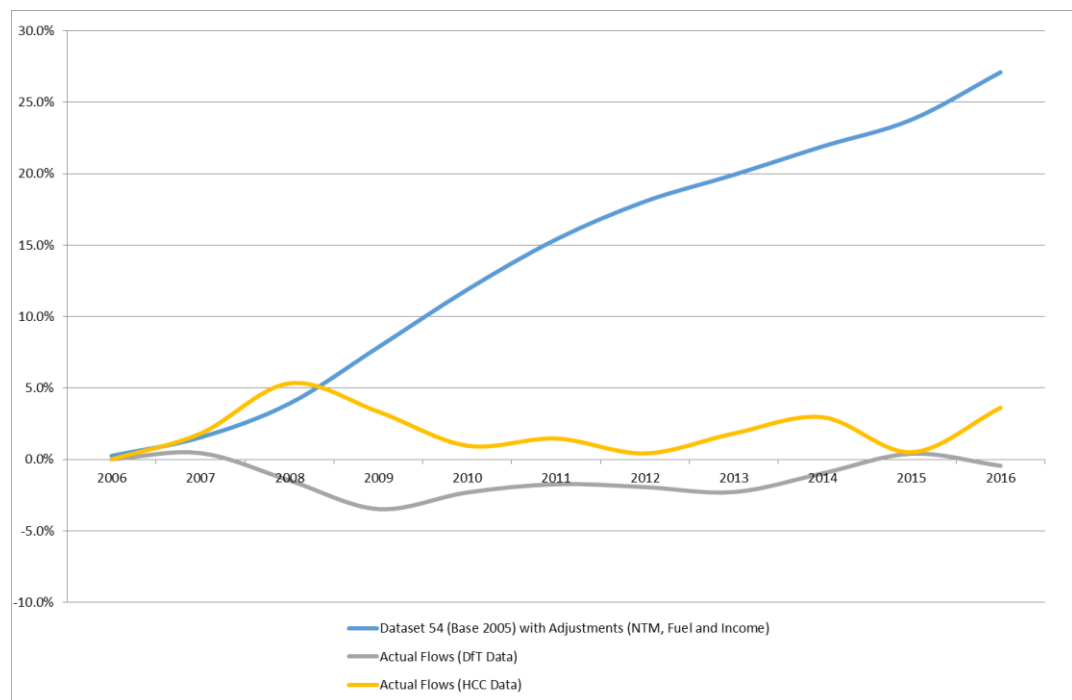


- 3.11 **Figure 3.2** shows road capacity in the three-hour commuter peaks under current conditions of approximately 13% in the morning peak period and 26% in the evening peak period.
- 3.12 It also helps to illustrate the effectiveness of a greater proportion of public transport use. The yellow area illustrates the road capacity (i.e. people capacity of car and bus on the road network). It is not a fixed capacity rather a notional capacity as the limit on road capacity moves up the graph with increasing proportion of public transport use of that road, at a rate equal to about four times each unit reduction in single occupancy car use.

- 3.13 The capacity of the mobility network takes into account both the capacity of the road network and the cycleway. This assessment has not considered pedestrians, but this would increase the capacity of the mobility network still further.
- 3.14 It is not the purpose of planning policy to prioritise protecting the convenience of commuter car drivers. It is the purpose of transport planning policy to encourage community interaction, social inclusion, economic growth, and in doing so to provide for a choice of mobility, and encourage the most energy efficient movement.
- 3.15 The totality of the mobility network in Stevenage, including the walking, cycling and bus networks, is not under significant load. There is already available capacity for easy movement at the busiest times. As travelling by car becomes increasingly inconvenient, or the behaviour of people changes, whether through education or changing priorities, people will make greater use of these available networks.
- 3.16 For this reason, Stevenage Borough Council's approach is not to forecast a traditional traffic demand, and then seek to accommodate it within an empirical limit by building bigger roads (predict and provide). It is to think smart about Mobility.
- 3.17 It is to move away from the premise that travel must be habitual, to a realisation that travel in the modern world is going to be about flexibility and choice, and often guided by an information technology platform on a computer or a smart phone. People now look for flexible seamless travel, and this will include virtual travel (the use of technology to replace travel).
- 3.18 The Stevenage Transport Strategy assumes that people will act to minimise their inconvenience. In order to provide for convenient travel by car in the commuter peak periods, more people will need to take mobility by other means.
- 3.19 With the stick comes the carrot. This is greater awareness of the existing alternatives, management measures (for instance, walking buses to primary schools) to encourage their use, and enhancement of existing networks and provision of new alternatives, spreading choice and maximising convenience. In Stevenage, this will include major investment in the upgrade of the active travel networks and investment in and enthusiasm for 'nudging' behaviour.

- 3.20 Approaching travel planning in this way maximises the convenience of the road network for those that must drive, or who continue to choose to drive, and this is even if it is relatively inconvenient compared to other modes.
- 3.21 We have sought the help of a mathematical traffic model to inform our judgements about road capacity. The modelling approach necessarily has limitations and so needs to be treated cautiously. This is explained in **Appendix A**.
- 3.22 This model provides the basis for judgements about spare road capacity, and the limiting nature of road capacity, which fixes an upper limit on road use compared with other forms of mobility.
- 3.23 The historic position in Stevenage, which is similar to that in other towns and cities, is that traffic growth has not risen in the same way that is forecast by a basic application of national forecasting tools.
- 3.24 **Figure 3.3** shows the actuality versus the forecast over the last 10 years. The trend has been for traffic volumes to remain broadly static across the day, compared with a forecast based on economic indicators that estimates much higher flows.

**Figure 3.3 - TEMPro/NTM Traffic Forecast (2005-2015) compared with actual traffic growth**



- 3.25 These observed effects provide further confidence for the disconnect between ‘social and economic’ growth, and traffic growth. It reinforces the common-sense judgement that people do act to minimise their inconvenience, and make judgements or changes, some small and others not so small.
- 3.26 One of the more significant interventions planned by Stevenage Borough Council is the relocation of the bus station next to the railway station to create a transport hub, and the redevelopment of the Lytton Way area, connecting the town centre with the new transport hub. To do this, and to remove the barriers to movement, Lytton Way will be closed and redeveloped, with bus access only. The plans for the town centre are summarised in **Appendix B**.
- 3.27 Taking into account this reallocation of road space, our judgement is that traffic capacity in the town centre area will be limited to broadly the level of movement that is experienced now during the peak hour of the peak commuter period. Outside of that peak hour there remains spare road capacity even assuming no mode shift to more efficient road use (i.e. car-pooling and public transport). As **Figure 3.2** illustrates, at the same time the walk and cycle network, improved for continuity, has extensive spare capacity.
- 3.28 The Local Plan adds about a 17% increase in housing in the town by 2031 as well as new jobs. Given the observed effects in Stevenage, the general mobility trends nationwide, particularly amongst the younger generation, the expectation and reliance upon behaviour change UK wide, the high capacity mobility networks in Stevenage and the emphasis and investment in mobility included in this Local Plan, Stevenage Borough Council is confident of its ability not just to design networks and methods for sustainable economic and community growth in this Local Plan, but to establish an approach that provides a long lasting blueprint for growth.



## 4 APPROACH TO MOBILITY FOR STEVENAGE

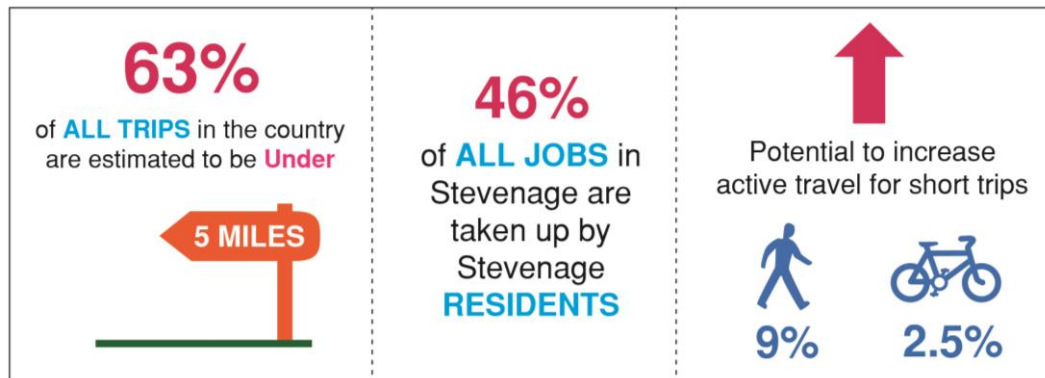
### Overview

- 4.1 The overarching Transport Strategy for Stevenage is set out in this section of the paper. It makes commitments to tried, tested and innovative initiatives in Mobility and Behaviour, that do not just mitigate the demands from the Local Plan growth but will accelerate the more efficient use of transport infrastructure within the town. It enables growth, not just for this Local Plan but beyond, with a reduced reliance on the car and more active and integrated communities.
- 4.2 It steers away from the historic, and now contra-policy, predict and provide car commuter peak as a proxy for transport and Mobility. Instead of prioritising road building schemes to satisfy a theoretical short lived car commuter demand, the strategy is to design for and prioritise Mobility as a whole. It is to create even more attractive choice in movement than already exists, committing funds to physical improvements to the higher capacity cycle network, which can be up to seven times more effective in terms of unit road space compared with car use, invest in public transport and make huge inroads in influencing behaviour by significant funding of new measures to promote and use the mobility options that already exist and will improve.
- 4.3 The commuter peak periods are the times of the day when the highway network is under the most pressure. The National Travel Survey (NTS) shows that in the AM peak hour (08:00-09:00), 25% of all movement is for commuting and business purposes and 50% is associated with education<sup>12</sup>. Therefore, three quarters of all movement in the AM peak hour are focussed on just these two activities. In the PM peak hour (17:00-18:00), over 40% of all movement is associated with these purposes.
- 4.4 In addition to this, Stevenage has a high level of internalisation of jobs, with many local residents taking up available jobs in Stevenage. Therefore, commuting distances will be short for many residents. A high proportion of all trips, not just commuter trips, are less than 5 miles.

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<sup>12</sup> National Travel Survey Table NTSS0502 Trip Start Time by Trip Purpose (Monday to Friday) England

**Figure 4.1 – Propensity to Increase Active Travel for Short Trips**



- 4.5 Given this, the strategy is to be cognisant of these trip purposes and to target in particular short trips made by car that could easily be made by active travel and public transport instead.

## Active Travel Strategy

### Existing Situation

- 4.6 Stevenage's cycle network was modelled on Dutch infrastructure and by the 1970s, when the network was finalised, Stevenage was held up as proof that the UK could build a Dutch-style cycle network.
- 4.7 Stevenage's good active travel infrastructure can easily become excellent with further investment. The cycle routes have the capacity to accommodate significant movement by bicycle, becoming material economic conduits for movement. **Appendix B** is the cycle map of the whole Stevenage network.

### Proposed Strategy

- 4.8 Stevenage Borough Council will place a high priority on active travel. For the purposes of this Local Plan and beyond, it will plan on the basis that the proportion of travel by active travel will increase, that commuter peak car demand will remain broadly static and therefore that the proportion of travel by car driver will decrease.
- 4.9 The strategy is to further encourage this shift through the creation of an active travel /car differential whereby it is more attractive to cycle for short journeys than drive.

- 4.10 The existence of the extensive, segregated cycle infrastructure means that Stevenage is better equipped than many towns to facilitate safe and convenient cycling and encourage this change in emphasis.
- 4.11 In Hertfordshire, it has been estimated that 63% of all journeys are less than 5 miles (ED128). Not only has Stevenage been designed with cycling in mind, but the majority of trips are of a distance that can comfortably be accommodated by a choice of means of mobility.
- 4.12 The strategy will focus on the following aspects:
- **Cycle Strategy:** an up to date cycling strategy will be prepared for Stevenage that will set out the strategy, measures and timescales for implementation. The strategy will consider all potential cycle trip purposes, including commuting, cycling to school and recreational cycling.
  - **An upgraded cycle network:** the highest priority for investment will be the upgrade of the existing cycle network, which has suffered from a historic lack of investment. This will include improved surfacing, improved lighting, addressing missing links in the network and changes to priority where cycleways meet the highway in order to create continuous routes. In accordance with draft Policy IT5 of the emerging Local Plan, developers will be required to provide safe, direct and convenient routes within the development, and link to existing cycleway and pedestrian networks.
  - **Wayfinding:** the former active travel Wayfinding Strategy that was developed, but not implemented, will be reviewed and updated where necessary. An Action Plan for its implementation will be included in the updated Cycle Strategy.
  - **Cycle Storage:** a review of existing cycle parking available to the public within Stevenage will be undertaken. The review will identify any gaps in existing cycle parking provision in terms of appropriate locations at trip ends as well as the quality of cycle parking. In addition, in accordance with draft Policy IT5 of the emerging Local Plan, developers will be required to provide secure cycle parking as part of any development coming forward.
  - **Cycle Training:** Positive actions to influence behaviour are education in, and awareness of, opportunities, including the opportunity to make best use of the active travel infrastructure. Cycle training, including for those of an early age, will help to broaden horizons and provide confidence.

## **Public Transport Strategy**

### **Existing Situation**

- 4.13 Public transport (buses and trains) is well used in Stevenage. Approximately 6% of travel to work is by bus, and 7% by train. However, the existing bus and railway station have been underinvested for some time and require an upgrade in provision. The bus-rail transfer is currently relatively poor as the existing bus station is not located adjacent to the railway station to provide a seamless interchange.

### **Proposed Strategy**

- 4.14 As part of the regeneration of the Town Centre it is proposed to close the existing bus station and replace it with new bus interchange at the railway station. It is also proposed to significantly improved bus connections into and through Stevenage, which will enable more employees in the town centre and Gunnels Wood employment area easily access their place of work.
- 4.15 Through the Thameslink expansion, Stevenage will be directly connected, by fast services, to the heart of central London and a variety of destinations south of London, including Gatwick Airport. Services will also stop at Farringdon for easy connections onto the Elizabeth Line (i.e. Crossrail) to Heathrow, Canary Wharf and beyond. With new trains on both commuter and intercity services, by 2018 there will be a step change in the accessibility and attractiveness of travel by rail to/from Stevenage. The Local Plan identifies (Policy TC4 iv) a proposal for a radically improved new Stevenage railway station, with National Rail having plans for a 5th platform, as part of a broader central area regeneration scheme. This will also help to drive a shift in travel onto rail.

## **Car Parking Strategy**

### **Proposed Strategy**

- 4.16 Parking is no longer a stand-alone issue, but has become a key aspect of both transport and land use planning. Control over the availability of parking spaces is a key policy instrument in influencing car trips. The supply and pricing of car parking has a fundamental influence on the way people travel. Research has shown that even where good alternatives to the car exist, if cheap and convenient car parking is available then people with access to a car will tend to choose this mode of travel.

- 4.17 The 2004 Parking Strategy will be updated as part of the development of the Stevenage Transport Strategy as a tool for encouraging greater activity in the town centre whilst minimising the demand for commuter car parking.
- 4.18 Stevenage Borough Council will take the lead in this by critically reviewing and managing its own staff car parking strategy.

## **Car Sharing**

### **Existing Situation**

- 4.19 Hertfordshire County Council currently operates a Liftshare car-pooling scheme, which has over 1,000 members.

### **Proposed Strategy**

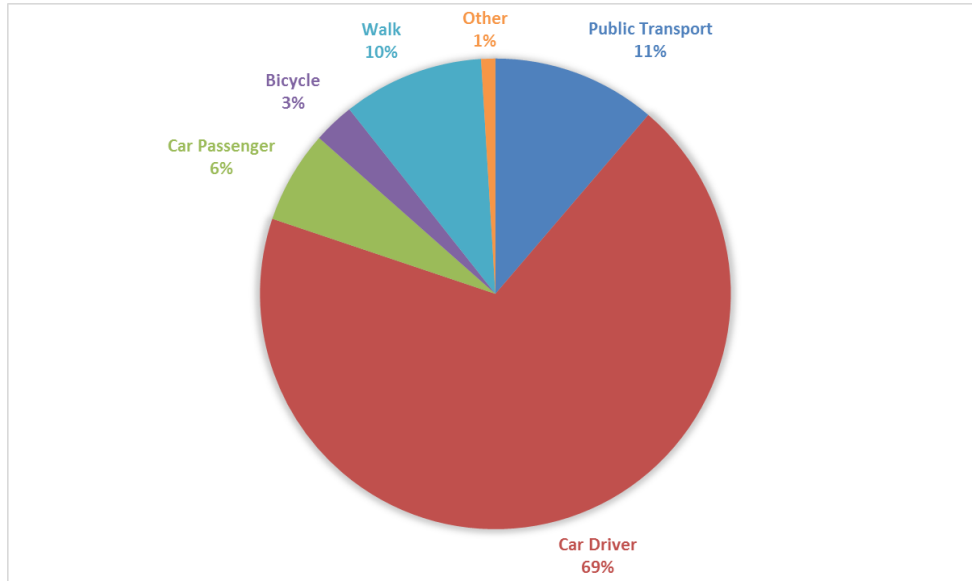
- 4.20 Stevenage Borough Council will develop car-pooling within the Stevenage community, and expect new development, where appropriate, to invest in the development and encouragement of this type of mobility. It will stay abreast of the significant emerging European research in this field, and seek the implementation of the most effective elements of this growing, and particularly socially inclusive, method of mobility.

## **Workplace Travel Planning**

### **Existing Situation**

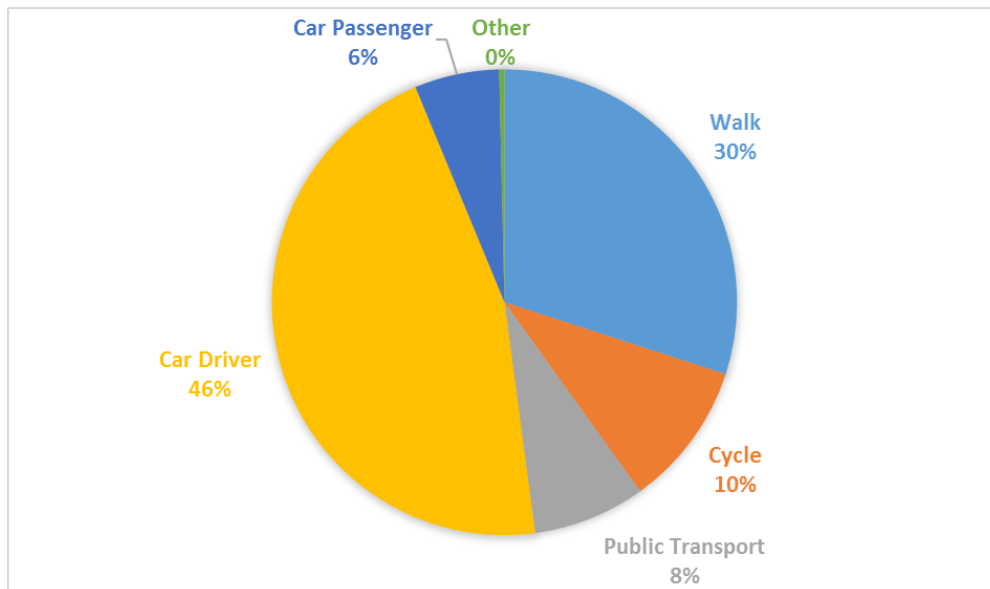
- 4.21 2011 Census data provides an insight into the main modes of travel for people working in Stevenage. This shows that 69% of people who work in Stevenage drive a car, 11% travel by public transport and 13% walk or cycle.

**Figure 4.2 – Mode of Travel to Work for People Working in Stevenage (2011 Census)**



- 4.22 The Hertfordshire 2015 Household Survey provides a useful insight into how far people travel to work and by which mode. Of particular interest are those trips that are under 3 miles, and therefore have the easiest potential to be made by sustainable modes. **Figure 4.3** illustrates the mode share of journeys to work under 3 miles.

**Figure 4.3 – Mode of Travel for Journey to Work Trips under 3 miles**



- 4.23 The survey showed that 22% of journeys to work in Hertfordshire are within 3 miles and that over half (52%) of these journeys are made by car. There is a significant potential for mode shift for these short trips to be made by active travel, public transport or more efficient use of the car.

## Proposed Strategy

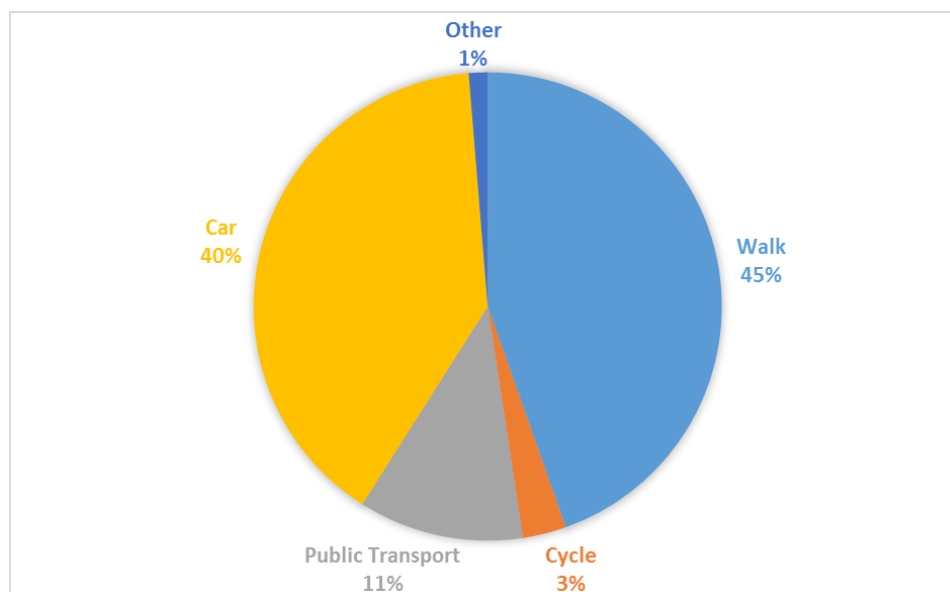
- 4.24 Gunnels Wood, between the A1(M) and the town centre, is by far the largest employment site in Stevenage. The area is made up of a large range of businesses, from small and medium businesses through to some very large employers including GlaxoSmithKline (GSK) and MBDA. Around 19,000 employees work on the estate for approximately 300 different businesses and it is set to intensify as part of the Local Plan.
- 4.25 The concentration of this many people, makes it an ideal area to target travel behaviour change through a range of travel planning measures. Major employers in this area, including GSK, are already part of the SmartGo Stevenage scheme, which offers a range of travel benefits and services to help make travel cheaper and easier for employees.
- 4.26 The strategy is to concentrate infrastructure and behavioural influence initiatives in these concentrated areas of employment, which include the Council office in Stevenage. There are some significant mobility benefits to be had in this way, and a strong evidential basis already in the UK for the effectiveness of this.

## Education Travel Planning

### Existing Situation

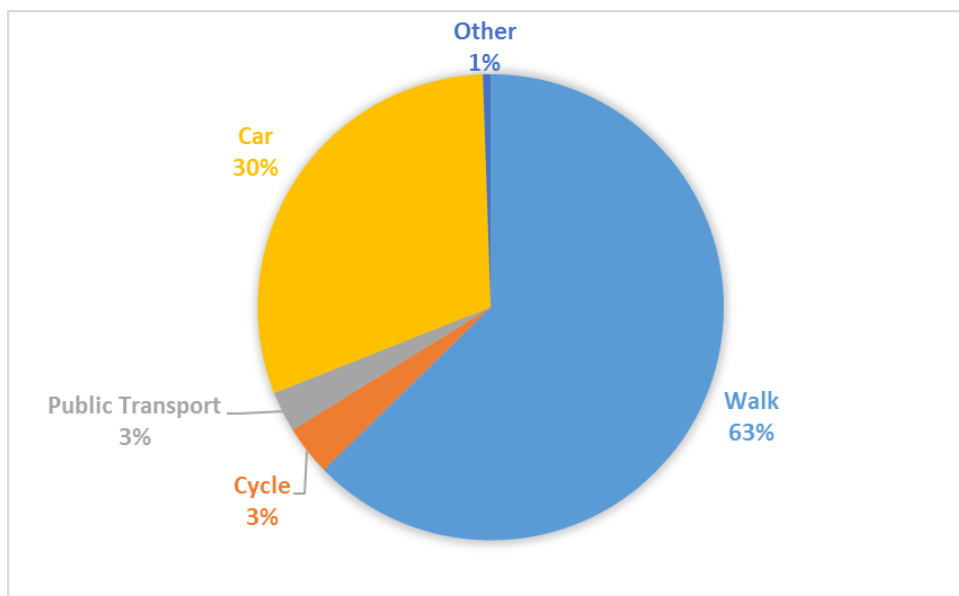
- 4.27 With regards to education trips, the Hertfordshire 2015 Household Survey shows that 40% of trips (all school ages) are made by car and the remaining 60% by non-car modes.

**Figure 4.4 – Mode of Travel for Education Trips (All School Ages)**



- 4.28 Short car trips have the greatest propensity to change to active travel. The short educational trips (under 3 miles) make up the vast majority of education related trips (over 70%) and, 30% of these are currently made by car. Therefore, any shift away from the car for these trips would have a positive effect on travel, particularly in the morning peak period.

**Figure 4.5 - Mode of Travel for Education Trips under 3 miles**



### **Proposed Strategy**

- 4.29 The Transport Strategy for Stevenage will focus on encouraging a change in behaviour away from the car for education trips. There is a good evidential base<sup>13</sup> for the effectiveness and benefits of education related interventions on school related travel, to the extent that positive behavioural initiatives can have a substantial effect on the propensity to travel to school by healthy and sustainable means. The strategy is to promote a plethora of measures, including:

- Development and enforcement of School Travel Plans;
- Bikeability cycle training in schools; and
- Continued development of education facilities within easy access by non-car modes.

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<sup>13</sup> DfT Modeshift STARS; NICE Guidance "What can local authorities achieve by encouraging walking and cycling"; Living Streets "Making the Case for Investment in the Walking Environment, A Review of the Evidence"



## Highway Network Management

### Proposed Strategy

- 4.30 For car travel in Stevenage to be sustainable, many people will need to travel by other means. It is unrealistic to expect traffic to flow unimpeded at peak times, or to design to accommodate that desire.
- 4.31 The strategy is to prioritise delivery of the overall mobility network. In some cases, that might mean reallocation of road space between modes, and this may include junction or road improvements.
- 4.32 In terms of traffic capacity, the Council will identify pinch points on the network in the first instance, and prioritise funding for road capacity improvements to relieve those pinch points in the context of the overarching mobility strategy. The IDP identifies the pinch points currently forecast by the traffic modelling exercise and assigns costs and priorities to those measures.

## **APPENDIX A**

### **Traffic Modelling Overview**

## Traffic Modelling Overview

1. This appendix provides a summary of the limitations of the S-Paramics model that has been used for Stevenage. It goes on to summarise the uncertainty with the assumptions that have been made to inform the model inputs. It does this to set the model results, and the judgements stemming from those results, in context.
2. The Department for Transport 'TAG Unit M4 Forecasting and Uncertainty' sets out guidance for forecasting the impact of transport projects including option testing and appraisal. Within this guidance, it states at paragraph 2.1.1 that:

*"There are two sources of forecast error: uncertainty in the inputs (such as size of new housing development) and error in the model parameters and specification (how these inputs propagate through the model). The practitioner should summarise all known assumptions and uncertainties in the modelling and forecasting approach in an uncertainty log."*

3. The guidance advises that an uncertainty log is developed, the purpose of which is *"to record the central forecasting assumptions that underpin the core scenario and record the degree of uncertainty around these central assumptions."*

## Fixed Demand Modelling

4. Micro-simulation models, such as S-Paramics, model the movements of individual vehicles travelling around a road network. They are fixed demand models; that is the vehicles are released onto the road network at pre-defined 5 minute intervals and will simply join the back of a queue.
5. There is no allowance in the model for the vehicles to change the time of journey having regard to the level of congestion or 'inconvenience' on the road network at that time. In reality people act to minimise their inconvenience and undertake one of a number of actions to avoid the busiest times of the day if possible (e.g. set off earlier in the morning, change the mode of travel, or even over time changing lifestyle). As congestion or inconvenience increases, the propensity for people to act to minimise their inconvenience will also increase. As it relates simply to changing the time of journey, it is more commonly referred to as 'peak spreading.'
6. The consequence of this inability in the model is to be overly and unrealistically pessimistic about road network performance. It is possible and necessary to manually adjust these inputs iteratively for a closer forecast of reality. The current model does not include this set of iterations, and so the results have to be treated accordingly.
7. Another limitation with fixed demand models, such as S-Paramics, is that they model fixed vehicle demand and are not capable of modelling travel behaviour in terms of mode shift.

8. Mode shift occurs in two main ways:
  - If congestion or inconvenience increases on the road network, then people act to minimise their inconvenience in a number of ways but one of these is to change mode of travel (i.e. car share, public transport, active modes).
  - Furthermore, if interventions are introduced to reduce single occupancy car travel (such as car parking management, car sharing, Travel Plans etc) or improvements to sustainable modes are made (such as investment in active travel network, new bus and rail station, increased level of public transport service etc) then people will again change mode.
9. Essentially the S-Paramics model is fixed in every aspect and the only element that is variable is the route that vehicles choose to use. The vehicles in the model are continuously re-calculating the most 'economic' journey and will re-route accordingly during their journey to minimise the theoretical cost of the trip.
10. Theoretical cost is not, in practice, a good proxy for route choice. The psychology of trip making is more complex. Perceived cost and inconvenience is often not the same as actual or mathematical cost or inconvenience, habits are important, peer pressure is important, as are a plethora of additional variables which cannot be forecast using this type of mathematical model without human intervention and iteration.
11. For these reasons, the model as it stands assesses an overly pessimistic and unrealistic position, and significantly so without manual intervention. It is the backbone of current transport policy that Mobility will change over time, and that travel choice will be influenced. To assume that this does not happen is to inherently assume that transport and town planning policy will fail. Insofar that the current model does not reflect these influences, the results need to be treated accordingly.

## **Demand Generation**

12. The S-Paramics Stevenage model has applied a number of traffic growth assumptions in order to develop vehicle demand matrices for the assessment years of 2021 and 2031. The future vehicle demand has been derived based on the following two elements:
  - Background Traffic Growth; and
  - Committed and Local Plan Trip Generation.
13. This section summarises the assumptions that have been used to forecast the future year vehicle traffic demand and why they significantly overstate what will realistically occur.

### **Background Traffic Growth**

14. A Base Paramics model was developed by AECOM, which simulates existing traffic conditions on the highway network.

15. The Base traffic flows (referred to as 'background traffic') have been growthed to 2021 and 2031 using TEMPro/NTEM growth rates adjusted for income and fuel based on WebTag adjustment factors.
16. The resultant background growth is summarised in **Table 1** below.

**Table 1 – Background Traffic Growth**

|                             | 2021        |             | 2031        |             |
|-----------------------------|-------------|-------------|-------------|-------------|
|                             | AM          | PM          | 2021        | 2031        |
| <b>Origins (model)</b>      | 1.04        | 1.06        | 1.04        | 1.07        |
| <b>Destinations (model)</b> | 1.06        | 1.06        | 1.08        | 1.05        |
| <b>External to model</b>    | 1.10        | 1.10        | 1.21        | 1.19        |
| <b>Total</b>                | <b>1.09</b> | <b>1.09</b> | <b>1.17</b> | <b>1.15</b> |

17. Effectively the growth in **Table 1** is the growth that is forecast to occur if no housing or jobs come forward and just reflects background traffic growth that is forecast by this method to occur by 2021 and 2031 as a result in changes in the value of time and vehicle operating costs, such as those resulting from fuel cost changes or income growth. **Table 1** is therefore a mathematical forecast that, even if the Local Plan and committed development growth does not come forward, background traffic in Stevenage would increase overall by 9% by 2021 and by 15-17% by 2031.
18. These growth factors take no account of observed effect, recent travel behaviour trends, the influence of other mobility options, the influence of increasing inconvenience in commuter peak, or many other factors that are relied upon in national policy to deliver economic and social growth i.e. they only forecast in an upwards direction. It is not consistent with the trends set out in the Independent Transport Commission report (ED129). This report concludes that the historic correlations between incomes/costs and travel are weakening and that car driving per adult has declined in spite of motoring costs remaining stagnant.

#### **Committed and Local Plan Trip Generation**

19. The next stage of forecasting traffic demand for 2021 and 2031 is to apply trip rates to the Local Plan and committed development schemes to provide development generated trips.
20. The S-Paramics model utilises TRICS trip rates from the Hertfordshire County Council WHaSH strategic model to estimate the level of vehicle trips generated by the committed and Local Plan developments.
21. The trip rates used for the S-Paramics Stevenage model are outlined in **Table 2** below<sup>1</sup>.

<sup>1</sup> Table 6.1 AECOM Stevenage Town Centre S-Paramics Model Forecasting Report, August 2016 – ED109

**Table 2 – TRICS Trip Rates used for the S-Paramics Stevenage Town Centre Model**

| <b>Sites to Assess</b>            | <b>AM</b>     |                    | <b>PM</b>     |                    | <b>Unit</b>      |
|-----------------------------------|---------------|--------------------|---------------|--------------------|------------------|
|                                   | <b>Origin</b> | <b>Destination</b> | <b>Origin</b> | <b>Destination</b> |                  |
| <b>Households</b>                 |               |                    |               |                    |                  |
| Residential                       | 0.420         | 0.163              | 0.221         | 0.399              | per dwelling     |
| Student Halls                     | 0.005         | 0.007              | 0.013         | 0.002              | per dwelling     |
| <b>Employment</b>                 |               |                    |               |                    |                  |
| <b>Retail - A1</b>                |               |                    |               |                    |                  |
| <u>Town Centre</u>                |               |                    |               |                    |                  |
| Town Centre Retail – Floor space  | 0.702         | 1.969              | 0.972         | 0.295              | per 100sq metres |
| Town Centre Retail - Jobs         | 0.005         | 0.096              | 0.209         | 0.029              | per job          |
| <u>Edge of Town</u>               |               |                    |               |                    |                  |
| Edge of Town Retail – Floor space | 0.049         | 0.162              | 0.330         | 0.303              | per 100sq metres |
| Edge of Town Retail - Jobs        | 0.026         | 0.086              | 0.174         | 0.160              | per job          |
| <b>A3/4</b>                       |               |                    |               |                    |                  |
| A Class – Floor space             | 0.000         | 0.000              | 1.388         | 2.065              | per 100sq metres |
| A Class - Jobs                    | 0.000         | 0.000              | 0.372         | 0.554              | per job          |
| <b>B Class</b>                    |               |                    |               |                    |                  |
| B1 Jobs                           | 0.015         | 0.203              | 0.176         | 0.011              | per job          |
| B1 Floor space                    | 0.086         | 1.153              | 0.994         | 0.060              | per 100sq metres |
| B2 Jobs                           | 0.04          | 0.49               | 0.402         | 0.025              | per job          |
| B2 Floor space                    | 0.082         | 1.011              | 0.829         | 0.723              | per 100sq metres |
| B8 Jobs                           | 0.044         | 0.085              | 0.078         | 0.029              | per job          |
| B8 Floor space                    | 0.051         | 0.099              | 0.091         | 0.033              | per 100sq metres |
| <b>Retirement</b>                 |               |                    |               |                    |                  |
| Care homes - bedrooms             | 0.073         | 0.146              | 0.073         | 0.049              | per bedrooms     |
| <b>Education</b>                  |               |                    |               |                    |                  |
| D1 Primary Schools - pupils       | 0.142         | 0.213              | 0.042         | 0.029              | Per pupils       |
| D1 Secondary Schools - pupils     | 0.094         | 0.151              | 0.026         | 0.016              | Per pupils       |

22. The trip rates used for the S-Paramics modelling are basic trips rates with no specific regard to the location within the town or town centre. For instance, the trip rates are both generally high in comparison to observed trip rates from the industry standard database TRICS, and furthermore, the trip rates for town centre development with limited car parking remain the same as those for edge of town urban extensions. They are not refined to take account of the nature of trip making that will occur in Stevenage as the Local Plan growth comes forward.
23. It is proposed to provide 2,000 residential units within Stevenage town centre as part of the Local Plan. This town centre development makes up a third of the proposed Local Plan residential development. Town centre developments provide low car trip rates as a result of their accessibility to a range of public transport (i.e. Stevenage rail and bus stations) as well as easy access by active modes to a range of town centre facilities. In addition, flats generate less vehicular trips than houses.
24. The Stevenage S-Paramics model has applied two-way residential TRICS trip rates of 0.58 in the AM peak hour and 0.62 in the PM peak hour to the proposed 2,000 residential units in the town centre. The Council is limiting residential parking in the town centre, and to address this, the model as it stands simply assumes the same trip rate, but redistributes trips as a result of restricted parking. It assumes that any element of residential trip making, on this high based trip rate, that cannot be accommodated by the residential parking is diverted to public car parks. The real world position is that residents would not own cars which

require a car park, and the propensity to use cars in the town centre environment would be substantially less than in the non town centre environment.

25. That is the intention of the Council, and it expects a lower trip rate as a consequence of the location and the limit on car parking.
26. We would expect that the proposed town centre flats would have a peak hour two-way vehicular trip rate in the region of 0.2 vehicle trips per residential unit (i.e. a third of what has been modelled). This is without any consideration of the proposed Integrated Transport Strategy and would be achieved purely as a result of developing flats within a highly accessible town centre. TRICS output for privately owned residential flats in town centre or edge of town centre within England (excluding Greater London) is included at the end of this Appendix and provides a two-way vehicular trip rate of 0.208 in the AM peak hour and 0.233 in the PM peak hour.
27. The Local Plan also proposes a number of urban extensions to the north, west and south-east of Stevenage town centre. Stevenage West (H02) will provide 1,350 units, Stevenage North (H03) will provide 800 units and Stevenage South-East (H04) will provide 550 units over two sites either side of the A602. These urban extensions make up almost 50% of the Local Plan residential development.
28. The generic WHaSH model TRICS trip rates (i.e. 0.58 in the AM peak hour and 0.62 in the PM peak hour) have been applied to the urban extensions to derive vehicular trips. The latest version of TRICS has been interrogated by Vectos to check if these 'unadjusted' trip rates are still valid. A simple TRICS assessment considering all privately-owned houses within England, outside of Greater London, and in an 'Edge of Town' location provides vehicular two-way trip rates of 0.52 in the AM peak hour and 0.51 in the PM peak hour, which represent over a 10% reduction in vehicle trips compared to those used in the model.
29. Furthermore, these TRICS trip rates are for small development sites that do not include a mix of uses that act to create a community and reduce the level of vehicular trips on the external highway network.
30. The National Planning Policy Framework (NPPF) is clear that significant development should be focused in locations which are or can be made sustainable<sup>2</sup>. Part of this means ensuring that the residents of new developments have access to appropriate local facilities.
31. Stevenage West, the largest of the urban extensions, will provide 10,000 sqm of employment space as well as a primary school and local facilities to serve the community, including convenience retail provision, a GP surgery and leisure facilities.
32. Stevenage North will provide a primary school and other community facilities (including a GP surgery, convenience retail and leisure facilities) and Stevenage South-East will provide local community facilities including a GP surgery and convenience retail facilities.

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<sup>2</sup> NPPF Paragraph 17 'Core Planning Principles'

33. The S-Paramics modelling has not taken into account the proposed development of communities that is planned and the internalisation of trips that will occur as a result of the proposed mix of facilities. For instance, education related trips make up 50% of the morning peak period movement<sup>3</sup> (much higher than travel to work at 25%). Providing a primary school within a development therefore has a real impact in reducing the level of external trips onto the wider transport networks.
34. Applying a notional 15% - 30% internalisation factor to the updated TRICS trip rates for movement within the local community would provide TRICS trip rates of between 0.36-0.44 vehicular trips per unit. These trip rates are around 30-40% lower than the trip rates used in the modelling for trips on the wider network. This is without any consideration of the proposed Integrated Transport Strategy, which would further act to reduce the vehicular trips.
35. Based on this analysis, the TRICS trip rates applied to the Local Plan growth are not reflective of the actual vehicular trip demand (bearing in mind that demand is different to what will manifest due to other influences) on the external highway network and the level of vehicular demand in reality will be much lower.
36. We must consequently consider the results of the modelling in this context.

#### **Resultant Traffic Growth**

37. **Table 3** below summarises the forecast growth to 2021 and 2031 assumed in the model, which includes background growth, committed development and Stevenage Local Plan growth.

**Table 3 – Forecast Traffic Growth (Background + Committed + Local Plan)**

|                  | 2021 |      | 2031 |      |
|------------------|------|------|------|------|
|                  | AM   | PM   | 2021 | 2031 |
| <b>Stevenage</b> | 1.17 | 1.20 | 1.32 | 1.33 |

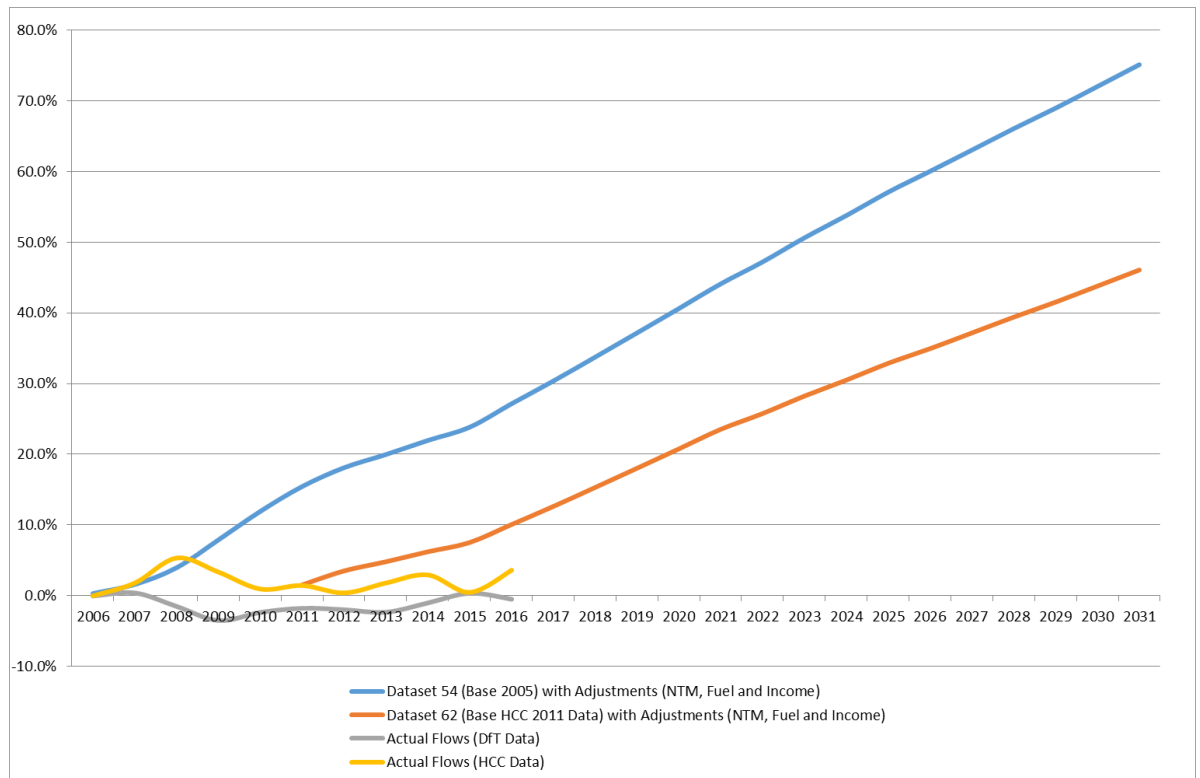
38. **Table 3** demonstrates that the model assumes that there would be 17-20% growth to 2021 and 32-33% growth to 2031.
39. To determine whether this is realistic, TEMPro growth (adjusted to income and fuel) has been compared with historic traffic flows sourced from Hertfordshire County Council and the Department for Transport. **Figure 1** below shows actual traffic flows in Stevenage since 2005 and the TEMPro growth (adjusted to income and fuel) for both TEMPro dataset 5.4 and TEMPro dataset 6.2. TEMPro dataset 6.2 has been used to inform the S-Paramics Stevenage modelling.

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<sup>3</sup> National Travel Survey Table NTSS0502 Trip Start Time by Trip Purpose (Monday to Friday) England



**Figure 1 – Comparison of TEMPro growth (adjusted to income and fuel) with Actual Traffic Flows**



40. In practice, actual traffic growth has remained flat, whereas the mathematical forecasts have been starkly positive. This mismatch is common in most UK towns and cities. It would be unrealistic, and the antithesis of policy to design to provide for this level of car commuter demand.
41. We need to bear this in mind when making judgements based on the model results.

### **Car Park Consolidation**

42. Stevenage Borough Council own and manage the majority of the existing town centre car parks within Stevenage. As part of the proposed redevelopment of the town centre, Stevenage Borough Council is proposing to redevelop a number of existing surface level car parks to provide a range of town centre facilities. A new multi-storey car park (assumed in the model to be 770 spaces) is proposed to be provided near to the railway station to off-set this loss of parking.
43. The S-Paramics model assumes that 1,124 and 1,415 two-way vehicles will enter/exit the multi-storey car park during the weekday AM and PM peak hours, respectively<sup>4</sup>.
44. Whilst this may be reflective of current levels of demand for the surface level parking that the multi-storey car park will replace, Stevenage Borough Council will have complete control

<sup>4</sup> Table 5.2 AECOM Stevenage Town Centre S-Paramics Model Forecasting Report, August 2016 – ED109

over the multi-storey car park and will be able to influence the vehicular demand through measures to be introduced in the proposed updated Car Park Strategy. The current model does not include any adjustments to parking demand to reflect the Car Park Strategy that will support the Local Plan, and so the results have to be treated accordingly.

### **Trip Distribution**

45. The S-Paramics model distributes Local Plan residential trips based on employment. Given that only 25% of movement (37% car trips) in the AM peak hour are commuter trips and conversely 75% (63% car trips) are not, with a significant proportion related to education, which is a predominantly local trip, a trip distribution based only on employment over-estimates trip length. It means that, in this respect, the model assumes a demand for car movement from the Local Plan growth greater than would occur in reality.
46. We need to bear this in mind when making judgements based on the model results.

Calculation Reference: AUDIT-152301-161214-1203

#### TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL  
Category : C - FLATS PRIVATELY OWNED  
VEHICLES

#### Selected regions and areas:

|    |                       |        |
|----|-----------------------|--------|
| 02 | SOUTH EAST            |        |
|    | EX ESSEX              | 2 days |
|    | SC SURREY             | 1 days |
| 03 | SOUTH WEST            |        |
|    | DC DORSET             | 1 days |
| 04 | EAST ANGLIA           |        |
|    | NF NORFOLK            | 1 days |
|    | SF SUFFOLK            | 1 days |
| 08 | NORTH WEST            |        |
|    | CH CHESHIRE           | 1 days |
|    | GM GREATER MANCHESTER | 2 days |
| 09 | NORTH                 |        |
|    | CB CUMBRIA            | 1 days |

This section displays the number of survey days per TRICS® sub-region in the selected set

#### Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings  
Actual Range: 6 to 154 (units: )  
Range Selected by User: 6 to 215 (units: )

#### Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/08 to 18/12/14

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

#### Selected survey days:

|          |        |
|----------|--------|
| Monday   | 1 days |
| Tuesday  | 3 days |
| Thursday | 4 days |
| Friday   | 2 days |

This data displays the number of selected surveys by day of the week.

#### Selected survey types:

|                       |         |
|-----------------------|---------|
| Manual count          | 10 days |
| Directional ATC Count | 0 days  |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

#### Selected Locations:

|                     |   |
|---------------------|---|
| Town Centre         | 3 |
| Edge of Town Centre | 7 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

#### Selected Location Sub Categories:

|                  |   |
|------------------|---|
| Residential Zone | 5 |
| Built-Up Zone    | 5 |

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out

Filtering Stage 3 selection:

Use Class:

C3 10 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

|                  |        |
|------------------|--------|
| 10,001 to 15,000 | 2 days |
| 15,001 to 20,000 | 2 days |
| 20,001 to 25,000 | 1 days |
| 25,001 to 50,000 | 5 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

|                    |        |
|--------------------|--------|
| 50,001 to 75,000   | 3 days |
| 75,001 to 100,000  | 1 days |
| 125,001 to 250,000 | 3 days |
| 250,001 to 500,000 | 1 days |
| 500,001 or More    | 2 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

|            |        |
|------------|--------|
| 0.6 to 1.0 | 2 days |
| 1.1 to 1.5 | 8 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No 10 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

|   |  |                 |  |                     |
|---|--|-----------------|--|---------------------|
| 1 | CB-03-C-01<br>KING STREET                                      | BLOCK OF FLATS  |  | CUMBRIA             |
|   | CARLISLE<br>Town Centre<br>Built-Up Zone                       |                 |  |                     |
|   | Total Number of dwellings:                                     | 40              |  |                     |
|   | Survey date: THURSDAY  | 12/06/14        |  | Survey Type: MANUAL |
| 2 | CH-03-C-01<br>NEW CRANE STREET                                 | BLOCKS OF FLATS |  | CHESHIRE            |
|   | CHESTER<br>Edge of Town Centre<br>Residential Zone             |                 |  |                     |
|   | Total Number of dwellings:                                     | 60              |  |                     |
|   | Survey date: FRIDAY  | 17/10/08        |  | Survey Type: MANUAL |
| 3 | DC-03-C-01<br>ABBOTSBURY ROAD                                  | BLOCKS OF FLATS |  | DORSET              |
|   | WEYMOUTH<br>Edge of Town Centre<br>Residential Zone            |                 |  |                     |
|   | Total Number of dwellings:                                     | 27              |  |                     |
|   | Survey date: TUESDAY   | 08/07/08        |  | Survey Type: MANUAL |
| 4 | EX-03-C-01<br>WESTCLIFF PARADE<br>WESTCLIFF<br>SOUTHEND-ON-SEA | FLATS           |  | ESSEX               |
|   | Edge of Town Centre<br>Residential Zone                        |                 |  |                     |
|   | Total Number of dwellings:                                     | 6               |  |                     |
|   | Survey date: TUESDAY   | 22/10/13        |  | Survey Type: MANUAL |
| 5 | EX-03-C-02<br>WESTCLIFF PARADE<br>WESTCLIFF<br>SOUTHEND-ON-SEA | BLOCK OF FLATS  |  | ESSEX               |
|   | Edge of Town Centre<br>Residential Zone                        |                 |  |                     |
|   | Total Number of dwellings:                                     | 94              |  |                     |
|   | Survey date: TUESDAY   | 22/10/13        |  | Survey Type: MANUAL |
| 6 | GM-03-C-02<br>WHITWORTH STREET W.                              | BLOCK OF FLATS  |  | GREATER MANCHESTER  |
|   | MANCHESTER<br>Town Centre<br>Built-Up Zone                     |                 |  |                     |
|   | Total Number of dwellings:                                     | 154             |  |                     |
|   | Survey date: THURSDAY  | 13/10/11        |  | Survey Type: MANUAL |
| 7 | GM-03-C-03<br>FAIRFIELD STREET                                 | BLOCK OF FLATS  |  | GREATER MANCHESTER  |
|   | MANCHESTER<br>Town Centre<br>Built-Up Zone                     |                 |  |                     |
|   | Total Number of dwellings:                                     | 20              |  |                     |
|   | Survey date: FRIDAY  | 14/10/11        |  | Survey Type: MANUAL |

LIST OF SITES relevant to selection parameters (Cont.)

|    |                            |                 |  |                     |
|----|----------------------------|-----------------|--|---------------------|
| 8  | NF-03-C-01                 | BLOCKS OF FLATS |  | NORFOLK             |
|    | PAGE STAIR LANE            |                 |  |                     |
|    | KING'S LYNN                |                 |  |                     |
|    | Edge of Town Centre        |                 |  |                     |
|    | Built-Up Zone              |                 |  |                     |
|    | Total Number of dwellings: | 51              |  |                     |
|    | Survey date: THURSDAY      | 11/12/14        |  | Survey Type: MANUAL |
| 9  | SC-03-C-01                 | FLATS           |  | SURREY              |
|    | HEATHCOTE ROAD             |                 |  |                     |
|    | CAMBERLEY                  |                 |  |                     |
|    | Edge of Town Centre        |                 |  |                     |
|    | Residential Zone           |                 |  |                     |
|    | Total Number of dwellings: | 140             |  |                     |
|    | Survey date: MONDAY        | 21/07/08        |  | Survey Type: MANUAL |
| 10 | SF-03-C-01                 | BLOCKS OF FLATS |  | SUFFOLK             |
|    | STATION HILL               |                 |  |                     |
|    | BURY ST EDMUNDS            |                 |  |                     |
|    | Edge of Town Centre        |                 |  |                     |
|    | Built-Up Zone              |                 |  |                     |
|    | Total Number of dwellings: | 85              |  |                     |
|    | Survey date: THURSDAY      | 18/12/14        |  | Survey Type: MANUAL |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED  
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

| Time Range    | ARRIVALS |             |           | DEPARTURES |             |           | TOTALS   |             |           |
|---------------|----------|-------------|-----------|------------|-------------|-----------|----------|-------------|-----------|
|               | No. Days | Ave. DWELLS | Trip Rate | No. Days   | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate |
| 00:00 - 01:00 |          |             |           |            |             |           |          |             |           |
| 01:00 - 02:00 |          |             |           |            |             |           |          |             |           |
| 02:00 - 03:00 |          |             |           |            |             |           |          |             |           |
| 03:00 - 04:00 |          |             |           |            |             |           |          |             |           |
| 04:00 - 05:00 |          |             |           |            |             |           |          |             |           |
| 05:00 - 06:00 |          |             |           |            |             |           |          |             |           |
| 06:00 - 07:00 |          |             |           |            |             |           |          |             |           |
| 07:00 - 08:00 | 10       | 68          | 0.035     | 10         | 68          | 0.124     | 10       | 68          | 0.159     |
| 08:00 - 09:00 | 10       | 68          | 0.056     | 10         | 68          | 0.152     | 10       | 68          | 0.208     |
| 09:00 - 10:00 | 10       | 68          | 0.058     | 10         | 68          | 0.074     | 10       | 68          | 0.132     |
| 10:00 - 11:00 | 10       | 68          | 0.078     | 10         | 68          | 0.083     | 10       | 68          | 0.161     |
| 11:00 - 12:00 | 10       | 68          | 0.069     | 10         | 68          | 0.065     | 10       | 68          | 0.134     |
| 12:00 - 13:00 | 10       | 68          | 0.086     | 10         | 68          | 0.078     | 10       | 68          | 0.164     |
| 13:00 - 14:00 | 10       | 68          | 0.084     | 10         | 68          | 0.102     | 10       | 68          | 0.186     |
| 14:00 - 15:00 | 10       | 68          | 0.075     | 10         | 68          | 0.080     | 10       | 68          | 0.155     |
| 15:00 - 16:00 | 10       | 68          | 0.074     | 10         | 68          | 0.056     | 10       | 68          | 0.130     |
| 16:00 - 17:00 | 10       | 68          | 0.106     | 10         | 68          | 0.069     | 10       | 68          | 0.175     |
| 17:00 - 18:00 | 10       | 68          | 0.146     | 10         | 68          | 0.087     | 10       | 68          | 0.233     |
| 18:00 - 19:00 | 10       | 68          | 0.109     | 10         | 68          | 0.059     | 10       | 68          | 0.168     |
| 19:00 - 20:00 |          |             |           |            |             |           |          |             |           |
| 20:00 - 21:00 |          |             |           |            |             |           |          |             |           |
| 21:00 - 22:00 |          |             |           |            |             |           |          |             |           |
| 22:00 - 23:00 |          |             |           |            |             |           |          |             |           |
| 23:00 - 24:00 |          |             |           |            |             |           |          |             |           |
| Total Rates:  |          |             | 0.976     |            |             | 1.029     |          |             | 2.005     |

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is:  $COUNT/TRP*FACT$ . Trip rates are then rounded to 3 decimal places.

#### Parameter summary

Trip rate parameter range selected: 6 - 154 (units: )  
 Survey date date range: 01/01/08 - 18/12/14  
 Number of weekdays (Monday-Friday): 10  
 Number of Saturdays: 0  
 Number of Sundays: 0  
 Surveys automatically removed from selection: 0  
 Surveys manually removed from selection: 0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-152301-161214-1243

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL  
Category : A - HOUSES PRIVATELY OWNED  
VEHICLES

Selected regions and areas:

|    |                                |        |
|----|--------------------------------|--------|
| 02 | SOUTH EAST                     |        |
|    | ES EAST SUSSEX                 | 1 days |
|    | EX ESSEX                       | 1 days |
|    | SC SURREY                      | 1 days |
|    | WS WEST SUSSEX                 | 1 days |
| 03 | SOUTH WEST                     |        |
|    | DC DORSET                      | 1 days |
|    | SM SOMERSET                    | 1 days |
| 04 | EAST ANGLIA                    |        |
|    | NF NORFOLK                     | 1 days |
|    | SF SUFFOLK                     | 1 days |
| 06 | WEST MIDLANDS                  |        |
|    | SH SHROPSHIRE                  | 3 days |
|    | WK WARWICKSHIRE                | 1 days |
| 07 | YORKSHIRE & NORTH LINCOLNSHIRE |        |
|    | NE NORTH EAST LINCOLNSHIRE     | 1 days |
|    | NY NORTH YORKSHIRE             | 3 days |
| 08 | NORTH WEST                     |        |
|    | CH CHESHIRE                    | 3 days |
|    | GM GREATER MANCHESTER          | 1 days |
| 09 | NORTH                          |        |
|    | CB CUMBRIA                     | 2 days |

This section displays the number of survey days per TRICS® sub-region in the selected set



### Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings  
Actual Range: 10 to 432 (units: )  
Range Selected by User: 6 to 4334 (units: )

### Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/08 to 13/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

### Selected survey days:

|           |        |
|-----------|--------|
| Monday    | 3 days |
| Tuesday   | 5 days |
| Wednesday | 4 days |
| Thursday  | 7 days |
| Friday    | 3 days |

This data displays the number of selected surveys by day of the week.

### Selected survey types:

|                       |         |
|-----------------------|---------|
| Manual count          | 22 days |
| Directional ATC Count | 0 days  |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

### Selected Locations:

|              |    |
|--------------|----|
| Edge of Town | 22 |
|--------------|----|

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

### Selected Location Sub Categories:

|                  |    |
|------------------|----|
| Residential Zone | 17 |
| No Sub Category  | 5  |

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

### Filtering Stage 3 selection:

### Use Class:

|    |         |
|----|---------|
| C1 | 1 days  |
| C3 | 21 days |

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filtering Stage 3 selection (Cont.):

Population within 1 mile:

|                  |        |
|------------------|--------|
| 1,001 to 5,000   | 3 days |
| 5,001 to 10,000  | 7 days |
| 10,001 to 15,000 | 7 days |
| 15,001 to 20,000 | 3 days |
| 20,001 to 25,000 | 1 days |
| 25,001 to 50,000 | 1 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

|                    |        |
|--------------------|--------|
| 5,001 to 25,000    | 2 days |
| 25,001 to 50,000   | 4 days |
| 50,001 to 75,000   | 3 days |
| 75,001 to 100,000  | 7 days |
| 100,001 to 125,000 | 3 days |
| 125,001 to 250,000 | 1 days |
| 250,001 to 500,000 | 1 days |
| 500,001 or More    | 1 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

|            |         |
|------------|---------|
| 0.6 to 1.0 | 7 days  |
| 1.1 to 1.5 | 15 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

|     |         |
|-----|---------|
| Yes | 2 days  |
| No  | 20 days |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

|   |   |             |                     |
|---|---|-------------|---------------------|
| 1 | CB-03-A-03 SEMI DETACHED<br>HAWKSHEAD AVENUE<br><br>WORKINGTON<br>Edge of Town<br>Residential Zone<br>Total Number of dwellings: 40<br>Survey date: THURSDAY 20/11/08           | CUMBRIA     | Survey Type: MANUAL |
| 2 | CB-03-A-04 SEMI DETACHED<br>MOORCLOSE ROAD<br>SALTERBACK<br>WORKINGTON<br>Edge of Town<br>No Sub Category<br>Total Number of dwellings: 82<br>Survey date: FRIDAY 24/04/09      | CUMBRIA     | Survey Type: MANUAL |
| 3 | CH-03-A-02 HOUSES/FLATS<br>SYDNEY ROAD<br><br>CREWE<br>Edge of Town<br>Residential Zone<br>Total Number of dwellings: 174<br>Survey date: TUESDAY 14/10/08                      | CHESHIRE    | Survey Type: MANUAL |
| 4 | CH-03-A-05 DETACHED<br>SYDNEY ROAD<br>SYDNEY<br>CREWE<br>Edge of Town<br>Residential Zone<br>Total Number of dwellings: 17<br>Survey date: TUESDAY 14/10/08                     | CHESHIRE    | Survey Type: MANUAL |
| 5 | CH-03-A-09 TERRACED HOUSES<br>GREYSTOKE ROAD<br>HURDSFIELD<br>MACCLESFIELD<br>Edge of Town<br>Residential Zone<br>Total Number of dwellings: 24<br>Survey date: MONDAY 24/11/14 | CHESHIRE    | Survey Type: MANUAL |
| 6 | DC-03-A-08 BUNGALOWS<br>HURSTDENE ROAD<br>CASTLE LANE WEST<br>BOURNEMOUTH<br>Edge of Town<br>Residential Zone<br>Total Number of dwellings: 28<br>Survey date: MONDAY 24/03/14  | DORSET      | Survey Type: MANUAL |
| 7 | ES-03-A-02 PRIVATE HOUSING<br>SOUTH COAST ROAD<br><br>PEACEHAVEN<br>Edge of Town<br>Residential Zone<br>Total Number of dwellings: 37<br>Survey date: FRIDAY 18/11/11           | EAST SUSSEX | Survey Type: MANUAL |

LIST OF SITES relevant to selection parameters (Cont.)

|    |                            |                          |  |                         |
|----|----------------------------|--------------------------|--|-------------------------|
| 8  | EX-03-A-01                 | SEMI -DET.               |  | ESSEX                   |
|    | MILTON ROAD                |                          |  |                         |
|    | CORRINGHAM                 |                          |  |                         |
|    | STANFORD-LE-HOPE           |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | Residential Zone           |                          |  |                         |
|    | Total Number of dwellings: | 237                      |  |                         |
|    | Survey date: TUESDAY       | 13/05/08                 |  | Survey Type: MANUAL     |
| 9  | GM-03-A-10                 | DETACHED/SEMI            |  | GREATER MANCHESTER      |
|    | BUTT HILL DRIVE            |                          |  |                         |
|    | PRESTWICH                  |                          |  |                         |
|    | MANCHESTER                 |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | Residential Zone           |                          |  |                         |
|    | Total Number of dwellings: | 29                       |  |                         |
|    | Survey date: WEDNESDAY     | 12/10/11                 |  | Survey Type: MANUAL     |
| 10 | NE-03-A-02                 | SEMI DETACHED & DETACHED |  | NORTH EAST LINCOLNSHIRE |
|    | HANOVER WALK               |                          |  |                         |
|    | SCUNTHORPE                 |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | No Sub Category            |                          |  |                         |
|    | Total Number of dwellings: | 432                      |  |                         |
|    | Survey date: MONDAY        | 12/05/14                 |  | Survey Type: MANUAL     |
| 11 | NF-03-A-03                 | DETACHED HOUSES          |  | NORFOLK                 |
|    | HALING WAY                 |                          |  |                         |
|    | THETFORD                   |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | Residential Zone           |                          |  |                         |
|    | Total Number of dwellings: | 10                       |  |                         |
|    | Survey date: WEDNESDAY     | 16/09/15                 |  | Survey Type: MANUAL     |
| 12 | NY-03-A-07                 | DETACHED & SEMI DET.     |  | NORTH YORKSHIRE         |
|    | CRAVEN WAY                 |                          |  |                         |
|    | BOROUGHBRIDGE              |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | No Sub Category            |                          |  |                         |
|    | Total Number of dwellings: | 23                       |  |                         |
|    | Survey date: TUESDAY       | 18/10/11                 |  | Survey Type: MANUAL     |
| 13 | NY-03-A-10                 | HOUSES AND FLATS         |  | NORTH YORKSHIRE         |
|    | BOROUGHBRIDGE ROAD         |                          |  |                         |
|    | RIPON                      |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | No Sub Category            |                          |  |                         |
|    | Total Number of dwellings: | 71                       |  |                         |
|    | Survey date: TUESDAY       | 17/09/13                 |  | Survey Type: MANUAL     |
| 14 | NY-03-A-11                 | PRIVATE HOUSING          |  | NORTH YORKSHIRE         |
|    | HORSEFAIR                  |                          |  |                         |
|    | BOROUGHBRIDGE              |                          |  |                         |
|    | Edge of Town               |                          |  |                         |
|    | Residential Zone           |                          |  |                         |
|    | Total Number of dwellings: | 23                       |  |                         |
|    | Survey date: WEDNESDAY     | 18/09/13                 |  | Survey Type: MANUAL     |

LIST OF SITES relevant to selection parameters (Cont.)

|    |   |                        |  |                     |
|----|---|------------------------|--|---------------------|
| 15 | SC-03-A-04<br>HIGH ROAD                                   | DETACHED & TERRACED    |  | SURREY              |
|    | BYFLEET<br>Edge of Town<br>Residential Zone               |                        |  |                     |
|    | Total Number of dwellings:                                | 71                     |  |                     |
|    | Survey date: THURSDAY                                     | 23/01/14               |  | Survey Type: MANUAL |
| 16 | SF-03-A-05<br>VALE LANE                                   | DETACHED HOUSES        |  | SUFFOLK             |
|    | BURY ST EDMUNDS<br>Edge of Town<br>Residential Zone       |                        |  |                     |
|    | Total Number of dwellings:                                | 18                     |  |                     |
|    | Survey date: WEDNESDAY                                    | 09/09/15               |  | Survey Type: MANUAL |
| 17 | SH-03-A-03<br>SOMERBY DRIVE<br>BICTON HEATH<br>SHREWSBURY | DETACHED               |  | SHROPSHIRE          |
|    | Edge of Town<br>No Sub Category                           |                        |  |                     |
|    | Total Number of dwellings:                                | 10                     |  |                     |
|    | Survey date: FRIDAY                                       | 26/06/09               |  | Survey Type: MANUAL |
| 18 | SH-03-A-05<br>SANDCROFT<br>SUTTON HILL<br>TELFORD         | SEMI-DETACHED/TERRACED |  | SHROPSHIRE          |
|    | Edge of Town<br>Residential Zone                          |                        |  |                     |
|    | Total Number of dwellings:                                | 54                     |  |                     |
|    | Survey date: THURSDAY                                     | 24/10/13               |  | Survey Type: MANUAL |
| 19 | SH-03-A-06<br>ELLESMERE ROAD                              | BUNGALOWS              |  | SHROPSHIRE          |
|    | SHREWSBURY<br>Edge of Town<br>Residential Zone            |                        |  |                     |
|    | Total Number of dwellings:                                | 16                     |  |                     |
|    | Survey date: THURSDAY                                     | 22/05/14               |  | Survey Type: MANUAL |
| 20 | SM-03-A-01<br>WEMBDON ROAD<br>NORTHFIELD<br>BRIDGWATER    | DETACHED & SEMI        |  | SOMERSET            |
|    | Edge of Town<br>Residential Zone                          |                        |  |                     |
|    | Total Number of dwellings:                                | 33                     |  |                     |
|    | Survey date: THURSDAY                                     | 24/09/15               |  | Survey Type: MANUAL |
| 21 | WK-03-A-02<br>NARBERTH WAY<br>POTTERS GREEN<br>COVENTRY   | BUNGALOWS              |  | WARWICKSHIRE        |
|    | Edge of Town<br>Residential Zone                          |                        |  |                     |
|    | Total Number of dwellings:                                | 17                     |  |                     |
|    | Survey date: THURSDAY                                     | 17/10/13               |  | Survey Type: MANUAL |

LIST OF SITES relevant to selection parameters (Cont.)

|    |                            |              |                     |
|----|----------------------------|--------------|---------------------|
| 22 | WS-03-A-04                 | MIXED HOUSES | WEST SUSSEX         |
|    | HILLS FARM LANE            |              |                     |
|    | BROADBRIDGE HEATH          |              |                     |
|    | HORSHAM                    |              |                     |
|    | Edge of Town               |              |                     |
|    | Residential Zone           |              |                     |
|    | Total Number of dwellings: | 151          |                     |
|    | Survey date: THURSDAY      | 11/12/14     | Survey Type: MANUAL |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED  
VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

| Time Range    | ARRIVALS |             |           | DEPARTURES |             |           | TOTALS   |             |           |
|---------------|----------|-------------|-----------|------------|-------------|-----------|----------|-------------|-----------|
|               | No. Days | Ave. DWELLS | Trip Rate | No. Days   | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate |
| 00:00 - 01:00 |          |             |           |            |             |           |          |             |           |
| 01:00 - 02:00 |          |             |           |            |             |           |          |             |           |
| 02:00 - 03:00 |          |             |           |            |             |           |          |             |           |
| 03:00 - 04:00 |          |             |           |            |             |           |          |             |           |
| 04:00 - 05:00 |          |             |           |            |             |           |          |             |           |
| 05:00 - 06:00 |          |             |           |            |             |           |          |             |           |
| 06:00 - 07:00 |          |             |           |            |             |           |          |             |           |
| 07:00 - 08:00 | 22       | 73          | 0.077     | 22         | 73          | 0.271     | 22       | 73          | 0.348     |
| 08:00 - 09:00 | 22       | 73          | 0.130     | 22         | 73          | 0.391     | 22       | 73          | 0.521     |
| 09:00 - 10:00 | 22       | 73          | 0.128     | 22         | 73          | 0.160     | 22       | 73          | 0.288     |
| 10:00 - 11:00 | 22       | 73          | 0.133     | 22         | 73          | 0.161     | 22       | 73          | 0.294     |
| 11:00 - 12:00 | 22       | 73          | 0.136     | 22         | 73          | 0.150     | 22       | 73          | 0.286     |
| 12:00 - 13:00 | 22       | 73          | 0.162     | 22         | 73          | 0.152     | 22       | 73          | 0.314     |
| 13:00 - 14:00 | 22       | 73          | 0.155     | 22         | 73          | 0.144     | 22       | 73          | 0.299     |
| 14:00 - 15:00 | 22       | 73          | 0.181     | 22         | 73          | 0.188     | 22       | 73          | 0.369     |
| 15:00 - 16:00 | 22       | 73          | 0.301     | 22         | 73          | 0.216     | 22       | 73          | 0.517     |
| 16:00 - 17:00 | 22       | 73          | 0.312     | 22         | 73          | 0.183     | 22       | 73          | 0.495     |
| 17:00 - 18:00 | 22       | 73          | 0.332     | 22         | 73          | 0.180     | 22       | 73          | 0.512     |
| 18:00 - 19:00 | 22       | 73          | 0.252     | 22         | 73          | 0.168     | 22       | 73          | 0.420     |
| 19:00 - 20:00 |          |             |           |            |             |           |          |             |           |
| 20:00 - 21:00 |          |             |           |            |             |           |          |             |           |
| 21:00 - 22:00 |          |             |           |            |             |           |          |             |           |
| 22:00 - 23:00 |          |             |           |            |             |           |          |             |           |
| 23:00 - 24:00 |          |             |           |            |             |           |          |             |           |
| Total Rates:  |          | 2.299       |           |            | 2.364       |           |          | 4.663       |           |

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is:  $COUNT/TRP*FACT$ . Trip rates are then rounded to 3 decimal places.

#### Parameter summary

Trip rate parameter range selected: 10 - 432 (units: )  
 Survey date date range: 01/01/08 - 13/11/15  
 Number of weekdays (Monday-Friday): 22  
 Number of Saturdays: 0  
 Number of Sundays: 0  
 Surveys automatically removed from selection: 1  
 Surveys manually removed from selection: 0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

## **APPENDIX B**

### **Stevenage Town Centre Regeneration**



# Stevenage Central Regeneration: what's planned?

## Station gateway

Linked to the delivery of the new Station, plans are currently being prepared for the redevelopment of the surrounding area. Working with Hertfordshire County Council, we are looking at the potential to reconfigure Lytton Way to create new sites for development and to remove a key barrier to growth in our town centre. The scheme will include the following:

- Two new Plazas will be provided at either end of the Station providing a new entrance to Stevenage;
- The Leisure Centre and Gordon Craig theatre will be relocated to create opportunities for new retail, offices, cafés and bars; and
- A new relocated bus station will be provided linked to the Rail station.



## Skyline

Formerly HM Land Registry Offices, this landmark building has now been carefully redesigned and converted to provide 150 studios and one- and two-bedroom apartments. All of the apartments have now been sold and the first new residents are starting to move in.



## Brickdale House

The first of the new Town Centre office conversions. Brickdale House has been refurbished to provide for 51 new one- and two-bedroom flats in the heart of Stevenage town centre. The conversion has now been completed and residents have begun to move in.



## Rail station

Through Thameslink upcoming expansion plans, Stevenage will shortly be directly connected with quick links to Farringdon, Blackfriars and beyond. Plans have been developed for a radically improved new Stevenage Station including a 5th platform. The new station is currently going through further stages of design and the Council, working with partners, to enable its construction to begin in 2020-21.

The redevelopment of Stevenage Rail Station is the top priority for the Council, the Hertfordshire Local Enterprise Partnership and Hertfordshire County Council. The Herts LEP have submitted a bid to Government for funding in the region of £54m to enable this development to come forward.



## Leisure park

The Council are in ongoing discussions with the Landowner of the Leisure Park over new development proposals that will potentially include a hotel, offices, restaurant, cafés and other leisure uses as well as new homes for Stevenage town centre. By connecting the Leisure Park through the development of the station it will become part of Stevenage Centre – accessible and an essential part of the vision for the new Stevenage.



## Matalan site

A major proposal has been submitted to the Council for the re-development of the Matalan site. The Planning Application proposes:

- 526 one- and two-bedroom homes; and
- Significant new shopping and leisure facilities with car parking.

This is a development in a key location for our town centre that has the potential to generate significant private investment. The new buildings of between 6 and 13 storeys will provide a new landmark development for the town.



## SG1 Development Zone

The Council are about to go out to tender to secure a private development partner to deliver the first phase of new development for the town centre at the same time as the Rail Station. This area will include the redevelopment of:

- Swingate House;
- Mecca Bingo;
- Stevenage Borough Council Offices;
- The Bus Station;
- The Plaza;
- Southgate Health Centre and Garages; and
- the Library.

The Council will be working in partnership with a developer to deliver up to 850 homes, new shops, leisure facilities and a public sector hub bringing Council, Health and Library services together in a new building.



## Six Hills House

Six Hills House, a former IT company office block, was empty for three years before redevelopment work commenced late last year. When complete the redevelopment will provide 143 new affordable homes through housing association Metropolitan. The 128 one- and two-bedroom flats and 15 three-bedroom flats will provide people with the opportunity to gain a vital first step on the housing ladder. The development is expected to be fully completed in the autumn.



## Vista Tower

Previously known as Southgate House, this former office building has been refurbished to provide 73 modern self-contained one- and two-bedroom apartments. Accommodating a comfortable and flexible lifestyle with open-plan living rooms, the development ensures that one of the town's most prominent buildings is given new life.



## Park Place/Town Centre Gardens

This area includes part of Town Centre Gardens as well as Park Place and the frontages to St Georges Way. The Council are considering the redevelopment of this area to provide:

- new leisure facilities;
- a new community/arts building;
- significant new homes and car parking; and
- improvements to existing retail and connections in this part of the town.

## New Leisure Facility

The Borough Council will be delivering a new multipurpose leisure facility within the town centre replacing both of the current aging facilities. Plans are underway for the new facility, due to be built and operational by 2021.



## Park Place

A proposal has been submitted to the council, to transform park place into a residential gateway between town centre gardens and the town centre. Comprising:

- ground floor retail units;
- conversion (and extension) of the existing first and second floors to residential; and
- construction of a further 202 apartments over three storeys of residential development above being one- and two-bedroom and studio units.

All apartments will benefit from open plan living spaces, generous glazing and private balconies or terraces looking over the gardens and the town centre.





## **APPENDIX C**

### **Stevenage Cycle Network Map**

# Stevenage Cycle Route Network

