

**ODYSSEY MARKIDES****TECHNICAL NOTE**

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JOB NO.	:	16-151
NOTE TITLE	:	Local Plan Transport Technical Review
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1.0 INTRODUCTION

- 1.1 North Hertfordshire District Council (NHDC) have commissioned Odyssey Markides (OM) to undertake a Technical Review of the evidence to support the NHDC Local Plan Public Consultation.
- 1.2 The Technical Review summarises the Local Plan Transport and Highway evidence base to date and highlights the links with the Infrastructure Delivery Plan (IDP).
- 1.3 An overview of the Local Plan position for all District/Borough's in HCC is provided as background information as well as adjacent authorities to NHDC as Local Plan growth assessments have to consider the wider impacts.
- 1.4 This Technical Review also addresses the discussions that have been undertaken with Hertfordshire County Council (HCC) through the Local Plan process to date. NHDC and HCC are working together to seek to address the wider transport matters. HCC have recommended that the Stevenage Town Centre S-paramics model is reviewed in and that outputs from the COMET county-wide model is considered in the context of the existing Aecom transport modelling for the Local Plan growth within NHDC.

1.5 For the purposes of the preparing the Local Plan, there are no issues that have emerged from the transport modelling work that

- Should prevent NHDC from approving the draft local plan for publication;
- Cannot be resolved through additional technical work in advance of, or at, examination; where additional work is required it has been highlighted within this Technical Note.
- would cause a significant highway issue that cannot be resolved through appropriate mitigation measures and more detailed transport assessments carried out at the planning application stage.

1.6 This Technical Note will examine the work that has been undertaken so far by NHDC to build the Local Plan evidence base which meets with the NPPF requirements which will be explained. Further work may be required in the future as HCC gain a better understanding of the cumulative impact of growth on the highway network across Hertfordshire and other adjoining authorities.

1.7 This Technical Note explains the points above in detail and specifically covers the following areas:

- Assessment and evaluation of the County-wide and District Level Highways and Transport evidence base for Local Plan Growth
- Stevenage S-Paramics Modelling including Identification and explanation of key modelling differences
- Assessment of the HCC COMET modelling
- Infrastructure Delivery Plan – Strategic Modelling and Sustainable infrastructure impacts.
- Summary of findings and next steps

2.0 LOCAL PLAN COUNTY CONTEXT

2.1 There is a requirement for local authorities to identify the need for housing and then seek to meet the need in full subject to taking into consideration other planning requirements, with Local Plans translating that need into land provision targets. The National Planning Policy Framework (NPPF) sets out how to determine 'objectively assessed housing need'. Online Government guidance in the National Planning Practice Guidance (NPPG) provides a recommended approach to deciding 'objectively assessed need' through a Strategic Housing Market Assessment (SHMA).

2.2 The National Planning Policy Framework (NPPF) makes clear in paragraph 158 that

Local planning authorities should have a clear understanding of housing needs in their area. They should:

- *prepare a Strategic Housing Market Assessment to assess their full housing needs, working with neighbouring authorities where housing market areas cross administrative boundaries.*

The Strategic Housing Market Assessment

- *should identify the scale and mix of housing and the range of tenures that the local population is likely to need over the plan period which:*
- *prepare a Strategic Housing Land Availability Assessment to establish realistic assumptions about the availability, suitability and the likely economic viability of land to meet the identified need for housing over the plan period.*

2.3 Authorities should join forces with neighbours, in line with the Duty to Co-operate, so that assessments of development needs cover market areas that straddle local authority boundaries. NHDC began producing a Strategic Housing Land Availability Assessment (SHLAA) in 2008 in conjunction with Stevenage Borough Council (SBC) but due to the timetables for their respective local plans diverging, since 2010 NHDC and SBC have undertaken separate SHLAA.

2.4 HCC are the Highway Authority for NHDC as well as the nine other Districts/Boroughs in Hertfordshire. HCC asked Aecom in 2015 to develop a County Wide Strategic Transport Model (COMET) which currently holds the most up to date information on a county-wide impact level. There is currently no COMET run that illustrates the impact

of the scale of growth from the Local Plan housing requirements for all 10 District Councils. HCC are undertaking a 2016 COMET run which will include all Local Plan growth information from as many Local Authorities within HCC. HCC are in charge of assessing the county-wide impacts through their own modelling.

2.5 The task of HCC undertaking county-wide modelling impacts is difficult given that all 10 District/Borough Councils are at different stages with their Local Plans as set out below:

- Broxbourne Borough Council - Public Consultation undertaken July 2016 and Local Plan due for examination in July 2017.
- Dacorum Borough Council - Core Strategy adopted in September 2013.
- East Hertfordshire District Council – Draft Local Plan 2014
- Hertsmere Borough Council – Core Strategy Adopted 2013 and Draft Site Allocations and Development Management Policies Plan 2015. Consultation on modifications August 2016.
- St Albans Council – Draft Local Plan public consultation February 2016
- Stevenage Borough Council (SBC)- Currently going through examination process for Local Plan.
- Three Rivers District Council – Core Strategy adopted in 2011 and Site Allocations Development Plan adopted 2014.
- Watford Borough Council – currently consulting on their Development Management Policies and Site Allocations Local Plan 2006-2031 part 2.
- Welwyn Hatfield Borough Council (WHBC) – currently undertaking public consultation on their draft local plan.
- North Herts District Council- Will consult on their Draft Local Plan Q4 2016.

2.6 NHDC have agreed to co-operate with Luton Borough Council (LBC) as an adjoining authority. The Luton Borough and Stevenage Borough Local Plans are both currently at the public examination stage. Welwyn Hatfield Borough Council are also ahead of NHDC as they are currently undertaking a public consultation. NHDC therefore should consider other Local Authority growth impacts that may affect NHDC for local authorities whom are going through public consultation or public examination of their Local Plan.

2.7 The NPPF in Paragraph 162 states that:

Local planning authorities should work with other authorities and providers to:

- *assess the quality and capacity of infrastructure for transport, water supply, wastewater and its treatment, energy (including heat), telecommunications, utilities, waste, health, social care, education, flood risk and coastal change management, and its ability to meet forecast demands; and*
- *take account of the need for strategic infrastructure including nationally significant infrastructure within their areas.*

2.8 Infrastructure impacts on education and health can be easily quantified based on the predicted local plan growth as calculations are available. However, the impact on the highway, traffic and transport infrastructure cannot be quantified that easily. Existing pressures on the network have to be identified and then proposed mitigation outlined to address the growth related to car ownership and general development schemes as well as the additional impacts from Local Plan growth. Mitigation needs to be reviewed on a strategic basis as a first step. NHDC, as well as surrounding local authorities, are all currently going through or planning to start the local plan process where an infrastructure impact evidence base is required.

2.9 Planning for the future requires the use of a range of information and analysis including the application of strategic transport and land-use models. Local Authorities have limited financial resources and a variety of potential future investment options to meet the needs of the increase in residents as a result of Local Plan growth will need to be considered. Transport models are used to assess different scenarios and potential transport schemes based on people's travel decisions and the congestion and delays on the highway network. Transport models are developed to predict some or all of these decisions, with different models often combining to provide an overall picture.

2.10 The first step to assessing the potential impacts of significant housing quanta on a local authority wide basis is a strategic traffic model. Strategic traffic models are used for forecasting the long-term impacts of schemes over wide areas.

2.11 HCC issued a Local Plan transport modelling requirements protocol in August 2016 that all Local Authorities in HCC should follow. NHDC have followed this protocol to date and as stated are working closely with HCC to ensure that the evidence base

provided to support the NHDC Local Plan is sound and that the ultimate goal of HCC supporting the NHDC Local Plan and Infrastructure Delivery Plans should be met.

- 2.12 With all the potential development being considered both in and around Hertfordshire, HCC feel that it is imperative that they continue to work cooperatively with all Local District/Borough Councils to establish and agree the level of growth being planned for and its cumulative impact to ensure that the right infrastructure and associated behavioural change policies and measures to facilitate modal shift are provided to in order to mitigate the impacts in the long term.
- 2.13 The Modelling protocol seeks to set out HCC's evidence requirements for each of the various local plan stages. The evidence is critical to HCC being able to understand the impacts of growth and the associated mitigations that have been developed as part of the local plan process led by the LPAs. The document sets out the level of transport / highway information and evidence already available to HCC as well as providing a clear picture of what is required to enable a sound understanding and evidence base to be developed at each stage of the Plan making process which is consistently applied across the County.
- 2.14 To inform the process of Local Plan development and review, HCC are planning on running the County Wide Transport Model (COMET) twice a year and will seek the latest spatial planning proposals from the Local Planning Authorities (LPAs) to include and inform the process.
- 2.15 The County wide transport model COMET will be used to support this process and to provide an appropriate evidence base for this work. It enables an understanding of the cumulative impact of the forecast growth to be considered as well as helping to consider the most suitable mitigations. The results will then be formally fed back through the various forums and meetings that take place with the LPAs to help ensure a common understanding of the issues identified from the modelling work and focus discussion, further investigation and development of the most appropriate mitigation measures. The overall aim of Modelling Protocol (August 2016) is to ensure that sufficient evidence is available by the time of an Examination in Public (EiP) so that the County Council as the LHA are able to support the Development Strategies and Infrastructure Development Plans being brought forward in Local Plans across Hertfordshire and around its borders.

3.0 TRANSPORT AND HIGHWAY EVIDENCE BASE

Traffic Modelling

3.1 Aecom are the term consultants for Hertfordshire County Council (HCC) and have previously undertaken work for Stevenage Borough Council, Welwyn Hatfield Borough Council and Luton Borough Council to use transport models to assess the impacts of development at a strategic level and support their respective Local Plan evidence bases.

3.2 Aecom were commissioned by NHDC to look at future transport issues in the District, in response to the housing development forecasts as part of the SHLAA. There are a number of transport evidence reports Aecom have undertaken for NHDC:

- North Hertfordshire District Council LDF Assessment dated 02/04/12;
- North Hertfordshire District Council Housing Assessment dated 24/11/12;
- North Hertfordshire District Council Housing Assessment – Addendum Note dated 05/01/2013;
- North Hertfordshire District Council Additional Housing Assessment dated 01/07/13;
- North Hertfordshire District Council Preferred Option Housing Assessment - Transport Modelling Report 2014 - Update 2 dated 07/01/15; and
- Preferred Local Plan Model Testing- Problem Locations dated 05/07/16.

3.3 The 2012, 2013 and 2015 reports all use the Stevenage and Hitchin Urban Transport Model (SHUM) which covers Hitchin and Stevenage, and the A1(M) motorway junctions 7,8, and 9. The North Hertfordshire towns of Letchworth and Baldock are on the periphery of the model area but the model does not extend as far as the town of Royston which will be discussed.

3.4 The SHUM model was developed by Aecom in 2009 and updated in October 2011 following advice and a review by the Highways Agency; now known as Highways England. The SHUM model was originally developed to aid the preparation of the Hitchin and Stevenage Urban Transport Plans (UTPs). The model has a 2008 base created with traffic count data and journey times and was signed off by the Highways Agency in December 2011.

3.5 The Aecom report “North Hertfordshire District Council LDF Assessment” dated 02/04/12 assessed 4 different scenarios

- Scenario 1: Selected sites (totalling 7,000) from the NHDC Strategic Housing Land Availability Assessment (SHLAA) - (see Annex C)
- Scenario 2: As Scenario 1, but without 2,300 dwellings to the North of Stevenage.
- Scenario 3: As Scenario 1, plus 5,000 houses at West Stevenage and 1,000 houses at Luton East (a current planning application at the time).
- Scenario 4: As Scenario 1, plus 1,000 houses at Luton East (a current planning application at the time).

3.6 The Aecom Report “North Hertfordshire District Council Housing Assessment” dated 24/11/12 assessed 5 different scenarios.

- Scenario 1: North and West Stevenage plus villages in North Hertfordshire a. 4,700 dwellings across many sites b. 2,300 dwellings across North Stevenage (includes 600 dwellings in Stevenage Borough) c. 350 dwellings at Roundwood, North East Stevenage d. 5,000 West Stevenage (includes 1,900 in Stevenage Borough) e. 850 dwellings as village growth (assumed to focus on Little Wymondley and Knebworth)
- Scenario 2: North and West Stevenage plus villages in Hitchin a. 4,700 dwellings across many sites b. 2,300 dwellings across North Stevenage (includes 600 dwellings in Stevenage Borough) c. 350 dwellings at Roundwood, North East Stevenage d. 5,000 West Stevenage (includes 1,900 in Stevenage Borough) f. 850 dwellings as village growth in Hitchin (principally Highover Farm)
- Scenario 3: North and West Stevenage plus East Luton a. 4,700 dwellings across many sites b. 2,300 dwellings across North Stevenage (includes 600 dwellings in Stevenage Borough) c. 350 dwellings at Roundwood, North East Stevenage d. 5,000 West Stevenage (includes 1,900 in Stevenage Borough) g. 850 dwellings East of Luton
- Scenario 4: South West Hitchin a. 4,700 dwellings across many sites h. 6,000 dwellings South West Hitchin delivered by 2031 (as part of a 8,000 dwellings package)
- Scenario 5: North and North East Stevenage a. 4,700 dwellings across many sites b. 2,300 dwellings across North Stevenage (includes 600 dwellings in

Stevenage Borough) c. 350 dwellings at Roundwood, North East Stevenage
3,950 dwellings North East Stevenage.

3.7 As part of the Housing Assessment work Aecom validated the SHUM model to reflect the transport network operation in 2008. To provide a representative transport network for 2021 and 2031, the highway network was updated to include the constructed and committed transport improvements in the study area. This resulted in the development of the Do Minimum networks for 2021 and 2031 which included the following identified improvements:

- Hitchin Payne's Park gyratory pedestrian crossing
- Glaxo Smith Kline junction improvements
- A1(M) Junction 7 signalised junctions.
- A1(M) Junction 6 northbound all lane running, Welwyn, HA pinch point scheme.

3.8 This Housing Assessment report dated 24/11/12 using the SHUM model concluded that there would be 11 problem junctions (in one or both peak periods) on the highway network in the 2021 and 2031 future years. A problem with network operation was defined as a location where the model shows there are still more than 100 vehicles queuing at the end of the AM or PM peak hour.

- A1(M) Junction 8 roundabout
- A505/B655 Pirton Road
- Paynes Park
- A602/B656 London Road (Hitchin Hill)
- Hitchin Industrial Area/Cadwell Lane
- A505 Cambridge Road/Woolgrove Road/William Road
- Arch Road/Hitchin Road (Great Wymondley)
- Fishers Green Road
- Stevenage Road/Chantry Lane
- A1(M) Junction 7 – Northbound on slip, southbound off slip and northbound mainline from junction 6
- A602/Hitchin Road/A1072 Gunnels Wood Road Roundabout- Southbound and Westbound approaches

3.9 The Aecom report “*North Hertfordshire District Council Additional Housing Assessment*” dated 01/07/13 followed the same methodology as the previous report but included an additional scenario:

- Scenario 6: North of Baldock and East of Luton a. 4,700 baseline dwellings (commitments plus priority 1 and 2 sites from the SHLAA assessment); b. 3,000 dwellings east of Luton; c. 3,000 dwellings north of Baldock; and d. 400 between Little Wymondley/Todds Green and Stevenage

3.10 This report concluded that there were 9 problem location junctions in the 2031 future year which were the same as the previous report and two which were no longer considered problem junctions.

- A1(M) Junction 8 roundabout
- Stevenage Road/Chantry Lane (to the south-west of Junction 8 of the A1M) within Little Wymondley.

3.11 Following the initial 2012/2013 housing assessment modelling work undertaken by Aecom a final set of development proposals were accepted as the ‘Preferred Option’ development proposal by NHDC. In July 2014, NHDC consequently requested a new development assessment based on the Preferred Option and the latest SHUM forecasting model which was updated in January 2014, and approved by the Highways Agency (HA) in March 2014.

3.12 The ‘Preferred Option’ included 17,380 total dwellings of which 15,290 dwellings were from 72 emerging sites which included the Stevenage West Development specified as 3,100 dwellings. This also includes 32 hectares of proposed employment areas.

3.13 The “*North Hertfordshire District Council Preferred Option Housing Assessment - Transport Modelling Report 2014 - Update 2*” dated 07/01/15 no longer included the A1(M) Junction 6 northbound all lane running, Welwyn, HA pinch point scheme as agreed with the Highways Agency in 2014. As part of the preferred option and the duty to co-operate with LBC, the Central Bedfordshire and Luton Transport Model (CBLTM) was utilised to understand the volume of trips from the Luton Local Plan growth would generate routing through the SHUM model area. A select zone analysis method was carried out based on the 2013 CBLTM model. The Aecom report dated

07/01/15 explains this process and the shortcomings of the chosen methodology in detail.

3.14 The Aecom report "*North Hertfordshire District Council Preferred Option Housing Assessment - Transport Modelling Report 2014 - Update 2*" dated 07/01/15 highlighted that there were 22 problem location junctions (with issues in one or both peak periods identified). The report also proposed potential mitigation options and initial costings for the problem location junctions as listed:

- A505 / B655 Pirton Road in Hitchin
- Payne's Park in Hitchin
- A602 / B656 London Road (Hitchin Hill) in Hitchin
- Hitchin Industrial Area / Cadwell Lane in Hitchin
- A505 Cambridge Road / Woolgrove Road / Willian Road in Hitchin
- Fishers Green Road in Stevenage
- A1(M) Junction 7: Northbound on-slip, southbound off-slip, Northbound mainline. Southbound on-slip
- A602 Hitchin Road / A1072 Gunnels Wood Road Roundabout (westbound approach) in Stevenage
- A115 Fairlands Way / Grace Way in Stevenage
- Six Hills Way / Homestead Moat in Stevenage
- A602 / Monkwood Way in Stevenage
- B197 London Road / Monkwood Way in Stevenage
- A602 / Stevenage Road in Stevenage
- A1(M) Junction 9 Northbound Mainline (from Junction 8)
- A1(M) Junction 8 Northbound on-slip
- Six Hills Way/ Valley Way roundabout in Stevenage
- A602/Valley Way/ Broadwater Crescent Roundabout in Stevenage
- London Road/Toby Carvery Junction in Stevenage
- Rectory Lane/Weston Road in Stevenage
- B197 North Road/A602 Lytton Way in Stevenage
- Arch Road/Hitchin Road in Great Wymondley
- A1072 Gunnels Wood Road/Clovelly Way in Stevenage

- 3.15 The latest 2016 Aecom report “Preferred Local Plan Model Testing – problem Locations” dated 05/07/16 uses the Welwyn / Hatfield /Stevenage / Hitchin / Baldock / Letchworth Transport Model (WHaSH-BL).
- 3.16 The original WHaSH model was developed by Aecom to assist with transport modelling work for the Welwyn Hatfield Local Plan evidence base. This is an integration of the Highways England approved SATURN model of the Stevenage and Hitchin Area (SHUM) and its extension to the southern boundary to encompass the Welwyn and Hatfield Urban Areas.
- 3.17 The two towns of Baldock and Letchworth Garden City, whilst in the WHaSH model area, are located to the northern periphery and had limited network and zonal representation. With the proposed large development sites north of Letchworth and north of Baldock, there was a need to extend the WHaSH model coverage to represent the urban areas of Letchworth and Baldock and A1(M) junction 10 in order to support the testing of development in the area, and better inform the Local Plan development. This model is referred to as WHaSH-BL.
- 3.18 The Aecom report “*Preferred Local Plan Model Testing- Problem Locations*” 05/07/16 assesses a 2031 Do minimum scenario which represents a scenario if traffic growth continued at a rate associated with the growth of the economy and changes in people’s travel habits, therefore representing the performance of the transport network regardless of any proposed developments. Aecom also assessed a 2031 Do Something Scenario when all Local Plan scenario growth in North Herts District is included and growth in the surrounding areas of Stevenage and Welwyn Hatfield is included based on TEMPRO growth rates.
- 3.19 The Do Minimum Scenario identified 13 problem junction locations in one or both peak periods which are:
- A1(M) J9 / Letchworth Gate / A505 in Letchworth
 - A1(M) J8 / A602 in Stevenage
 - Station Rd / Royston Rd / Clothall Rd in Baldock
 - A602 / Trinity Rd in Stevenage
 - A1155 / A602 in Stevenage
 - A505 / Norton Way in Letchworth
 - Woolgrove Rd / Cambridge Rd / Willian in Hitchin

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- Pirton Rd / A505 / Upper Tilehouse St / Wratten Rd in Hitchin
 - Cadwell Ln / Wilbury Way / Woolgrove Rd in Hitchin
 - Upper Tilehouse St / A602 / Paynes Park in Hitchin
 - A602 / Monkswood Way in Stevenage
 - Six Hills Way / A602 in Stevenage
 - London Rd / Monkswood Way in Stevenage

3.20 Of the 13 problem junction locations in the Do Minimum 2031 Scenario, 8 have previously been raised in the Aecom report *“North Hertfordshire District Council Preferred Option Housing Assessment - Transport Modelling Report 2014 - Update 2”* dated 07/01/15.

3.21 The Do Something 2031 scenario includes an additional 7 problem junction locations:

- Hitchin Road/Arch Road in Hitchin
- A602/B656/Gosmore Road/St John’s Road in Hitchin
- Six Hills Way/Homestead Moat in Stevenage
- Clovelly Way/Gunnels Wood/Bridge Road in Stevenage
- A602/Corey’s Mill Lane in Stevenage
- A1072/Martins Way/Canterbury Way in Stevenage
- B197/Gravelly Road/North Road in Stevenage

3.22 Of the 7 problem junction locations in the Do Something 2031 Scenario 3 have previously been raised in the Aecom report *“North Hertfordshire District Council Preferred Option Housing Assessment - Transport Modelling Report 2014 - Update 2”* dated 07/01/15. It should be noted only 9 of the total 30 problem location junctions fall within NHDC.

3.23 It is therefore clear that the WHaSH-BL modelling is the best strategic model currently available to assess the specific NHDC transport Local Plan growth impacts as it has highlighted a number of additional junctions and the traffic modelling has been refined through each iteration. This modelling satisfies the Local Plan requirements for the evidence base and assists with the Infrastructure Delivery Plan. Discussions have occurred with HCC to discuss the outcomes of the model which were positive and further work will be undertaken outlined in this Technical Note to fully meet the requirements prior to Local Plan examination. The Aecom report *“Preferred Local Plan Model Testing- Problem Locations”* 05/07/16 also proposes potential mitigation for each of the problem locations with Scheme Proforma’s in the Appendix which

highlights the problem and the details of the mitigation, along with an outline cost analysis and a high level mitigation diagram.

Royston

3.24 An assessment of the impact on the road network in the Royston area is not possible due to the extent of the SHUM and WHaSH-BL modelled highway network.

3.25 HCC confirmed that the approach not to include Royston in the SHUM and WHaSH-BL models was acceptable as the impact could be assessed using the COMET model which expands beyond the NHDC boundaries to the north of Royston.

3.26 HCC have helpfully provided outputs from the COMET modelling for the 2031 forecast scenario which show the following problem junctions and links identified for the AM and PM peaks:

AM Peak

Junctions with 1-5minute delay

- Old N Road/A505 Junction 2.5-5minute delay
- A505/A10 Junction 1-2.5minute delay
- Station Road/A10 Junction 1-2.5minute delay
- Chestnut Lane/The Causeway/A1198 Junction 1-2.5-minute delay

Links with 0.85-4.431 Volume over capacity

- A10 Link between Melbourn and Royston
- A1198 Link between Royston and Kneesworth
- A505 Link from A10 to Baldock Road
- Melbourn Street between A10 and Kneesworth Street
- A10 between Newmarket Road/Melbourn Street and Sun Hill
- B1368 from Flint Cross to Fowlmere
- The Causeway from Kneesworth to Bassingbourn

PM peak

Junctions with 1-2.5minute delay

- Old N Road/A505 Junction 1-2.5minute delay
- A505/A10 Junction 1-2.5minute delay
- Kneesworth Street/Melbourn Street Junction- 1-2.5minute delay
- Chestnut Lane/The Causeway/A1198 Junction 1-2.5-minute delay

Links with 0.85-4.431 volume over capacity

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- A10 Link between Melbourn and Royston
 - A1198 Link between Royston and Whaddon Gap
 - A505 Link from A10 to Baldock Road
 - Melbourn Street between A10 and Kneesworth Street
 - A10 between Newmarket Road/Melbourn Street and Sun Hill
 - B1368 from Flint Cross to Fowlmere
 - The Causeway from Kneeworth to Bassingbourn
 - A505 from Flint Cross to Royston
 - A10 from Coombelands/Feldfare Way roundabout to the A505
 - York Way/Burns Road approaches to the Old N Road junction
 - Old N Road

3.27 The outputs from the COMET modelling, provided by HCC in August 2016, show there are a number of junctions and links highlighted where it would be beneficial to undertake further assessment at the local level when development is forthcoming. Further work to compare the COMET outputs around Royston to the thresholds definition used to identify problem junctions within the Aecom report *“Preferred Local Plan Model Testing- Problem Locations”* dated 05/07/16 should be undertaken prior to the Local Plan Examination to ensure a consistent approach. A very high level assessment shows that there are no links or junctions in the centre of Royston that are showing any significant impacts, however, the A505 has been highlighted as having some congestion issues and it would be beneficial to examine this further in light of Local Plan growth.

COMET Hotspots

3.28 HCC also provided COMET outputs showing the congestion hotspots in 2015 that have been highlighted from the Strategic Traffic model. These are current congestion hotspots that common sense dictates could be exacerbated by Local Plan growth.

3.29 The hotspots identified on the COMET model but not within the list of 20 problem junctions highlighted in the Aecom report *“Preferred Local Plan Model Testing- Problem Locations”* dated 05/07/16 are as follows:

Royston

- A10 Sun Hill/B1039
- A10/A505

- A505/A1198/Old N Road
- **Baldock**
- Junction 10- A507/A1M
- A505/B656
- **Letchworth**
- A505/B656/Pixmore Way
- **Hitchin**
- Fishponds Road/Bedford Road
- Whitehall Road/A602
- B656/A505 Cambridge Road/Nightingale road
- **Graveley**
- Graveley Lane/B197
- **Poynders End**
- B651/B656/White Lane
- **Stevenage**
- A602/Martins Way
- A602/Corey Mills Lane
- A1155/Gunnels Wood Road
- A1155/A602
- A1155/St George's Way
- Six Hills Way/Gunnels Wood Road
- A602/Six Hills Way/London Road
- Six Hill Way/St George's Way/A602
- Junction 7 A1M
- A602/Gunnels Wood Road
- Valley Way/A602/Broadwater Crescent
- Shephall Way/A602
- Monkswood Way/London Road
- A602/Broadwater Lane
- Broadwater Crescent/A602
- **Kimpton**
- Hitchin Road/B651

3.30 Appendix E of the Aecom report *"Preferred Local Plan Model Testing- Problem Locations"* dated 05/07/16 helpfully provides the criteria by which Aecom have

identified their problem locations which should be used in any further work undertaken to assess the COMET hotspots and link all the strategic modelling work.

3.31 Aecom have used the following assessment criteria for identifying 'problem locations':

3.32 *Speed threshold*- are two or more links below the speed threshold in the AM, PM or inter-peak period. The speed threshold information is as follows:

- 20mph speed limit where the actual speed is 7mph or below
- 30mph speed limit where the actual speed is 15mph or below
- 40mph speed limit where the actual speed is 25mph or below
- 50mph speed limit where the actual speed is 35mph or below
- 60mph speed limit where the actual speed is 40mph or below
- 70mph speed limit where the actual speed is 50mph or below

3.33 *Congestion*- Is the congestion caused by the relevant junction? Are the associated delays of a certain length? Problem locations are identified where there is a queue of 5PCU's (passenger car units) or more totally at least 28.75m.

3.34 *Type of junction*- are the delays not caused by an engineering method which are intended to control delay? i.e. signals will cause artificial queues which should disperse during every signal cycle.

3.35 *Type of road*- Are the delays location on primary, main or secondary distributor roads which are intended to distribute traffic to primary or key destination settlements.

3.36 It would be beneficial for a comparison of the COMET findings to be undertaken in relation to the WHaSH-BL outputs based on an initial high level review. However, no issues appear to be raised within the centre of Royston as a result of the Local Plan growth. It is not a surprise that the COMET model raises additional junctions that have not been raised within the WHaSH-BL modelling as it is a much larger strategic model covering a wider area and the links and nodes along with the zones are different to the WHaSH-BL traffic model and the SHUM traffic model.

3.37 The construction and purpose of the COMET model which includes public transport and traffic assignment at the County-wide level is completely different to the purpose for constructing the WHaSH-BL traffic assignment model which would also create

disparity when trying to compare outputs. As noted the thresholds identifying whether junctions, links and nodes are 'problem junctions' also differ.

4.0 STEVENAGE S-PARAMICS MODELLING

- 4.1 Discussions have been undertaken with Hertfordshire County Council (HCC) through the Local Plan process to date. NHDC and HCC are working together to seek to address the wider transport matters. HCC have recommended that the Stevenage Town Centre S-paramics model is reviewed in and that outputs from the COMET county-wide model are considered in the context of the existing Aecom transport modelling for the Local Plan growth within NHDC.
- 4.2 In November 2014 Aecom was asked by Stevenage Borough Council to look at future transport issues in the district, in response to the latest housing development forecasts proposed as part of their Local Plan growth. The assessment was carried out in conjunction with North Hertfordshire District Council (NHDC) so that the assessment includes consideration of impacts of the NHDC development assumptions at the time as well as Stevenage Borough's. The results from the SHUM modelling which included assumptions for SBDC and NHDC is included in the Aecom report "*North Hertfordshire District Council Preferred Option Housing Assessment - Transport Modelling Report 2014 - Update 2*" dated 07/01/15.
- 4.3 Aecom have developed a new paramics model for the central area of Stevenage as their SHUM modelling. A base year model has been developed representing current (2015) traffic conditions and future year models to replicate the SHUM forecast years of 2021 and 2031 have also been produced.
- 4.4 HCC have helpfully provided Chapters 7 and 8 of the Stevenage Town Centre Model Report by Aecom which highlights a number of additional problem locations:
- St Georges Way
 - Fairland's Way
 - Lytton way Road/Fairland's Way
 - Six Hills Way/Gunnels Wood Road Junction
 - Martins Way
- 4.5 This s-paramics model includes the Local Plan growth for NHDC and the reason the problem links/junctions may differ could be due to the problem junction threshold criteria. This is the same issue raised between the identification of problem locations

within the countywide COMET model compared to the WHaSH-BL and SHUM traffic models.

- 4.6 The main difference that makes comparison between the WHaSH-BL model and the Stevenage Town Centre S-paramics model is the fact these are two completely different types of traffic models. The S-paramics model is a smaller more localised microsimulation model compared to the assignment of traffic within zones for the WHaSH-BL and SHUM traffic models.
- 4.7 Microsimulation differs from traditional highway assignment modelling by modelling the actions and interactions of individual vehicles, in simulated time steps typically less than 1 second, as they travel through a road network. Traditional models assign a matrix of trips to a network calculating average journey times across timeframes of 1 hour or more, using empirical relationships between flow and theoretical capacity. Microsimulation is capable of providing a real time visual output compared to traditional assignment models which look at strategic links and nodes. Moving components in the system means the modelling performs according to the physical constraints and the behaviour of the drivers. In microsimulation the movement of individual vehicles is largely governed by three interacting models representing: vehicle following, vehicle gap and lane changing. The Stevenage Town Centre S-paramics model would highlight additional junctions that have congestion and delay as it is a more sensitive model (thresholds need to be compared to the Strategic WHaSH-BL modelling).

5.0 INFRASTRUCTURE DELIVERY

Infrastructure Delivery Plan

- 5.1 An Infrastructure Delivery Plan (IDP) identifies all types of infrastructure needed to support new homes and employment uses from the Local Plan over the Local Plan period and forms part of the evidence base for Local Plans. The IDP usually informs the setting of the Community Infrastructure Levy Charging Schedule. The Community Infrastructure Levy (CIL) is a system of planning charges for the funding of a wide range of infrastructure. The Planning Act 2008 provides a wide definition of the infrastructure that can be funded by the Community Infrastructure Levy. It can include schools, sports facilities, transport, culture, green infrastructure, community, health and social care facilities among other things. The Council has yet to take a formal decision regarding the introduction (or otherwise) of CIL in the District and will work with infrastructure providers in identifying appropriate public funding mechanisms such as S106 planning obligations.
- 5.2 The findings from the strategic traffic modelling, required to assess the infrastructure impacts from Local Plan growth, needs to be included in the IDP. An overall potential cost for mitigating the Local Plan growth can be provided as well as the problem junction locations. It needs to be born in mind, as noted in Sections 3 and 4 of this report, there are difficulties in comparing the WHaSH-BL traffic assignment model to the County-wide COMET model and the Stevenage Town Centre S-paramics model and allowance should be made for this.

Strategic Modelling

- 5.3 The difficulty for Local Authorities is assessing the infrastructure needs and potential impacts on infrastructure from Local Plan growth using site allocations which usually happens prior to planning applications being submitted.
- 5.4 An issue with the Local Plan process and required evidence base, which needs to consider adjacent authority growth, is the conclusion of whose responsibility it is to promote and provide/finance the highway and transport infrastructure requirements required by Local Plan growth and mitigate of impacts on existing infrastructure.
- 5.5 Even without Local Plan growth the Do Minimum 2031 scenario highlighted within the Aecom report "*Preferred Local Plan Model Testing- Problem Locations*" 05/07/16

shows that there are junctions adversely affected by traffic growth. Whilst development can reasonably be expected to mitigate their own impacts, issues with general growth are not directly their responsibility. The IDP includes all junctions and potential mitigation measures from the WHaSH-BL modelling findings as the IDP should be used to commence discussions regarding mitigation and the approach for assessing the impact of development within Transport Assessments.

- 5.6 All large planning applications, or those with specific issues, require a Transport Assessment to be submitted to support the planning application. The Transport Assessment should be written in line with the National Planning Policy Guidance "Travel plans, transport assessment and statements in decision making". These should take account of the strategic modelling that has been undertaken and the scope of any assessment should be agreed with HCC.
- 5.7 In determining whether a Transport Assessment or Statement will be needed for a proposed development local planning authorities should take into account the following considerations:
- the Transport Assessment and Statement policies (if any) of the Local Plan;
 - the scale of the proposed development and its potential for additional trip generation (smaller applications with limited impacts may not need a Transport Assessment or Statement);
 - existing intensity of transport use and the availability of public transport;
 - proximity to nearby environmental designations or sensitive areas;
 - impact on other priorities/ strategies (such as promoting walking and cycling);
 - the cumulative impacts of multiple developments within a particular area; and
 - whether there are particular types of impacts around which to focus the Transport Assessment or Statement (e.g. assessing traffic generated at peak times).
- 5.8 The Infrastructure Delivery Plan is a live document which should be regularly updated. The strategic modelling has highlighted problem junctions and potential mitigation measures which are included in the IDP. It would be for the Transport Assessments submitted for the development projects to test the assumptions provided through the Strategic modelling as part of the Local Plan evidence base and include assessment of the proposed mitigation included in the IDP taken from the

strategic modelling as localised modelling may alter the mitigation type and level required.

Public transport and Sustainable travel modes

- 5.9 Infrastructure impacts from Local Plan growth are not confined to the physical highway network. Public transport impacts and requirements for sustainable travel and encouraging sustainable modes follow through the policies in the Local Plan and the IDP. Sustainable infrastructure mitigation and public transport improvements have been assessed for the purposes of Local Plan growth evidence base to support the housing and employment needs. The IDP includes proposals which have not yet been undertaken, but are still required, from the Urban Transport Plans (UTPs) for Hitchin, Baldock, Letchworth and Royston as well as information provided from HCC in terms of their county-wide sustainable initiatives, following their Local Transport Plan³, which are being tested within the county-wide COMET model which includes public transport and highway assignment models. The Local Transport Plan 4, which is under development by HCC, will include county-wide sustainable infrastructure measures that support the county-wide Local Plan growth.
- 5.10 The HCC report TN07 Hertfordshire COMET *“Pattern of Travel across Hertfordshire”* September 2015 provides an understanding of the wider travel patterns across Hertfordshire which cannot be ascertained from the current suite of traffic models that Aecom have undertaken for the various Boroughs/Districts. All the separate traffic models have been created for different reasons and therefore HCC have decided to develop a countywide model in order to assess travel patterns across Hertfordshire and allow interaction with public transport modes. The County Council hope to include the Local Plan growth for Districts/Boroughs as and when the information is available so that the County-wide impacts and connections between Local Authorities can be better understood in terms of the infrastructure impacts.
- 5.11 There are a number of different data sources to utilise when assessing travel patterns, one of the main sources is the Census 2011 and initial conclusions from this data were provided within the Aecom HCC COMET report. It was concluded that the main movement to London is by rail, car is the main mode of transport across the County and there are a high number of trips between adjacent urban areas. Not surprisingly the A1(M) and the links between Hemel Hempstead and Watford are the

main inter-urban movements within the County. The east-west movement was shown to be strong which is masked by the number of London bound trips.

- 5.12 The HCC 2012 Travel Survey, fare information and mobile phone OD data was also obtained to provide an overview of travel patterns and highlight particular corridors of interest. The A1(M) and links to this route is the corridor of interest that greatly affects NHDC.
- 5.13 The Aecom COMET report 2015 concluded that there is scope for focusing on more sustainable links between inter-urban and intra-urban locations, except London where rail is a dominant mode. On corridors which are connected relatively well by rail there is still a high car mode share, it was discussed that this could be linked to rail fare or overcrowding on certain routes but this requires further investigation.
- 5.14 There was a clear identification between town centres being linked by rail but the main employment areas not being as accessible with employment sites within towns being better accessed by car for inter-urban trips. Overall, some towns have considerable movements between them. Stevenage and Hitchin have been highlighted by HCC as a key inter-urban link which is poorly connected by public transport and more sustainable modes of travel, making vehicular trips more attractive.
- 5.15 Sustainable improvements for intra and inter urban transport services should be encouraged as well as the Local Plan including a strong land-use planning policy which ensures that development is located and focused around the provision of high quality public transport services. Funding from developments can further enhance this provision which should be included in the IDP.
- 5.16 The IDP identifies schemes to encourage cycling and walking for intra-urban trips and discussions with HCC indicate there is clearly considerable scope for promoting cycling as an alternative to the car for shorter commuting trips. Development projects can include new infrastructure and improvements to existing sustainable infrastructure as part of their Transport Assessments to meet the needs and mitigate the impacts of development. There is a focus on growth and transport plans to consider linkages between the main corridors of interest, as noted the A1(M) is a key corridor through NHDC.

5.17 The key findings from the COMET modelling, which includes a public transport model, can be adopted in the Local Plan and evidence base for Local Plan growth. The COMET model developed by HCC can be used to assess the county-wide aspirations which smaller models would not incorporate. The county wide model will show the key corridors of interest and linkages between the urban areas and inter and intra urban travel where public transport and sustainable modes should be promoted.

5.18 The strategic traffic modelling provides a worst case scenario in terms of vehicular trips. There is an argument to be made about encouraging sustainable modes and improving and constructing new sustainable infrastructure within and between key urban centres which would result in a reduction in vehicular travel. HCC are keen to promote 'Sustainable Towns' which would result in a reduction in vehicular travel. Local Plan growth will unlock financial investment for sustainable infrastructure.

6.0 SUMMARY AND NEXT STEPS

- 6.1 This Technical Note assesses the various traffic models that have been undertaken to assess the NHDC Local Plan growth on a Local Authority and County Wide level. The work undertaken so far in terms of transport, traffic and highways evidence has been outlined and further work may be required in the future as HCC gain a better understanding of the accumulative impact of growth on the highway network across Hertfordshire and other adjoining authorities
- 6.2 A consistent approach for assessing thresholds for delays and congestion on the highway network is needed and discussions with HCC are ongoing in terms of the type and level of traffic modelling that has been undertaken in other local authorities and specific hotspots on the local highway network with NHDC in the context of Local Plan growth. This is to understand the Highway Authorities role in leading on improvements to the transport network as well as the role of Highways England and developers. Further work is needed when development schemes are brought forward to assess the specific local infrastructure impacts and requirements for public transport as well as walking and cycling networks and local junction characteristics.
- 6.3 The IDP is a live document which is regularly updated as and when localised impacts and specific deliverable mitigation is identified. Funding discussions with stakeholders will be required once the impacts and requirements from the Local Plan growth have been outlined.
- 6.4 The strategic modelling that is carried out which forms part of the Local Plan evidence base has to assess the quality and capacity of infrastructure for transport and its ability to meet forecast demands. Localised traffic and junction models are not undertaken for Local Plan evidence base purposes as the specifics of the development impacts from a strategic perspective cannot be captured from localised junction modelling. This will normally be undertaken at the planning application stage.
- 6.5 The type of model used and threshold definition highlighting problem locations vary which causes difficulties in comparing output forecast data. Most of the Districts/Boroughs within HCC, as well as adjacent authorities, are currently going through the Local Plan process; therefore, a significant level of modelling activity is

being undertaken at the same time for different authorities whilst Local Plan growth figures are being constantly revised.

6.6 Ultimately development proposals need to be supported by Transport Assessments which encourage sustainability, manage the existing network and propose mitigation for any residual impacts. The NHDC strategic transport modelling evidence base should form a starting point for any local traffic, public transport and sustainability assessment specific to a development proposal.