WYG Transport Planning

Uttlesford District Council

Uttlesford Local Plan
Transport Study

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Executive Summary

This Transport Study has been produced to assist with the preparation of Uttlesford District Council's new Local Plan. The previous draft Plan was withdrawn following receipt of the Inspector's examination conclusions at the end of 2014, several of which related to transport matters.

This study broadly examines the likely transport implications of different spatial distribution options for future Local Plan development within the district. It examines potential development locations and presents a high level comparative appraisal of the transport implications of a range of possible development scenarios.

The comparative transport merits of twelve Local Plan development scenarios have been assessed and two preferred scenarios have been identified to assist with the District Council's Local Plan preparation.

This strategic level study has been produced in accordance with the National Planning Policy Framework (NPPF), relevant transport policies, transport guidance and current best practice. It applies a methodology that is considered to be proportional and robust that uses currently available information. It will form part of the Local Plan evidence base and has been produced in consultation with the transport and planning authorities responsible for the study area and adjacent districts.

Existing and future multi-modal transport conditions have been examined. Future conditions assuming no Local Plan development were established. Future committed development within Uttlesford and adjacent districts has been taken into account in accordance with current best practice, and assessments undertaken of the cumulative transport effects of Local Plan development at the end of the plan period (2033).

Strategic transport implications and the key transport infrastructure required to accommodate forecast conditions at the end of the plan period has been identified and discussed including likely transport investment. References are made to other ongoing relevant transport studies that will identify specific mitigation measures in more detail.

Additional demands for sustainable travel due to Local Plan development are expected to be largely accommodated by existing infrastructure and services, reflecting planned investment. However; developers will be expected to deliver local improvements to integrate development sites and encourage sustainable travel behaviours.

Developers will also be required to assess the transport implications of their sites and the cumulative implications of sites in the local area. Appropriate transport mitigation will need to be identified and agreed with the highway authorities to address development impacts and mitigation will be secured through the planning approval process.

1 Objectives and Scope of the Study

1.1 INTRODUCTION

1.1.1 This Transport Study has been produced to assist with the preparation of Uttlesford District Council's new Local Plan. The study area is shown in **Figure 1** and comprises Uttlesford district and parts of the adjacent authority areas of South Cambridgeshire, Braintree, Chelmsford, Epping Forest and East Hertfordshire to consider effects beyond the district. This is discussed in 3.1.2.

1.2 CONTEXT TO THE STUDY AND OBJECTIVES

1.2.1 The current plan for the district is the Uttlesford Local Plan, which was adopted in January 2005. The Council's most recent draft Local Plan was withdrawn from the examination process following receipt of the Inspector's examination conclusions at the end of 2014.

1.2.2 A review of the Inspector's comments and the previous Highway Impact Assessment (HIA) reports produced in support of the withdrawn Local Plan was undertaken at the start of the study and this is summarised in a Technical Note (TN1) that can be found in **Appendix A**.

1.2.3 The Inspector's comments on the withdrawn Local Plan highlighted two key areas of concern, namely:

- Concerns over lack of evidence regards the impact of growth on Junction 8 of the M11 and that the proposed mitigation of traffic congestion around Junction 8 would be inadequate to accommodate the cumulative travel demand likely to result from combined development within Uttlesford, Harlow, East Hertfordshire and Epping Forest districts.
- Potential impacts of proposed large-scale development and settlement at Elsenham on the local highway network

1.2.4 The inspector noted that regards Saffron Walden Policy 1

> *"In strategic terms this is a sound allocation although there appear to be some risks to its effectiveness in the way the scheme is being brought forward"*

1.2.5 The Inspector considered that the Objectively Assessed need (OAN) for housing that was assessed across the district was broadly appropriate and suggested only a modest increase of 6 units per annum (pa), taking the requirement to 529pa. The Inspector also recommended

examining an increase of 10% to the OAN to approximately 580pa to reflect potential market conditions and to assist with improving affordability.

1.2.6 The Council is therefore now preparing a new Local Plan to take these comments and other issues raised by the Inspector into account. It is anticipated that the new plan will be adopted in 2017 and will run until 2033. This Transport Study has been prepared as part of the evidence base in support of the new Local Plan and has been prepared in accordance with the National Planning Policy Framework (NPPF) which requires local planning authorities to use a proportionate evidence base to support their Local Plan production to help achieve sustainable development. The NPPF states that:

> *"Infrastructure*
>
> *162. 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."*

1.2.7 This Transport Study has been produced within the context of NPPF guidance, with the aim of providing a high level but robust assessment of current transport conditions, future travel demands, the need for new/improved transport infrastructure, indicative costs, potential funding sources and priorities for delivery.

1.2.8 This Transport Study has been prepared in close consultation with Essex County Council (ECC), the local highway authority within Uttlesford, and Highways England, responsible for the M11 Motorway, A120(T) and A11(T) Trunk Roads that pass through the study area. All adjacent local authorities have also been consulted during the preparation of the study including Cambridgeshire and Hertfordshire County Councils.

1.3 STRUCTURE OF THE REPORT

1.3.1 The structure and content of the remainder of this report is summarised as follows.

Planning Policy

1.3.2 Presents a summary of national and local transport and planning policies relevant to the study.

Baseline Assessment

1.3.3 Presents an overview of the study area, identification of existing transport conditions, travel patterns and existing transport services and infrastructure for all relevant modes of transport.

Committed Transport Schemes and Land-Use Developments

1.3.4 This section comprises the identification of committed transport schemes and land-use developments that will result in material changes to existing transport conditions within the district and identification of their likely transport effects.

Local Plan Development

1.3.5 This section identifies the Areas of Search (AoS) considered during preparation of the new Local Plan, presents an audit of their relative sustainability in transportation terms and identifies person trip generation, modal splits and trip distribution onto existing transport networks.

Transport Impacts

1.3.6 This section comprises the identification of likely impacts on existing transport networks as a result of proposed Local Plan development.

Transport Mitigation

1.3.7 This section identifies potential infrastructure improvements required to facilitate Local Plan development and/or mitigate transportation impacts on existing networks. This does not preclude the need for other transport mitigation measures which may be identified at the planning application stage for development sites. Potential strategic infrastructure improvements are discussed in a preliminary format and likely delivery mechanisms are identified. Several of these are the subject of separate ongoing studies and others will be subject to detailed assessment and design as and when development proposals are brought forward.

Summary

1.3.8 The final section summarises the findings of the study and presents recommendations.

Figures and Appendices

1.3.9 The Figures and Appendices referred to in the text are presented at the end of the report.

2 Planning Policy

2.1 PREAMBLE

2.1.1 This study has been produced taking into account relevant national and local policies that seek to achieve sustainable development. Consideration has been given to the following key documents.

National

- National Planning Policy Framework (March 2012)
- Planning Practice Guidance: Transport Evidence Bases in Plan Making and Decision Taking (Oct 2014)
- DfT Circular 02/2013: Strategic road network and the delivery of sustainable development (Sept 2013)

Local

- Essex Transport Strategy: the Local Transport Plan for Essex (June 2011)
- Cambridgeshire Local Transport Plan 2011-2031 (July 2015)
- Transport Strategy for Cambridge and South Cambridgeshire (April 2014)
- Greater Cambridge City Deal
- Hertfordshire Local Transport Plan 2011-2031 (April 2011)

2.2 EXISTING AND EMERGING DEVELOPMENT PLANS

2.2.1 The Local Planning Authorities (LPA) adjoining Uttlesford have adopted plans but these need updating with new plans. Uttlesford falls within the West Essex and East Hertfordshire Housing Market Area (HMA). Each of the LPAs within the HMA are currently preparing new local plans and East Hertfordshire Council is due to consider its pre-submission Plan in late September 2016.

2.2.2 Most growth within the HMA and a significant proportion of the infrastructure required to deliver the growth is focused around Harlow as the largest, most sustainable town. Key transport improvements are planned including a new junction onto the M11 motorway (Junction 7A) to help accommodate the growth planned in the HMA.

2.2.3 Beyond the HMA South Cambridgeshire has an adopted Core Strategy with its emerging Local Plan at examination stage. No major allocations are proposed in the vicinity of the Uttlesford border. The approach adopted by South Cambridgeshire is one of strict control of competing land-uses focusing growth at key locations inter-linked by sustainable transport corridors. South Cambridgeshire and Cambridge City Councils intend a joint plan review in 2019.

2.2.4 Braintree District Council, Colchester Borough Council, and Tendring District Council together forming the 'North Essex Authorities' have produced a Preferred Options Local Plan Part One (Core Strategy) as a coordinated response to significant future growth. The joint strategy proposes three co-terminus garden communities including a site to the West of Braintree with 2,500 homes in the plan period and potentially 1,400 homes from land within Uttlesford. This site could ultimately build to a garden community of 13,000 homes with key supporting facilities. Significant supporting transport infrastructure is programmed including widening of the A12(T) and measures on the A120(T) corridor.

2.3 NATIONAL

National Planning Policy Framework

2.3.1 The National Planning Policy Framework was published on 27 March 2012 and constitutes guidance for local planning authorities and decision-takers both in drawing up development plans and as a material consideration in determining applications. The NPPF replaces previous planning policy statements and planning policy guidance.

2.3.2 The National Planning Policy Framework must be taken into account in the preparation of Local and neighbourhood Plans, and is a material consideration in planning decisions. It states that in order to be considered sound a Local Plan should be consistent with national planning policy.

2.3.3 Paragraph 6 of the Framework refers to the purpose of the planning system to contribute to the achievement of sustainable development and this is a continuing theme throughout the whole of the document.

2.3.4 Paragraph 7 refers to three dimensions to sustainable development – economic, social and environmental;

- Economic – identify/coordinate development requirements including infrastructure

- Social – quality built environment with accessible local services
- Environmental – minimise pollution

2.3.5 At the heart of the NPPF is a presumption in favour of sustainable development. In terms of transport, one of the core planning principles is to actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are, or can be made sustainable.

2.3.6 The NPPF states that developments should be located and designed where practical to give priority to pedestrian and cycle movements, and have access to high quality public transport facilities; create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians; and consider the needs of people with disabilities by all modes of transport.

PPG: Transport Evidence Bases in Plan Making and Decision Taking

2.3.7 In March 2014 the Department for Communities and Local Government (DCLG) produced a web-based resource of planning practice guidance that superseded previous guidance. This includes 'Transport Evidence Bases in Plan Making and Decision Taking' which sets out why, how and when Local Planning Authorities should produce robust transport evidence bases in support of new or revised Local Plans. The guidance states:

> *"A robust transport evidence base can facilitate approval of the Local Plan and reduce costs and delays to the delivery of new development, thus reducing the burden on the public purse and private sector."*
>
> *"The transport evidence base should identify the opportunities for encouraging a shift to more sustainable transport usage, where reasonable to do so; and highlight the infrastructure requirements for inclusion in infrastructure spending plans linked to the Community Infrastructure Levy, section 106 provisions and other funding sources."*
>
> *"A robust evidence base will enable an assessment of the transport impacts of both existing development as well as that proposed, and can inform sustainable approaches to transport at a plan-making level. This will include consideration of viability and deliverability."*

2.3.8 The guidance identifies the key issues that should be considered in developing a Local Plan transport evidence base, outlines assessment methodology and defines the key stages of Local Plan preparation when transport assessment work should be undertaken.

2.3.9 This study has been prepared following the advice contained with the PPG guidance note and has considered strategic transport issues within Uttlesford district and beyond, where impacts could be significant, at key stages of the Local Plan production.

DfT Circular 02/2013: Strategic road network and the delivery of sustainable development

2.3.10 This circular explains how Highways England will engage with the planning system. It also gives details on how Highways England will fulfil its remit to be a delivery partner for sustainable economic growth whilst maintaining, managing and operating a safe and efficient strategic road network.

2.3.11 The Circular confirms that the primary aim of Highways England is the continued safe operation of its network (i.e. Motorways and Trunk Roads) and that development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section of the strategic road network, or they do not increase demand for use of a section that is already operating at over-capacity levels. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts are severe[1].

2.3.12 Regarding the preparation of Local Plans the circular states:

> *"In framing its contribution to the development of Local Plans, the Highways Agency's aim will be to influence the scale and patterns of development so that it is planned in a manner which will not compromise the fulfilment of the primary purpose of the strategic road network."*
>
> *"Through the production of Local Plans, development should be promoted at locations that are or can be made sustainable, that allow for uptake of sustainable transport modes and support wider social and health objectives, and which support existing business sectors as well as enabling new growth."*
>
> *"Capacity enhancements and infrastructure required to deliver strategic growth should be identified at the Local Plan stage, which provides the best opportunity to consider development aspirations alongside the associated strategic infrastructure needs."*

[1] There is no standard definition of severe. Each case is assessed on its own merits in the context of local transport conditions.

"Where a potential capacity need is identified, this will be considered and weighed alongside environmental and deliverability considerations. Additional capacity may be considered in the context of the Highways Agency's forward programme of works, balancing the needs of motorists and other road users with wider impact on the environment and the local/regional community."

2.3.13 This Transport Study has been produced in consultation with Highways England (formerly the Highways Agency) and the revised Local Plan for Uttlesford has been developed having due regard to the guidance contained within Circular 02/2013.

Essex Transport Strategy: the Local Transport Plan for Essex

2.3.14 Essex County Council's third Local Transport Plan (LTP3) sets out the County Council's vision for transport which is:

"A transport system that supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex."

2.3.15 The LTP3 sets out the outcomes the Council will aim to achieve over a fifteen year period to 2026 and identifies the policies for transport and the broad approach to implementing these. An implementation plan is also included which sets out how the outcomes of the strategy will be delivered and monitored and the short-term priorities for investment.

2.3.16 LTP3 outlines the following five objectives:

- Provide connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration.
- Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology.
- Improve safety on the transport network and enhance and promote a safe travelling environment.
- Secure and maintain all transport assets to an appropriate standard and ensure that the network is available for use.
- Provide sustainable access and travel choice for Essex residents to help create sustainable communities.

2.3.17 This Transport Study has been produced in consultation with Essex County Council and the new Local Plan for Uttlesford has been developed having due regard to the objectives of LTP3.

Cambridgeshire Local Transport Plan (LTP3)

2.3.18 The third Cambridgeshire LTP (2011 – 2031) has been produced in partnership with Cambridge City Council and the district councils of East Cambridgeshire, Fenland, Huntingdonshire and South Cambridgeshire and sets out policies and plans for transport to contribute towards the County Council's vision:

"Creating communities where people want to live and work: now and in the future."

2.3.19 The LTP acknowledges that opportunities to deliver transport improvements funded from traditional sources are relatively limited however, a City Deal for the Greater Cambridge area will provide up to £500 Million to invest in transport infrastructure in the next 15-20 years. The Council is therefore well placed to deliver improvements for the Cambridge area identified in the LTP Long Term Transport Strategy (and in the Transport Strategy for Cambridge and South Cambridgeshire that sits under it) that will support economic and housing growth.

2.3.20 The LTP3 document addresses the County Councils priorities. These are:

- Supporting and protecting people when they need it most
- Helping people to live independent and healthy lives in their communities
- Developing our local economy for the benefit of all

2.3.21 One of the key aims of the transport strategy set out in the LTP3 is to support the development strategy for Cambridgeshire by aiming to reduce the need to travel and by providing sustainable travel options for new developments.

2.3.22 The LTP3 seeks to address eight challenges:

- Improving the reliability of journey times by managing demand for road space, where appropriate and maximising the capacity and efficiency of the existing network.
- Reducing the length of commute and the need to travel by private car.
- Making sustainable modes of transport a viable and attractive alternative to the private car.
- Future-proofing our maintenance strategy and new transport infrastructure to cope with the effects of climate change.

- Ensuring people - especially those at particular risk of social exclusion - can access the services they need within reasonable time, cost and effort wherever they live in the county.
- Addressing the main causes of road accidents in Cambridgeshire.
- Protecting and enhancing the natural environment by minimising the environmental impact of transport.
- Influencing national and local decisions on land-use and transport planning that impact on routes through Cambridgeshire.

2.3.23 To help address these challenges whilst accommodating Local Plan development within Cambridge City and South Cambridgeshire District a joint transport strategy has been developed that forms part of the LTP3 suite of documents.

Transport Strategy for Cambridge and South Cambridgeshire (TSCSC).

2.3.24 The TSCSC sets out a transport strategy for facilitating the employment and residential growth within Cambridge and South Cambridgeshire District identified in the Council's respective Draft Local Plans. These plans are expected to deliver around 33,000 new homes in and around the city and in South Cambridgeshire to help accommodate 44,000 new jobs in the period to 2031.

2.3.25 The purpose of the strategy is to:

- Provide a detailed policy framework and programme of schemes for the area, addressing current problems and consistent with the policies of the Third Cambridgeshire Local Transport Plan 2011-26 (LTP3).
- Support the Cambridge and South Cambridgeshire Local Plans, and take account of committed and predicted levels of growth, detailing the transport infrastructure and services necessary to deliver this growth.

2.3.26 An extract from the vision for the TSCSC is reproduced as follows:

> *"In the future, Cambridge and the surrounding area of South Cambridgeshire will be renowned for its efficient, accessible and sustainable transport system which will support a thriving and beautiful historic core, and provide efficient and networked links to and from the city, its major employment hubs, and the bustling villages and key centres beyond."*

2.3.27 Eight objectives are identified for the TSCSC. These are:

- To ensure that the transport network supports the economy and acts as a catalyst for sustainable growth.
- To enhance accessibility to, from and within Cambridge and South Cambridgeshire (and beyond the strategy area).
- To ensure good transport links between new and existing communities, and the jobs and services people wish to access.
- To prioritise sustainable alternatives to the private car in the strategy area, and reduce the impacts of congestion on sustainable modes of transport. Transport Strategy for Cambridge and South Cambridgeshire.
- To meet air quality objectives and carbon reduction targets, and preserve the natural environment.
- To ensure that changes to the transport network respect and conserve the distinctive character of the area and people's quality of life.
- To ensure the strategy encourages healthy and active travel, supporting improved wellbeing.
- To manage the transport network effectively and efficiently

2.3.28 The focus of the policies presented in the TSCSC is to:

- Manage the demand for general vehicular travel and reduce through traffic in Cambridge
- Prioritise road safety, particularly for pedestrians and cyclists
- Meet environmental objectives in terms of air quality and reducing transport related emissions
- Support economic growth, mitigate transport impacts of growth and help protect the area's distinctive character and environment

2.3.29 To achieve this, sustainable transport capacity will be provided in and around the city between key employment areas, and to where people live and access services. The backbone of the strategy will be a high quality passenger transport network of bus, guided bus and rail services, fed and complemented by comprehensive pedestrian and cycle networks. Highways capacity enhancements will ensure that traffic can move efficiently in appropriate locations without interfering with passenger transport corridors.

2.3.30 The TSCSC identifies the Saffron Walden to Cambridge corridor, along with the M11 as the main entry point into the county from Essex via the A1301 and also via the Cambridge-London Liverpool Street railway line. The TSCSC states:

"As with many of the market towns that surround Cambridge, although Saffron Walden lies in Essex, it looks to the city for much of its employment, services, healthcare and retail. The corridor is also close to the cluster of biotech sites to the south of the city. The Genome Campus sits on the corridor and there are strong links to the Babraham Research Campus and Granta Park. The main passenger transport focus for the corridor is the railway line, which has stations at Shelford, Whittlesford, Great Chesterford and Audley End".

2.3.31 The SWOT analysis summary for the Saffron Walden to Cambridge corridor from the TSCSC is reproduced as follows:

Strengths:

- Existing railway line along corridor with regular services between Cambridge and London Liverpool Street
- Connections to Stansted Airport
- Four village stations
- Park & Ride site at Trumpington
- Existing off-road cycle route between Addenbrooke's and Shelford

Opportunities:

- Planned railway industry increases to service frequency along route
- Potential to link to north of Cambridge once Cambridge Science Park Station is built
- Potential connections between the knowledge-based campuses in this area of the district
- Improve the stations as interchanges

Weaknesses:

- Congestion on the A1301 around the interchange with A505 caused by high volumes of traffic along A505
- Knock-on effects of rat-running through neighbouring villages

Threats:

- Increasing congestion along A1301 and A505

2.3.32 Transport interventions on the Saffron Walden to Cambridge corridor focus on:

"making the existing railway the first mode of choice, and improving upon the existing service provided by the railway line. As with other corridors, the overarching principle will be to intercept as many trips as far out of Cambridge as possible. The role of the railway will be strengthened through improvements to services, especially to Stansted Airport and also to the village stations, whose roles will become more important as interchange points between the railway and other modes of transport servicing the more rural areas.

Interchange facilities will be provided at Shelford and Whittlesford Parkway stations, linking villages into the HQPT corridor through a network of cycle and pedestrian links, which will also connect the large employment sites in Sawston and the Genome Campus to those further afield at Granta Park and Babraham Research Campus. Networks around the catchment area for Sawston Village College will also be created."

Greater Cambridge City Deal

2.3.33 The Greater Cambridge City Deal is an agreement set up between a partnership of local organisations and Central Government, to help secure future economic growth and quality of life in the Greater Cambridge city region.

2.3.34 The projects to be delivered as part of tranche 1 of the City Deal, support the Transport Strategy for Cambridge and South Cambridgeshire (TSCSC). This in turn supports planned housing and employment growth outlined in the Local Plans.

2.3.35 The agreement set up with Central Government will provide up to £500 million worth of funding over the next 15 years with an initial £100 million investment secured over the five years to 2020 to progress the first tranche of City Deal projects designed to:

- Bring vital improvements to key routes into the city.
- Connect existing and new residential and employment areas with high quality public transport networks, including new orbital bus routes around Cambridge.
- Provide more sustainable ways for people to travel between their homes and places of work, through a comprehensive network of pedestrian and cycle routes.

2.3.36 The tranche 1 City Deal projects have prioritised schemes that can be delivered quickly and provide immediate benefits to residents and commuters in Greater Cambridge. They also complement other schemes underway to improve major road and rail links across the wider Cambridgeshire region.

2.3.37 One of the tranche 1 projects, the 'A1307, Three Campuses to Cambridge' corridor is examining the A1307 corridor between Haverhill and Cambridge. This will link the three major employment sites of Granta Park, Babraham Research Campus and the Cambridge Biomedical Campus with Cambridge. Possible options are being investigated including park and ride, segregated bus links, segregated walking and cycling routes and bus priority measures. Consideration was also given to re-use of a disused railway on the corridor. This is not being considered for future rail use however, parts of the old route could be used for buses. The scheme is not considering dualling of the A1307.

2.3.38 Cambridge Science Park Station (CSPS) - a new rail station is planned for the Chesterton sidings area of Cambridge. This will provide rail access to the northern business and research parks of the City, especially for those travelling from South Cambridgeshire and Ely. New bus and cycling links will also be provided to maximise the potential to reduce car use.

Hertfordshire Local Transport Plan

2.3.39 The vision of the third Local Transport Plan (LTP3) for Hertfordshire is:

"To provide a safe, efficient and resilient transport system that serves the needs of business and residents across Hertfordshire and minimises its impact on the environment."

2.3.40 The LTP3 states that the Council will achieve this by:

"Making best use of the existing network and introducing targeted schemes where improvements are required so as to deliver a reliable and readily usable transport network to benefit local business, encourage further economic growth and allow access for all to everyday facilities.

Promoting and supporting sustainable travel to reduce growth in car traffic and contribute to improved health and quality of life for residents with a positive impact on the environment and on the wider challenge of reducing transport's contribution to climate change."

2.3.41 The five goals of the LTP3 to support the vision are:

- Support economic development and planned dwelling growth.
- Improve transport opportunities for all and achieve behavioural change in mode choice.
- Enhance quality of life, health and the natural, built and historic environment for all Hertfordshire residents.

- Improve the safety and security of residents and other road users.
- Reduce transport's contribution to greenhouse gas emissions and improve its resilience.

2.3.42 To help achieve these goals the plan places a high priority on making better use of existing transport networks. A key element of the plan is 'intelligent transport systems'. Measures such as optimising traffic signals and providing real-time information to help make the best use of our roads.

2.3.43 This will be supported through a co-ordinated programme of travel planning with the development of travel plans for businesses, schools, railway stations and for individuals. Above all, the aim is to make everyone aware of all the travel options available and the consequences of the choice that they make.

2.3.44 Hertfordshire County Council is also currently consulting on the preparation of its Transport Vision 2050 project which will be used to shape the long term development of Hertfordshire's transport system over the next 35 years. As part of the overall Transport Vision 2050 project, the Council is currently consulting on the content of the new Local Transport Plan summary document and seeking views on how to achieve modal shift and increased investment in sustainable transport provision. The results of the consultation will help to define and shape the full transport strategy and accompanying policies in due course.

Summary

2.3.45 The draft Uttlesford Local Plan and this transport study have been prepared having due regard to the various policies identified in the LTP3 documents of neighbouring authority areas where these could have implications for transport conditions and/or planned development within Uttlesford.

Duty to Cooperate

2.3.46 The Localism Act 2011 places a legal duty on local planning authorities to engage constructively, actively and on an ongoing basis to maximise the effectiveness of Local Plan preparation in the context of strategic cross boundary matters.

2.3.47 The duty to cooperate is not a duty to agree. But local planning authorities should make every effort to secure the necessary cooperation on strategic cross boundary matters before they submit their Local Plans for examination.

2.3.48 During the preparation of this study consultation has been undertaken with Highways England and Essex County Council in their capacity as highway authorities for Uttlesford District. Neighbouring highway authorities (Hertfordshire County Council and Cambridgeshire County Council), planning authorities that directly border Uttlesford (Braintree District, Chelmsford District, Epping Forest District, East Hertfordshire, North Hertfordshire, South Cambridgeshire) plus Cambridge City, Harlow, St Edmundsbury and Stansted Airport have also been consulted.

2.3.49 A record of this consultation and the feedback received can be found in a separate Consultation Summary Report which demonstrates how duty to cooperate has been addressed throughout the production of this study.

3 Baseline Assessment

3.1 INTRODUCTION

3.1.1 This section of the report identifies existing transport conditions within the study area which is shown in **Figure 1**.

3.1.2 The extent of the study area was agreed following consultation with Essex County Council, Cambridgeshire County Council, and Hertfordshire County Council and the local district authorities adjacent to Uttlesford district. Both East Hertfordshire and South Cambridgeshire Councils requested that the study area include key highway routes within their authority areas (i.e. the A120 around Bishop's Stortford and the A505 between the M11 and A11(T) east of M11 Junction 10 at Duxford). Essex County Council requested that the study area also incorporate; the A120(T) around Braintree, the A131 to the southwest of Braintree to its junction with Essex Regiment Way north of Chelmsford, plus the M11 between Junctions 7 and 8.

3.1.3 The study area depicted in **Figure 1** therefore comprises Uttlesford district and parts of the adjacent authority areas of; South Cambridgeshire, Braintree, Chelmsford, Epping Forest and East Hertfordshire.

3.2 DISTRICT CHARACTERISTICS

3.2.1 Uttlesford is a large rural district of about 64,750 hectares and a population of 79,443 (2011 Census). It is located in North West Essex, with the market towns of Saffron Walden (population 15,500) and Great Dunmow (population 8,830) situated in the northern and southern parts of the district respectively. Stansted Airport is situated within the district, just northeast of the Hertfordshire town of Bishop's Stortford. The airport has a current (2016) throughput of about 23.6 million passengers per annum (mppa) (at June 2016) and has planning permission to expand to 35mppa.

3.2.2 The M11 motorway runs south to north through the western part of the district from south of Junction 8 at Bishop's Stortford to Junction 9/9A at Great Chesterford/Stump Cross. The A120 runs west to east across the southern part of the district from Bishop's Stortford to Braintree. There are also significant B class roads within the district.

3.2.3 The West Anglia Main Line from London Liverpool Street to Cambridge runs south to north through the western side of the district (parallel with the M11) with a dedicated branch line serving Stansted Airport. Some local bus services in the southern part of the district benefit from added demand from Stansted Airport, meaning that they run at a higher frequency and earlier and later than otherwise might be the case.

3.3 TRAVEL DEMOGRAPHICS

Introduction

3.3.1 Relevant transport data has been obtained from the Office of National Statistics (ONS) Nomis website using Key Statistics summary tables from the 2011 Census. This is summarised and discussed as follows.

Existing Modes of Travel

3.3.2 A comparison of mode of travel to work data is presented in **Table 1** below. The predominant mode of travel to work for Uttlesford is the private car and relative levels of car use within the district are higher than for both Essex and England. Bus, motorcycle and bicycle use within Uttlesford is low, but not dissimilar to Essex. Train use within Uttlesford is lower than for the county as a whole, although it is the same as the national level. Walking within the district is approximately equivalent to both the county and England albeit higher in the market towns and lower within rural areas.

3.3.3 The data reflects the rural nature of the majority of Uttlesford and the relatively sparse public transport provision. For many residents the car is the only feasible mode of transport.

Table 1 – 2011 Census: Mode of Travel to Work (Usual Residents)

Mode of Travel	Uttlesford	Essex	England
Car	76%	70%	66%
Bus	2%	3%	8%
Train	10%	14%	10%
Motorcycle	1%	1%	1%
Bicycle	1%	2%	3%
Walking	10%	10%	11%
Other	1%	1%	1%
Totals	100%	100%	100%

Notes:
1. Car includes car/van drivers, car/van passengers, and taxis
2. Bus includes bus, coach or minibus

3. Train includes train, metro, light rail, tram and underground
4. Motorcycle includes motorcycle, scooter or moped
5. Figures exclude work from home and not working

Vehicle Availability

3.3.4 Car and van availability is summarised in **Table 2** below. This details the percentage of households with access to a car/van. Data is presented for Uttlesford district, Essex County and England.

Table 2 – 2011 Census: Percentage of Households with Cars/Vans Available

	Uttlesford	Essex	England
No cars or vans in household	10%	18%	26%
1 car or van in household	36%	42%	42%
2 cars or vans in household	38%	30%	25%
3 cars or vans in household	11%	7%	5%
4 or more cars or vans in household	5%	3%	2%
Totals	100%	100%	100%

3.3.5 As can be seen from **Table 2** Uttlesford has the lowest percentage of households without access to a vehicle or access to only one vehicle and the highest percentage of households with access to more than one vehicle.

3.3.6 Uttlesford is a rural district where household car ownership is recognised as being higher than the national average. The number of cars/vans available per household is also higher than nationally, with the average number of vehicles per household being 1.2 nationally, 1.4 in Essex and 1.7 in Uttlesford.

Journeys to Work

3.3.7 The usual places of work for Uttlesford residents ages 16 and over (in employment at the time of the 2011 Census) is summarised in **Table 3** below (% Destinations). This shows that a large proportion of residents work within the district (42%), or work within neighbouring authority areas close to Uttlesford (32.8%[2]), or within London (16.5%). **Table 3** also shows that the reverse situation is similar for people travelling into the district to work.

Table 3 – 2011 Census: Work Destinations and Work Origins (all modes)

Work Destinations	% Destinations	% Origins
Uttlesford	42.00%	42.50%
London (City & Greater London)	16.50%	4.00%
East Hertfordshire	9.60%	11.20%
Other (sum of all other destinations/origins)	8.70%	13.60%
Harlow	4.60%	3.30%
Cambridge City	4.50%	1.30%
South Cambridgeshire	4.30%	3.80%
Chelmsford	3.20%	3.10%
Braintree	2.90%	12.50%
Epping Forest	2.50%	1.60%
St Edmundsbury	0.70%	2.50%
North Hertfordshire	0.60%	0.60%
Total	100.00%	100.00%

3.3.8 Distances travelled to work for residents of Uttlesford are summarised in **Table 4** this shows that Uttlesford residents travel comparatively further to work, with 20% of Uttlesford journeys to work being more than 30km, compared with 16% in Essex, and 8% nationally. Again this reflects the rural nature of the district with a dispersed pattern of small settlements and villages.

Table 4 – 2011 Census: Distance Travelled to Work (all modes)

	Uttlesford	Essex	England
More than 30km	20%	16%	8%
10-30km	24%	23%	21%
0-10km	47%	52%	63%
Other	9%	10%	8%
Totals	100%	100%	100%

Note: the 0-10km category includes work from home

[2] Calculated as total less Uttlesford, London and other.

Road Safety

3.3.9 Personal Injury Accident (PIA) statistics have been provided by Essex County Council, Hertfordshire County Council and Cambridgeshire County Council for the road network within the study area (including Motorways and Trunk Roads) for the period covering 01/09/2010 to 30/10/2015. A summary of the data is presented in **Table 5** as follows.

Table 5 – Personal Injury Accident Summary

	Fatal	Serious	Slight	Total
2010 (4 months)	1	18	90	109
2011	9	68	243	320
2012	7	61	250	318
2013	3	46	277	326
2014	2	68	272	342
2015 (8 months)	1	49	157	207
Totals	23 (1%)	310 (19%)	1,289 (80%)	1,622 (100%)

3.3.10 **Figure 2** depicts the locations of all personal injury accidents within the district between 01/09/2010 and 30/08/2015. Accident severities have been colour coded with red representing 'Fatal' accidents, yellow 'Serious' and green 'Slight' accidents.

3.3.11 As can be seen from **Figure 2** recorded injury accidents are relatively evenly distributed across the highway network with higher concentrations observed within urban areas. Details of accident cluster sites were provided by Essex County Council for Uttlesford district and this information is presented in **Figure 3**. For the purpose of this study cluster sites are defined as any location (within a 50m radius) where there have been four or more injury accidents (of any severity) recorded within the last 5 years.

3.3.12 As can be seen from **Figure 3** cluster sites of four or more accidents were recorded at the following locations with Uttlesford (accident severities on **Figure 3** are classified by the most severe accident recorded at each location):

- High Street Saffron Walden – 1 Serious, 5 Slight
- B1052 Saffron Walden – 4 Slight
- B1383 at Audley End – 2 Serious, 2 Slight
- B1383 at Wendens Ambo – 1 Serious, 3 Slight

- M11 at Wendens Ambo – 1 Fatal, 1 Serious, 2 Slight & 4 Slight & 4 Slight
- A120/B1383 north of Bishop's Stortford – 5 Slight
- A120/B1256 (south of Great Dunmow) – 4 Slight & 1 Serious, 3 Slight
- B184 (South of Great Dunmow) - 1 Serious, 3 Slight
- M11 Junction 8 complex of junctions – 1 Serious, 12 Slight & 7 Slight
- M11 just south of Junction 8 – 4 Slight
- B1256/B183 Takeley – 2 serious, 5 Slight
- A1060/B183 Hatfield Heath – 1 Serious, 3 Slight
- B1256/Braintree Road (east of Great Dunmow) – 3 Serious, 11 Slight
- A120/A1250 (Bishop's Stortford) – 1 Serious, 3 Slight
- A120(T)/Round Coppice Road (south of Stansted Airport) – 1 Serious, 7 Slight

3.3.13 Analysis of the data in **Table 5** shows that over the last five years injury accidents have been recorded at an average rate of between 26 to 29 accidents per month across the whole study area, equivalent to just less than one per day.

3.4 HIGHWAY NETWORK

Existing Conditions

3.4.1 Roads within the study area fall into three categories; Motorways (M11), Trunk Roads (A120, A11) which are the responsibility of Highways England and County Roads (all other roads within the study area) which are the responsibility of the respective County Councils (Essex County Council, Cambridgeshire County Council and Hertfordshire County Council).

3.4.2 The road network examined for the purposes of this study is identified in **Figure 4**. The network includes all Motorway, 'A' and 'B' Classification roads within the study area as well as some minor roads that either provide useful connections or are close to Local Plan development Areas of Search (AoS). Existing traffic conditions on the study area network have been determined through the examination of relevant data sources and through discussions with the highway authorities.

3.4.3 The availability of existing traffic flow data for roads within the study area was researched and all suitable data obtained. Only current data has been applied, which for the purposes of this study has been taken as any data collected post 1st January 2013. Where no suitable data was available new automatic traffic counts (ATC) were undertaken on key links within the study area. A total of 45 new ATC surveys were undertaken at the locations shown in **Figure 5**. The time periods for these surveys were:

- Tuesday 12th April to Tuesday 26th April 2016 – 39 ATC sites
- Tuesday 10th May to Tuesday 24th May 2016 – five ATC sites (Cambridgeshire)
- Tuesday 14th June to Tuesday 28th June 2016 – one ATC site (Hall Road, Stansted)

3.4.4 Traffic flows data from years preceding 2016 were 'factored' to a common 2016 base year using National Traffic Model (NTM) growth factors adjusted by local TEMPRO growth. Details of the data and analysis methodology can be found in **Appendix B** and the resultant flows are illustrated on **Figure 6**. Existing traffic flows are summarised in **Table 6** on the following page.

Table 6 – Existing (2016) Daily Traffic Flows on Motorways and 'A' Roads

Route	Carriageway Standard	Average Annual Daily Traffic (AADT) (2-Way)	
		Total Flow	% HGV
M11 (J7 – J8)	Dual three lane motorway	108,497	15%
M11 (J8 – J9)	Dual two lane motorway	80,770	15%
M11 (J9 – J10)	Dual two lane motorway	47,704	17%
A11(T)	Dual Carriageway	31,815	20%
A505	Single Carriageway	17,585	3%
A1307	Single Carriageway	18,029	4%
A120(T)	Dual Carriageway	56,371	8%
A120 (Bishop's Stortford)	Single Carriageway	19,840	14%
A1060	Single Carriageway	12,600	1%
A130	Single Carriageway	22,764	6%
A131	Dual/Single Carriageway	20,026	4%

Note: Highest flows used where more than one flow available. HGV% includes passenger service vehicles (PSV).

3.4.5 As can be seen from **Table 6** the roads with the highest volumes of traffic are the M11 motorway, the A120(T) and the A11(T) which is as would be expected because these are major through routes for north-south and east–west traffic respectively and both form part of the strategic road network and therefore carry longer-distance through traffic in addition to local movements.

Traffic Patterns

3.4.6 The 2011 Census 'Journey to Work' data summarised earlier in this section (see **Table 3** on Page 22) shows that 57% of the people of working age (in employment at the time of the Census) who live in Uttlesford travel to work outside of the district and 42% stay internal to the district. Further analysis of the Census data shows that 58% of the trips out of the district have destinations within Essex and 20% have destinations within adjacent Counties (Hertfordshire, Cambridgeshire and Suffolk), 17% have destinations within London (Greater London and City of London combined). **Table 1** on page 20 shows that the majority of work-related trips are made by car (76%).

3.4.7 For people who work in Uttlesford 42.5% are from within the district and 57.5% travel from outside of the district. Further analysis shows that 67% of trips into the district have origins within Essex and 19% have origins within adjacent Counties (Hertfordshire, Cambridgeshire and Suffolk), 4% have origins within London (Greater London and City of London combined).

3.4.8 The vast majority of commuter trips to/from the district are therefore between origins and destinations within Essex, authority areas outside of Essex but adjacent to Uttlesford (i.e. Cambridge, South Cambridgeshire, East Hertfordshire) or London.

Network Performance

3.4.9 Network performance for the road network within the study area has been assessed based on link capacity. The prime indicator for road capacity and congestion on rural links is determined by the Congestion Reference Flow (CRF), which is defined in Annex D of TA 46/97 'Traffic Flow Ranges for use in the Assessment of New Rural Roads' as follows:

> *"The Congestion Reference Flow (CRF) of a link is an estimate of the Annual Average Daily Traffic (AADT) flow at which the carriageway is likely to be congested at peak periods on an average day. For the purposes of calculating the CRF, 'congestion' is defined as a situation when the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link. At this point the effect on traffic is likely to be one or more of the following: flow breaks down with speeds varying considerably, average speeds drop significantly, the sustainable throughput is reduced and queues are likely to form. This critical flow level can vary from day to day and from site to site and must be considered as an average. The CRF is a measure of the performance of a road link between junctions."*
>
> *"The congestion threshold is a measure of the maximum achievable hourly throughput of a link."*
>
> *"Any increase in demand above this threshold can lead to flow breakdown, queueing and reduced throughput."*
>
> *"The threshold may be expressed in terms of annual average daily traffic (AADT) by identifying the likely ratio of peak to daily flow and applying this to the threshold hourly value. The resulting AADT is known as the Congestion Reference Flow (CRF)".*[3]

[3]Source: Design Manual for Roads and Bridges, Volume 5, Section 1, Part 3 TA 46/97.

3.4.10 Congestion Reference Flow (CRF) values have been used as a simple indication of the performance of road links within the study area. Based on these calculated reference capacities link "stress" levels have been identified where "stress" is defined as the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow expressed as a percentage.

3.4.11 CRF is a performance measure for assessing the capacity of rural road links. It is a relatively simplistic indicator for use at the 'strategic level'. The benefits of using the CRF methodology are that network link capacity can be assessed relatively easily as the data required for the calculation is either readily available or can be obtained relatively inexpensively. Alternative methodologies such as using strategic transport models require much more extensive input data, including origin-destination surveys, which at a district level would be complex and expensive to undertake. The modelling process is also significantly more complex and time consuming.

3.4.12 The key shortcomings of the CRF methodology are that CRF is a measure of the performance of the links between junctions. Junction performance should therefore be assessed separately. CRF is therefore not applicable for use in urban locations where junction capacity is usually the limiting factor.

3.4.13 A stress level of 100% (i.e. when the demand flow equals the CRF value) is the critical point at which link flows breakdown resulting in queuing and reduced throughput. Therefore for the purposes of this study the following stress thresholds have been applied to identify when links are approaching, or exceeding their theoretical maximum capacity:

- Less than 90% stress - the link operates within capacity, although journey times may become less reliable over 75% stress (see below).
- Between 90% and 100% stress - The link is approaching capacity and is increasingly susceptible to flow breakdown.
- Greater than 100% stress - The link operates over capacity and is likely to experience flow breakdown on a regular basis.

3.4.14 The above thresholds have been applied to easily identify when link capacity is approaching critical conditions (i.e. 100% stress). However, it should be noted that 75% stress is generally accepted as the threshold level for adverse effects on journey time reliability. Therefore, links

with between 75% and 99% stress will still be operating within capacity but journey times are likely to be less reliable than on links with less than 75% stress.

3.4.15 Details of the CRF calculation methodology, data analysis and results can be found in **Appendix B** and the resultant CRF link values are illustrated on **Figure 7**. The comparison between observed link flows and CRF values is illustrated on the stress plan presented as **Figure 8**. For ease of reference link stress levels of less than 90% are shown in green, 90%-100% in yellow, and greater than 100% are shown in red.

3.4.16 The stress plan indicates that all links within Uttlesford district currently operate at less than 90% stress. Outside of the district, but within the study area the links listed in **Table 7** have been identified as having stress levels in excess of 90% and could be expected to experience less reliable journey times and congestion in peak periods.

Table 7 – Links Close to or Exceeding Capacity in the Base Year

ink Location	Maximum Stress	Local Authority
A505 between the M11 and the A11	98%	South Cambridgeshire
A1307 between the A11 and Linton	94%	South Cambridgeshire
B1008 between Onslow Green and the B1417	91%	Chelmsford
A131 between Great Leighs and the B1008	119%	Chelmsford
A131 north east of Braintree	106%	Braintree
A120 east of Braintree	115%	Braintree

3.4.17 For urban networks link stress is a less reliable indicator of network performance because there are typically a greater number of junctions in urban areas and junction capacity is therefore usually the limiting factor.

3.4.18 Essex County Council has therefore provided TrafficMaster congestion data for Uttlesford that can be found in **Appendix C**. TrafficMaster congestion data is derived from the journey times of vehicles containing Global Positioning System (GPS) equipment. The data in **Appendix C** is an average for 2014-2015 (the latest whole year available at the time of writing) and presents a comparison between peak hour and free flow vehicle speeds. This comparison highlights where vehicle speeds are lower during the AM and PM peak periods than during off-peak periods when traffic can flow freely and removes the influence of junction geometry.

3.4.19 It can be seen from the TrafficMaster data that, on the whole, observed vehicle speeds during the AM and PM peak periods are generally very similar to off-peak speeds on the majority of the highway network within the district, as would be expected in a broadly rural district. This

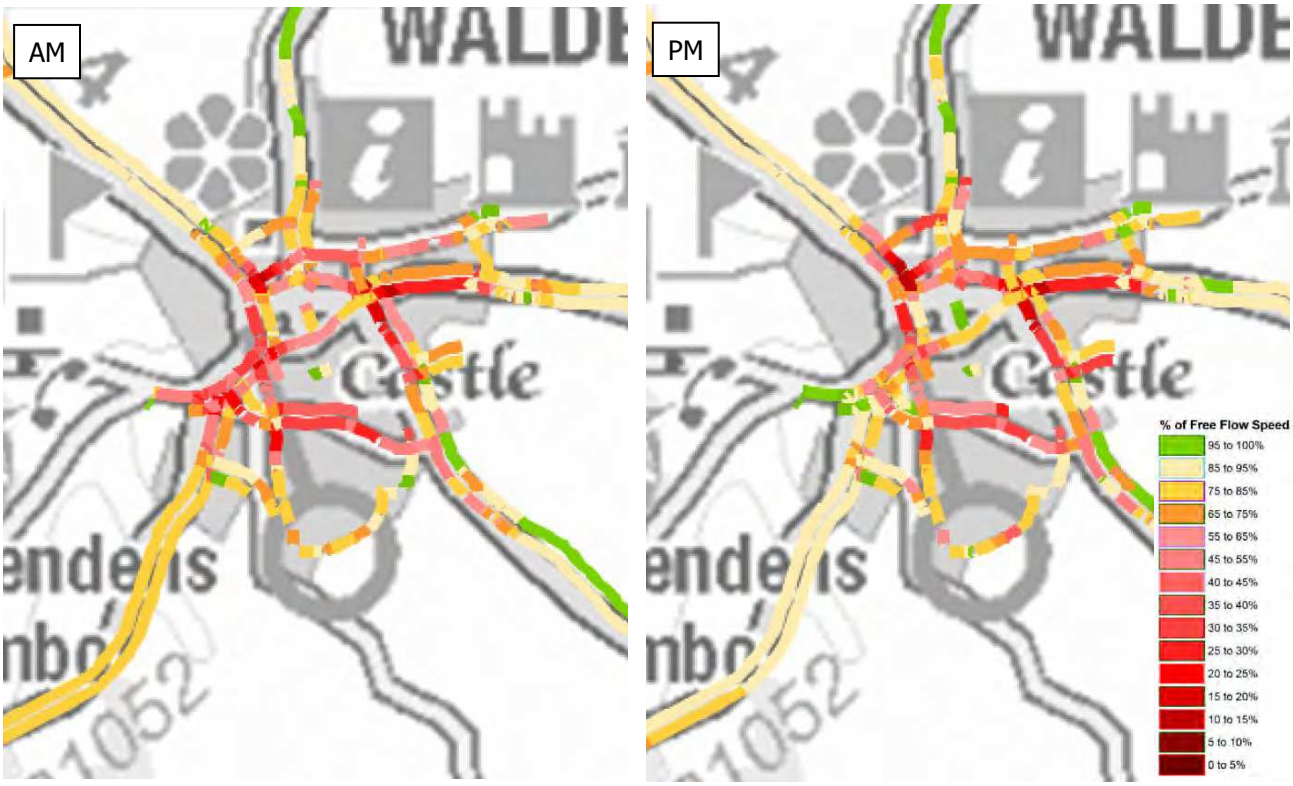
supports the findings of the CRF assessment that the rural highway network within Uttlesford largely operates within capacity.

3.4.20 However, some settlements within the district do exhibit reduced vehicle speeds in the peaks, most notably: Saffron Walden, Newport, Felsted and, to a lesser extent, Stansted Mountfitchet, Takeley and Great Dunmow. Reduced speeds are also observed on the westbound A120(T) approaching M11J8 in the AM peak. This is discussed in the following text.

3.4.21 TrafficMaster information is based on vehicle speed data on the network which, in urban areas will typically be slower in the AM and PM peaks due to general increased traffic and frontage activities (e.g. pedestrians crossing the road, buses stopping on the carriageway, on-street car parking etc). Slower traffic speeds in the peaks therefore do not necessarily mean there are junction capacity problems. However, the data still provides a useful guide to network performance and can help to identify possible problem areas.

Saffron Walden

3.4.22 The images on the following page show TrafficMaster congestion data for Saffron Walden for 2014-15 AM and PM peak periods. The results highlight the areas of the highway network within the town that typically experience reduced peak period vehicle speeds.



3.4.23 Observation of the TrafficMaster data suggests that the operation of the following junctions within Saffron Walden may be contributing towards peak period delays:

- B1052 High Street/George St signals
- B1052 London Road/Debden Road mini-roundabout
- B1052 London Road/B184 Audley Road /High Street
- B184 Audley Road/B184 East Street
- B184 Thaxted Road/B1053 Radwinter Road
- B1052 Common Hill/B184 East Street/Hill Street
- B1052 Common Hill/B1052 Castle Hill/Church Street/Ashdon Road

3.4.24 The TrafficMaster observations are consistent with the findings of an assessment undertaken in 2013/14 by Essex County Council into the operation of the highway network within the town. The assessment identified that all of the above junctions would be operating with one or

more arms exceeding capacity in the peak hours by a future year of 2026 with committed development traffic flows taken into account.

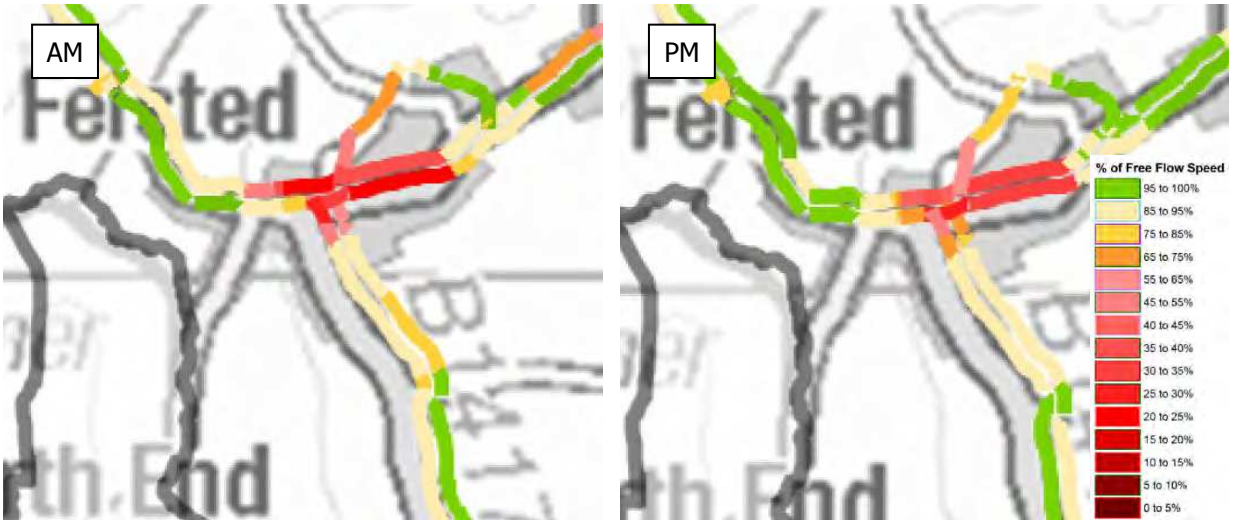
Newport

3.4.25 The images below show TrafficMaster results for Newport village on the B1383 to the south of Saffron Walden.

3.4.26 Newport village is linear in character with frontage development on either side of the B1383 which runs through the centre of the village. The village has a major secondary school to the north, long sections of high street with no parking restrictions on the western side, pedestrian crossings, and a popular baker's shop which elicits significant short term on-street parking demand, particularly during the AM peak. There is also demand from school children crossing the nearby zebra crossing to call into the bakery on their way to school from the rail station. Reductions in peak period traffic speeds within the village are therefore considered most likely to be due to these general activities rather than as a result of poor performance of specific junctions.

Felsted

3.4.27 The TrafficMaster data identifies lower peak period vehicle speeds through the village of Felsted. The situation in Felsted is similar to Newport village with a main through-route and numerous frontage activities, on-street parking and bus stops. The operation of the junction between the B1417 Chelmsford Road and Station Road in the centre of the village may also contribute towards the lower vehicle speeds recorded in the TrafficMaster data.



Stansted Mountfitchet

3.4.28 Within Stansted Mountfitchet there are several issues that contribute towards the peak period delays that are indicated on the TrafficMaster extracts on the following page. These include:

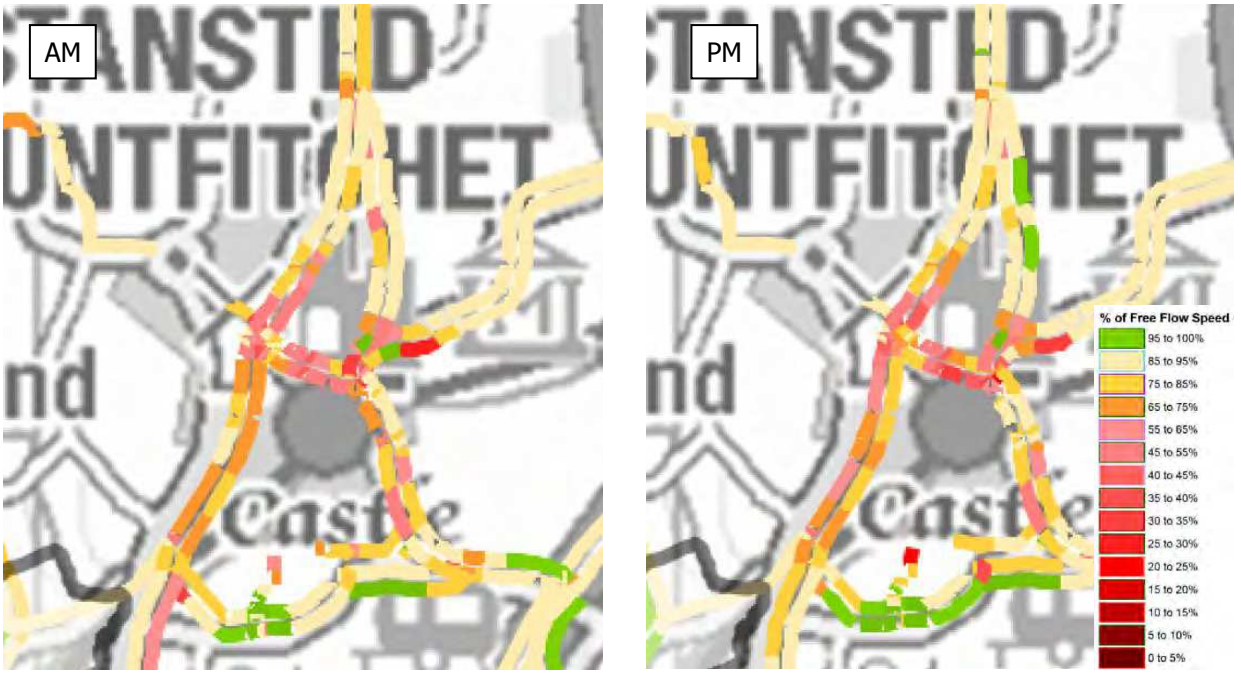
- The B1383 Cambridge Road has no parking restrictions north of its junction with B1051 Chapel Hill, resulting in significant demand for short term on-street parking to visit the two local convenience stores in this location.
- A signal controlled pedestrian crossing which would be called more frequently during the morning peak as residents travel between their homes and the two primary schools in the village.

3.4.29 These factors significantly reduce vehicle speeds through the village as parking on both sides of the road quite often means that two large oncoming vehicles cannot pass each other.

3.4.30 On B1051 Chapel Hill there is on-street resident's parking on the southern boundary which restricts the operation of the link to one-way traffic by virtue of the resulting narrowing of the carriageway. The location of the rail station at the bottom of Chapel Hill also exacerbates the congestion in this area, particularly at the B1051 Chapel Hill/Lower Street/Church Road/car park access/Station Road junction.

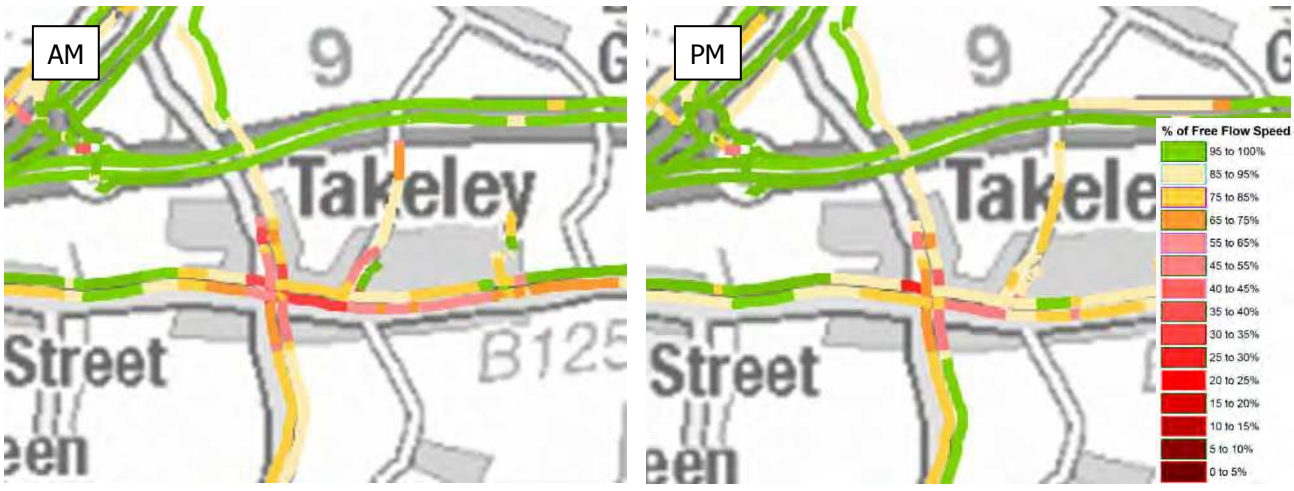
3.4.31 The junctions that experience peak period delays are:

- B1051 Grove Hill signals
- B1051 Chapel Hill/Lower Street/Church Road/car park/Station Road junction
- B1051/Lower Street
- B1383 Silver Street/B1051 Chapel Hill



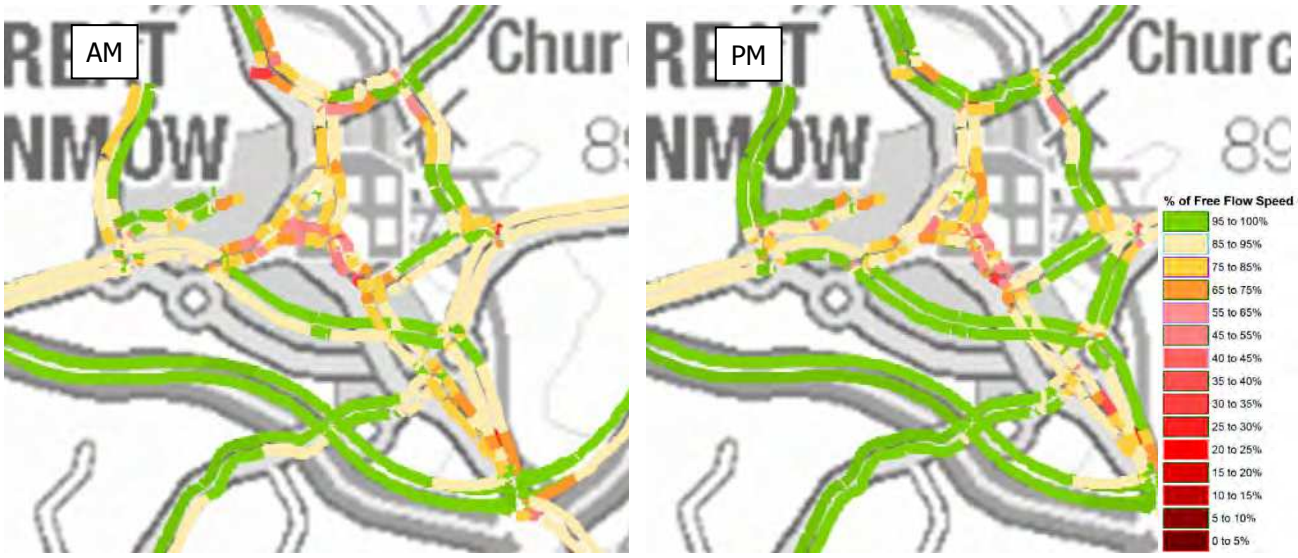
Takeley

3.4.32 Within Takeley village peak period delays occur at the Four Ashes signal controlled crossroads junction.



Great Dunmow

3.4.33 In Great Dunmow the delays are typical for a high street with mixed shopping and parking opportunities, with additional AM congestion in the vicinity of the secondary school to the north of the town. To the south of the town, the Hoblongs junction of the B184 Chelmsford Road with the B1256 experiences significant delays for southbound traffic during the PM peak. Committed development within the town has a planning condition to improve the operation of this junction.



3.4.1 Based on the TrafficMaster congestion plots, discussions with Essex County Council and Highways England the key junctions identified within the study area that currently experience congestion during peak periods are summarised in **Table 8**.

Table 8 – Junctions that Already Experience Peak Period Congestion

Junction Location	Local Authority
M11 J9 at Duxford	South Cambridgeshire
A505/A1301 'McDonalds' roundabout east of Duxford	South Cambridgeshire
M11 Junction 8	Uttlesford
A120/A1250 Roundabout immediately west of M11J8	Uttlesford
A120/B1383 Roundabout north of Bishop's Stortford	Uttlesford
A120(T)/B1018 roundabout junction at Braintree (Galley's Corner)	Braintree
A120(T)/A131 roundabout (Mark's Farm) at Braintree	Braintree
A131/B1008 Essex Regiment Way Roundabout	Chelmsford

3.5 CAR PARKING

3.5.1 Parking in Uttlesford is run by the North Essex Parking Partnership, which is a partnership between Essex County Council and 12 district/borough councils. The North Partnership is led by Colchester Council which co-ordinates the on-street and off-street civil parking enforcement process together with the administration of parking restrictions and penalties.

3.5.2 Uttlesford District Council provides a total of 12 secure public car parks within the district which are summarised in **Table 9** below. These provide parking space for approximately 1,278 cars of which there are c.539 spaces for short stay visitors and c.739 spaces for long stay commuters. On-street pay and display parking is also available in Saffron Walden. Coach parking is available in Saffron Walden and Stansted Mountfitchet.

Table 9 – Council Provided Car Parking within Uttlesford

Name	Type	Maximum Stay	Spaces
Saffron Walden			
Castle Street	On-Street Pay & Display	1 Hour	-
Abbey Lane	On-Street Pay & Display	1 Hour	-
Museum Street	On-Street Pay & Display	1 Hour	-
East Street	On-Street Pay & Display	1 Hour	-
Gold Street	On-Street Pay & Display	1 Hour	-
Fairycroft Road	Short Stay	3 Hours	294
Rose & Crown	Short Stay	2 Hours	27
The Common	Short Stay	3 Hours	109
Swan Meadow	Long Stay	-	394
Swam Meadow (Coach Park)	Long Stay	-	6
Great Dunmow			
Angel Lane	Short Stay	3 Hours	31
Chequers Lane	Short Stay	3 Hours	67
New Street	Short Stay	3 Hours	11
White Street	Long Stay	-	172
Stansted Mountfitchet			
Crafton Green	Long Stay	-	52
Lower Street	Long Stay	-	109
Lower Street (Coach Park)	Long Stay	-	6

3.5.3 Car parking charges typically start at £0.40 for up to 30 minutes, and range to £4.70 for up to 10 hours parking. Coach parking is £6.00 per day. Parking is free in all of the above car parks on Bank Holidays.

3.5.4 Restricted free parking is also provided by Waitrose for their patrons within Saffron Walden town centre.

3.6 BUS TRANSPORT

3.6.1 Bus services within the district are shown in **Appendix D** and are summarised in **Table 10** below, (as of April 2016).

Table 10 – Bus Services within Uttlesford

Route Number	From	To	Days	Approx' Frequency		Operator
				Peak	Off-Peak	
590	Audley End	Saffron Walden	Mon - Fri	Daily	Half Hour	Viceroy Coaches of Essex
5	Bishop's Stortford	Stansted Airport	Mon - Sat	Hourly	Hourly	Stephenson's of Essex
301	Bishop's Stortford	Saffron Walden	Mon - Sat	Hourly	Hourly	Stephenson's of Essex
7/7A	Bishop's Stortford	Stansted Airport	Mon - Sat	Hourly	Hourly	ACME bus company
309	Bishop's Stortford	Stansted Airport	Mon - Sun	No Service	Every 3 hours	Arriva Harlow
C	Bishop's Stortford	High Easter	Schooldays	No Service	Daily	JW Lodge & Sons Ltd
D	Bishop's Stortford	High Easter	Schooldays	No Service	Daily	JW Lodge & Sons Ltd
S	Bishop's Stortford	High Easter	Schooldays	No Service	Daily	JW Lodge & Sons Ltd
SB14	Bishop's Stortford	Clavering	Mon & Thur	No Service	Daily	Viceroy of Essex Ltd
L	Broomfield	Stagden Cross	Schooldays	No Service	Daily	JW Lodge & Sons Ltd
16	Chelmsford	Wethersfield	Mon - Sat	No Service	Three times daily	Stephenson's of Essex
542	Chelmsford	Great Dunmow	Schooldays	No Service	Daily	First in Essex
SB12	Farnham	Bishop's Stortford	Thursday	No Service	Daily	Uttlesford Community Transport
42A	Galleywood	Stansted Airport	Mon - Sun	Hourly	Hourly	First in Essex
17/18	Great Dunmow	Chelmsford	Tue, Thur, Fri, Sat	No Service	Daily	JW Lodge & Sons Ltd
414	Great Dunmow	Saffron Walden	Schooldays	Daily	No service	Stephenson's of Essex
313/313A	Great Dunmow	Saffron Walden	Mon - Sat	No Service	Three times daily	Stephenson's of Essex
347	Hatfield Broad Oak	Harlow	Tue, Thur, Sat	Daily	Twice daily	Epping Forest Community
59	Haverhill	Saffron Walden/Newport	Mon - Fri	Daily	Every 2 hours	Stephenson's of Essex
60	Haverhill	Saffron Walden	Mon - Sat	Daily	Three times daily	Stephenson's of Essex
319	High Roding	Bishop's Stortford	Schooldays	Daily	No service	JW Lodge & Sons Ltd
29	Linton	Saffron Walden	Tuesday	Daily	Daily	Viceroy of Essex Ltd
17	Little Sampford	Saffron Walden	Tues & Fri	No service	Daily	Community Link
446	Manuden	Saffron Walden	Schooldays	Daily	No service	Panther Travel
DaRT1	W Uttlesford	W Uttlesford	Mon - Sat	Demand Responsive		Arrows Taxis (Essex) Ltd
DaRT2	N Uttlesford / W Braintree	N Uttlesford / W Braintree	Mon - Sat	Demand Responsive		Arrows Taxis (Essex) Ltd
118	Newport	Great Yeldham	Schooldays	No Service	Daily	Hedingham Omnibuses
417	Newport	Rayne	Schooldays	No Service	Daily	Stephenson's of Essex
418	Newport	Great Saling	Schooldays	No Service	Daily	Stephenson's of Essex
451	Newport	Great Dunmow	Schooldays	No Service	Daily	Stephenson's of Essex
446B	Newport	Clavering	Schooldays	No Service	Daily	Panther Travel

322	Old Harlow	Saffron Walden	Schooldays	Daily	No service	Regal busways
146	Ongar	Hatfield Heath	Tues & Thur	No Service	Daily	Regal Busways
1	Saffron Walden	Takeley	Schooldays	No Service	Daily	Acme Transport Services
11	Saffron Walden	Chrishall	Schooldays	No Service	Daily	Acme Transport Services
34	Saffron Walden	Town service	Mon - Sat	Daily	Hourly	Viceroy of Essex Ltd
132	Saffron Walden	Cambridge	Sunday & BH	Daily	Every 2 hours	C Myall & Son
301	Saffron Walden	Bishop's Stortford	Mon - Sat	Hourly	Hourly	Stephenson's of Essex
444	Saffron Walden	Barley	Schooldays	No Service	Daily	Viceroy Coaches of Essex
445	Saffron Walden	Chrishall	Schooldays	No Service	Daily	Viceroy Coaches of Essex
Citi 7	Saffron Walden	Cambridge	Mon - Sat	Hourly	Hourly	Stagecoach in Cambridge
SB13	Saffron Walden Shopper	Chrishall	Tues & Fri	No Service	Daily	Viceroy of Essex Ltd
P	Sawbridgeworth	High Easter	Schooldays	No Service	Daily	JW Lodge & Sons Ltd
6	Stansted Airport	Saffron Walden	Mon - Sat	Hourly	Hourly	Stephenson's of Essex
133	Stansted Airport	Braintree	Sunday & BH	Hourly	Hourly	TGM Group T/A TGM Stansted
508	Stansted Airport	Harlow	Mon - Sat	Half hour	Half hour	sxConnect
509	Stansted Airport	Harlow	Mon - Sun	Half hour	Half hour	sxConnect
510	Stansted Airport	Harlow	Mon - Sun	Half hour	Half hour	sxConnect
AX1	Stansted Airport	Canvey	Mon - Sun	Hourly	Hourly	CC Cabs
Shuttle	Stansted Airport	Hilton Hotel	Mon - Sun	Half hour	Half hour	Stansted Airport
Shuttle	Stansted Airport	Holiday Inn	Mon - Sun	Half hour	Half hour	Stansted Airport
X10	Stansted Airport	Chelmsford	Mon - Sun	Hourly	Hourly	First in Essex
X30	Stansted Airport	Chelmsford	Mon - Sun	Hourly	Hourly	First in Essex
M1	Stansted Mountfitchet	High Easter	Schooldays	No Service	Daily	JW Lodge & Sons Ltd
318	Thaxted	Bishop's Stortford	Thursday	Daily	No service	Viceroy of Essex Ltd
419	Wethersfield	Newport	Schooldays	Daily	No service	Stephenson's of Essex
306	WickenBonhunt	Bishop's Stortford	Schooldays	Daily	No service	ACME bus company
453	Wimbish	Newport	Schooldays	Daily	No service	Stephenson's of Essex

Note: Services ordered by journey origin

3.6.2 Bus services fall into two distinct groups, commercial and financially supported. Bus services that run within the district with financial support from ECC primarily provide services between the main settlements and villages within the district and to/from external destinations. Commercial services are focussed on providing school services, connections to Stansted Airport and a handful of services to/from locations outside of the district.

3.6.3 Some local bus services in the southern part of the district benefit from additional services serving Stansted Airport and adjacent employment areas, meaning that they run at a higher frequency and earlier and later than otherwise might be the case.

3.6.4 Stansted Airport is also served by regular coach services that provide links to London railway stations and the cities of Cambridge, Colchester, Ipswich, Norwich, Oxford, and destinations in the Midlands and the North. These are summarised as follows:

Table 11 – Coach Services serving Stansted Airport

Route Number	From	To	Approx' Daily Frequency	Daily Services	Operator
A6	London Stansted Airport	London Paddington	up to 15 mins	43	National Express
A7	London Stansted Airport	London Victoria	up to 15 mins	72	National Express
A8	London Stansted Airport	London Liverpool St	up to 20 mins	50	National Express
A9	London Stansted Airport	London Stratford	up to 30 mins	45	National Express
A50	London Stansted Airport	London Victoria	up to 30 mins	40	Stansted Citylink
767	London Stansted Airport	London Kings Cross	up to 30 mins	40	Stansted Citylink
A2	London Stansted Airport	London Bridge & Stratford	up to 30 mins	50	Airport Bus Express
A1	London Stansted Airport	London Victoria	up to 30 mins	50	Airport Bus Express
727	London Stansted Airport	Cambridge	every 2 hours	9	National Express
727	London Stansted Airport	Thetford and Norwich	every 2 hours	10	National Express
737	London Stansted Airport	Oxford	every 2 hours	8	National Express
349/350	London Stansted Airport	Nottingham, Leicester & Liverpool	Twice daily	Twice daily	National Express
777	London Stansted Airport	Birmingham	up to 2 hourly	11	National Express
727	London Stansted Airport	Gatwick and Brighton	up to 2 hourly	11	National Express
727/250	Heathrow	London Stansted Airport	every 2 hours	15	National Express
250	London Stansted Airport	Ipswich	every 2 hours	10	National Express
250	London Stansted Airport	Colchester	every 2 hours	11	National Express
777	Coventry	London Stansted Airport	every 2 hours	11	National Express
727/250	Luton Airport	London Stansted Airport	every hour	20	National Express

Bus Stations

3.6.5 Stansted Airport is the only bus/coach station within the district and provides 39 bus stands immediately adjacent to the airport terminal building.

Accessibility to Services and Key Destinations

3.6.6 **Figure 9** shows the location of every bus stop within the study area with a 400m buffer zone (direct line distances) surrounding each stop to provide an indication of accessibility to bus services (representing a typical 5 minute walking distance).

3.6.7 It can be seen that there are clear bus service corridors which follow major transport routes and that existing bus services provide good coverage within the district, with all primary populated areas having a majority of households within 400m of a bus stop.

3.6.8 Within the district the areas where bus service coverage is at its highest include Saffron Walden, Great Dunmow, Stansted Airport and the B1383 corridor between Saffron Walden and Bishop's Stortford. It is also clear from **Figure 9** that there are areas, mainly less populated rural areas, where walking distances to bus services are much greater.

Park & Ride

3.6.9 Park & Ride facilities are car parks with connections to public transport that allow commuters and others wishing to travel into city centres to leave their personal vehicles in a car park and transfer to a bus or rail system (rapid transit, light rail or commuter rail) for the rest of their journey. Park & Ride facilities are generally located on the outer edges of large cities and their usual aim is to remove car trips from urban areas; reduce traffic congestion and reduce the need for city centre car parks where there are competing demands for land use.

3.6.10 The majority of Park & Ride sites in the UK rely on bus-based onward transport to and from the city or town centre, but there are now a few using light-rail (e.g. Nottingham and Sheffield). Some key pointers to successful Park & Ride schemes are:

- Park & Ride sites located conveniently in relation to main arterial routes.
- Shortage of low-cost easy-access city or town centre parking.
- Frequent dedicated public transport link to town or city centre.
- Shorter journey time by public transport than by car.
- Competitive journey pricing.

3.6.11 "Parkway" stations are those that provide Park and Rail travel facilities, and are generally located outside of main urban areas such as Bristol; Tiverton; Didcot; Luton Airport; East Midlands; Liverpool South; Warwick and Southampton. Some (as in the case of Luton; East Midlands and Southampton) also serve airports.

Park & Ride in Uttlesford

3.6.12 There are no existing Park & Ride facilities within Uttlesford district. However, Park and Ride sites are located just outside of the study area in South Cambridgeshire (Trumpington and Babraham Road Park & Ride sites). These provide approximately 10 minute frequency bus services into Cambridge in the peak periods Monday to Saturday and approximately 15 minute frequency on Sundays and cost £3 for an adult return ticket, plus £1 per vehicle parking fee.

3.6.13 There is also a Park and Ride site just outside of the study area in Chelmsford (Chelmer Valley Park and Ride) that provides approximately 10 minute frequency bus services into Chelmsford Monday to Saturday and costs £3 for an adult return ticket, plus £1 per vehicle parking fee. A new shuttle bus service has also recently been provided between the Park and Ride site and Broomfield Hospital that runs approximately every 30 minutes Monday to Friday and costs £3 for a return ticket, plus £1 per vehicle parking fee. The locations of these Park and Ride sites are shown on **Figure 10**.

3.6.14 There are no Parkway Stations within Uttlesford however Whittlesford Parkway station is situated on the West Anglia Main Line in the village of Whittlesford which is located within South Cambridgeshire a short distance to the east of M11J10 at Duxford.

3.7 PASSENGER RAIL

3.7.1 **Figure 10** also shows the rail network within the study area. Uttlesford is served by the West Anglia Main Line from London Liverpool Street to Cambridge which is an electrified line that runs south to north through the western side of the district (parallel with the M11) with a dedicated branch line serving Stansted Airport.

3.7.2 Rail stations within the district are situated at Great Chesterford, Audley End for Saffron Walden (at Wendens Ambo), Newport, Elsenham, Stansted Mountfitchet and Stansted Airport. These stations are managed by Abellio Greater Anglia. A summary of station facilities is presented in **Table 12**.

Table 12 – Rail Station Facilities within Uttlesford

Station	Days Open			Staffing		Customer Help Points	Ticket Machines	CCTV	Toilets	Seated Area	Wifi	Shops	Step free access	Wheelchairs available
	Mon-Fri	Sat	Sun	Part Time	Full Time									
Great Chesterford	✓	X	X	✓	X	✓	✓	✓	X	✓	✓	X	X	X
Audley End	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓
Newport	✓	X	X	✓	X	✓	✓	✓	X	✓	✓	X	X	X
Elsenham	✓	X	X	✓	X	X	✓	✓	X	✓	✓	X	✓	X
Stansted Mountfitchet	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	X	X	X
Stansted Airport	✓	✓	✓	X	✓	X	✓	✓	✓	✓	✓	✓	✓	X

3.7.3 Rail services from London Liverpool Street to Cambridge, Hertford East and Stansted Airport are operated by Abellio Greater Anglia. Express services from London Liverpool Street to Stansted Airport are operated by Stansted Express (part of Abellio Greater Anglia). Services from Stansted Airport to Cambridge and onward to Birmingham New Street (via Peterborough) are operated by CrossCountry. Recent changes to rail services are discussed further in Section 4 (see paragraph 4.3.3).

3.7.4 Network Rail classifies the West Anglia Main Line between London Liverpool Street and Cambridge as two routes: the 'D.01 Bethnal Green – Stansted Airport' and the 'D.05 Stansted – Ely' routes (source: Network Rail – Route Specifications: Anglia 2015). Both routes are 25kV AC (overhead) electrified along their entire lengths with maximum permitted line speeds of 90mph.

3.7.5 For the 'D.01 Bethnal Green – Stansted Airport' route typical journey times between London Liverpool Street and Stansted Airport/Stansted Mountfitchet are between 45 to 50 minutes. There are four peak and four off-peak trains per hour between Stansted Airport and London Liverpool Street.

3.7.6 For the 'D.05 Stansted – Ely' route typical journey times between London Liverpool Street and Cambridge are approximately 80 minutes with three peak and two off-peak trains per hour. Most services to/from London stop at all stations within Uttlesford with train services between Cambridge and Stansted Airport just stopping at Audley End and the airport.

3.7.7 The majority of the West Anglia Main Line is twin track and all stations within Uttlesford have two platforms except Stansted Airport station which has three platforms with capacity of up to 16 cars. At Elsenham station there are staggered platforms either side of a gated level crossing. Stansted Mountfitchet and Audley End stations have two 12-car platforms, all other station platforms within Uttlesford can accommodate up to eight-car train lengths.

3.7.8 There are 17 level crossings within Uttlesford of which three are controlled crossings on the public highway network and the remaining 14 are public footpath or private access road crossings. The three controlled crossings on the public highway are:

- Ikleton Road Level Crossing – Public road(Ikleton Road) at Great Chesterford
- Trees Level Crossing – Public road (Rookery Lane), Wendens Ambo
- Elsenham – Public road (Old Mead Road/Station Road), Elsenham

3.7.9 Network Rail consulted on the potential closure of nine level crossings in June 2016 as part of a national programme of closures which seeks to improve safety on the railway. The nine crossings being considered for closure were all footpath or private road crossings and were; Fullers End, Elsenham Emergency Hut, Ugley Lane, Henham, Elephant, Dixies, Windmills, Wallaces and Littlebury Gate House. There are no proposals to close the three existing level crossings on the public highway.

Accessibility to Services & Key Destinations

3.7.10 **Figure 9** indicates 800m and 3.2km (straight line) catchment distances to all existing rail stations within the district. These represent the typical distances covered in 10 minutes walking or cycling respectively.

3.7.11 As can be seen from the figure a proportion of the western side of the district has reasonable access to passenger rail, including the majority of the urban areas of Great Chesterford, Wendens Ambo, Newport, Stansted Mountfitchet and Elsenham. Parts of Saffron Walden are also within cycle distance of Audley End railway station. However, the remainder of the district, including the eastern half of Saffron Walden and Great Dunmow, falls well outside of reasonable walking and cycling distance to the nearest railway station.

Rail Demand

3.7.12 The Office for Rail and Road (ORR) provides estimates of the total numbers of people entering, exiting and changing at each station in Great Britain based on ticket sales data recorded in rail industry systems. Data for the most recently available two year periods for the stations within Uttlesford is presented in **Table 13**.

Table 13 – Rail Station Usage in Uttlesford

Station	Station Entries/Exits			
	2014-2015	2013-2014	Difference	
Great Chesterford	111,046	106,940	4,106	4%
Audley End	878,746	838,804	39,942	5%
Newport (Essex)	192,228	195,246	-3,018[4]	-2%
Elsenham	194,738	182,252	12,486	7%
Stansted Mountfitchet	526,590	509,178	17,412	3%
Stansted Airport	4,501,996	3,686,010	815,986	22%

3.7.13 As can be seen all stations except Newport experienced an increase in passenger numbers between 2013 and 2015 with the largest increase observed at Stansted Airport. Stansted Airport has more rail users than all the other stations combined.

Anglia Route Study – March 2016

3.7.14 The Anglia Route Study was published in March 2016 and seeks to establish the required capacity and capability of the railway to meet anticipated future demands. The study acknowledges that the West Anglia Main Line carries busy commuter and leisure traffic from Stansted Airport and Cambridge into London. It also has the potential for significant housing and employment growth and connects world-leading centres for biosciences and technology.

3.7.15 The study states that "*The East of England has the fastest growth in employment in England outside London and contributes significantly to the UK economy. The forecast growth in passenger demand is significant across all main service groups in the region*".

[4] No explanation for reduction provided in ORR data

3.7.16 The study identifies an increase in morning peak passenger demand into London on the West Anglia Main Line of 18% (2013 to 2023) and 39% (2013 to 2043). Freight traffic is also anticipated to increase significantly across the Anglia region particularly with regard to trains to/from Felixstowe and London Gateway Ports however this has little effect on the West Anglia Main Line through Uttlesford which is an 'irregular freight path' with less than hourly freight train movements anticipated by 2023.

3.7.17 The study acknowledges that:

> "*Given the size and strategic importance of Stansted and Cambridge as travel and employment centres, the service to and from London is relatively poor; the Route Study investigates how to improve the services. Rail services to Stansted Airport are also not well matched with the times when air passengers are most likely to travel.*"

> "*Stansted Airport is a key destination on the West Anglia route which has seen large growth and is predicted to continue to grow. In 2014, passenger volumes at the airport increased by 12 per cent from 17.8 million to 20.0 million, with forecasts showing Stansted reaching its planning cap of 35mppa in around the next ten years*".

3.7.18 Overall there is expected to be a capacity gap of approximately 1,000 passengers on the Cambridge and Stansted Airport services into London Liverpool Street in the AM peak by 2023 and a gap of 2,100 passengers by 2043.

3.7.19 To support the forecast demand the study identifies that capacity can be increased through train lengthening. In the longer term the study identifies that a significant intervention such as Crossrail 2 will be required to meet connectivity and capacity outputs, together with additional track capacity (i.e. four tracks), additional platform capacity and additional services on the West Anglia Main Line corridor.

3.7.20 The provision of four tracks on the corridor would also improve journey times by enabling the segregation of fast and stopping services. In the shorter term, the study identifies that potential improvements to off-peak journey times should be achievable through; new rolling stock, line speed improvements and calling pattern amendments. No improvements to current journey times in the peak periods can be made due to a combination of capacity constraints and the mix of services on the route.

Braintree Branch line – Cressing loop

3.7.21 The Braintree Branch Line is the rail line that spurs from the Great Eastern Main Line at Witham and travels northwest to Braintree. It is a single track which means that trains are currently unable to pass thereby limiting its capacity for passenger rail services.

3.7.22 There have been long standing aspirations for a passing loop to be provided on the branch line at Cressing to allow two trains to pass thereby enabling a doubling of the number of trains travelling between Braintree and London Liverpool Street.

3.7.23 As part of their long term planning Network Rail has accepted the need for the 'Cressing Loop' to increase passenger service frequency between Braintree and Witham (the nearest four track railway) and provide up to two trains per hour. Although not identified for delivery until after Control Period 6 (i.e. after 2024) there may be potential to bring the works forward.

3.7.24 A further passing loop north of Witham Station has also been identified for delivery during Control Period 6 to help increase capacity and improve journey times on the Great Eastern Main Line.

3.8 AIR TRAVEL

3.8.1 London Stansted Airport is situated within the district (See **Figure 10** for location), just northeast of the Hertfordshire town of Bishop's Stortford. The airport is owned and operated by the Manchester Airports Group (MAG). Stansted is a base for a number of major European low-cost carriers and handles passenger and cargo flights serving around 160 destinations across 30 countries. In 2015 it was the fourth busiest airport in the United Kingdom after Heathrow, Gatwick and Manchester.

3.8.2 The airport has a single runway, one main passenger terminal and three satellite passenger terminals. There are numerous car parks and hotels available on the site and the airport has its own railway station situated in the main terminal building directly below the concourse.

3.8.3 The airport has a current throughput of about 23.6 million passengers per annum (mppa) (at June 2016) and the highest volume of dedicated freight traffic among the London airports (currently handling around 240,000 tonnes of air freight and mail per annum).

3.8.4 The airport has planning permission to expand to 35mppa and 243,500 passenger air transport movements and 20,500 cargo air transport movements per annum. The airport is forecast to

be approaching its current planning capacity of 35mppa within the next 10 years. MAG anticipate jobs at the airport increasing to 18,000 when they reach 35mppa.

3.8.5 Stansted is the largest single-site employer in the east of England employing over 10,000 people across 190 companies on the site. The airport is therefore an important contributor to the local economy and a major source of employment for residents within Uttlesford and the wider county.

3.9 CYCLING AND WALKING

Highway Cycle Network

3.9.1 As mentioned in Section 3.2, Uttlesford is a large rural district area with the key residential settlements being the market towns of Saffron Walden, Great Dunmow and the village of Stansted Mountfitchet. Due to the rural nature of the district, there is a significantly low level of utility cycle infrastructure present, with the major residential settlements within the district considered to have a difficult topography for cycling due to its 'hilly' nature.

3.9.2 Essex Highways produced a new cycling strategy for the district in the form of Uttlesford Cycling Strategy (2014) document. This document identified that the district has the highest level of car ownership within Essex. In addition, key local destinations within the district such as work places and other trip generating locations currently do not provide cycle infrastructure. Therefore, few residents of the district make utility cycle trips. However, it was noted that recreational cycling is relatively popular due to the attractive countryside and the relatively lightly trafficked nature of the rural highway network.

3.9.3 Uttlesford Cycling Strategy (2014) aims to promote the importance of cycling within the district and identify potential ways to increase cycling. With significant new developments planned within the district by 2031, it identifies that cycling infrastructure as well as providing key cycle routes should be incorporated into these planned developments for ease of access and allowing linked cycle trips within the district. The main focus of the cycle infrastructure improvements will be within the market towns of Saffron Walden and Great Dunmow and the village of Stansted Mountfitchet.

National Cycle Network

3.9.4 Existing cycle networks within the district are shown on **Figure 11**. National Cycle Network (NCN) route 11 and 16 as well as Regional route 50 all cross Uttlesford district. NCN route 11

is a 91-mile-long cycle route which runs in a north-south direction. NCN route 11 connects Harlow to the south, and Wigginhall St Germans, Norfolk to the north via Cambridge and Ely. NCN route 11 is still currently under development which will provide links from Harlow to Stansted Mountfitchet and Waterbeach to Wicken as well as a link to Saffron Walden. From Stansted Mountfitchet, NCN route 11 predominantly follows minor roads up until Whittlesford, from which it then becomes a traffic-free route into the south of Cambridge.

3.9.5 NCN route 16 is a 40-mile-long cycle route which is divided into two sections routeing in an east-west direction. The first section of NCN route 16 is approximately 34 miles long between Stansted and Great Totham. This section of NCN route 16 heads in a southeast direction on bridle paths from Birchanger near Stansted which then joins the Flitch Way (a traffic free disused railway path between Braintree and Bishop's Stortford) and ends in Braintree via Takeley and Great Dunmow. The second section of NCN route 16 is approximately 6 miles long located further to the south between Southend-on-Sea and Shoeburyness, routeing along the seafront of Westcliff-on-Sea.

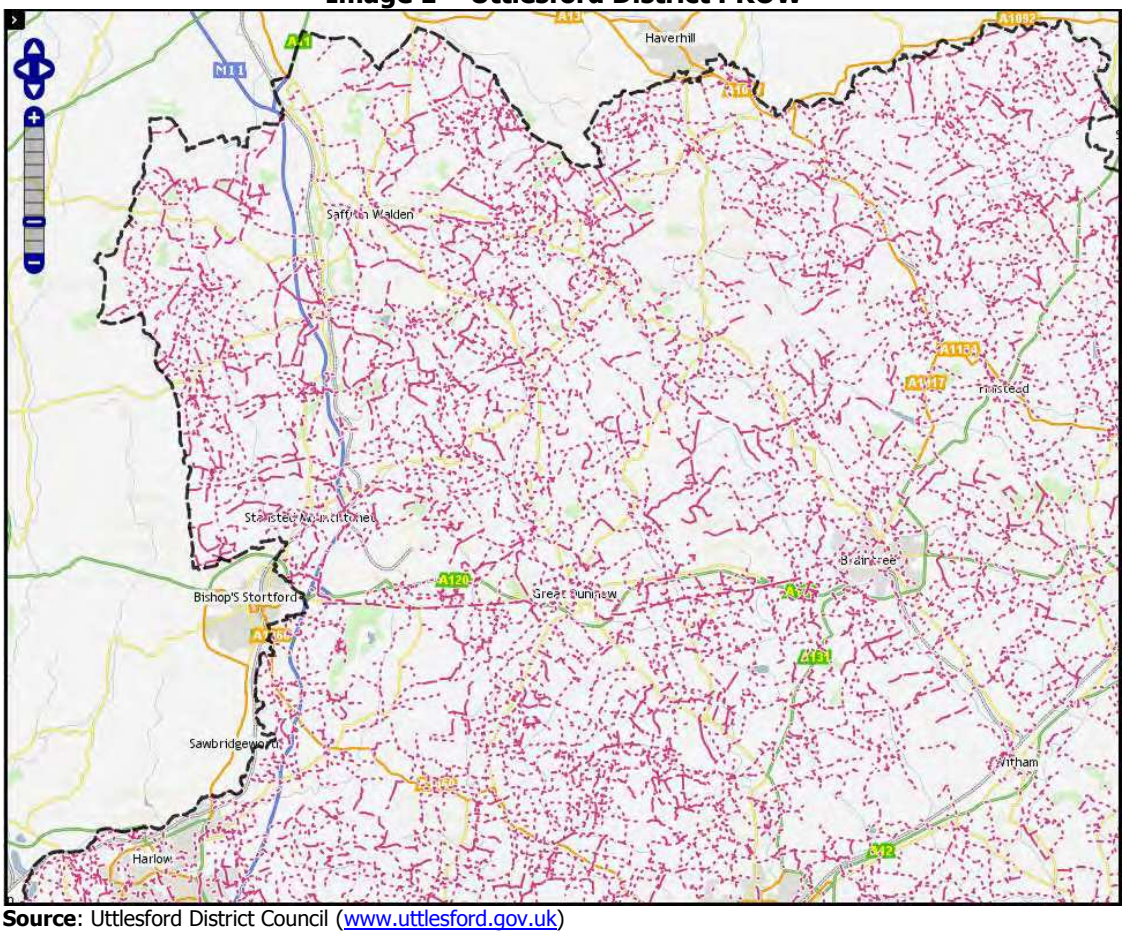
Regional Cycle Routes

3.9.6 Regional Route 50 is primarily an on-road cycle route following relatively lightly trafficked country roads. Regional route 50 links to NCN route 11 to the north at Quendon and NCN route 1 to the southeast at Ulting.

Public Rights of Way

3.9.7 **Image 1** on the following page shows an extract of the public rights of way (PROW) within Uttlesford district obtained from Uttlesford District Council's website (www.uttlesford.gov.uk). The PROW network is also shown on **Figure 11**. These show that there are a significant amount of interconnected PROWs including footpaths, bridleways, byways and restricted byways which reflects its rural nature and relatively low residential settlement areas.

Image 1 – Uttlesford District PROW



Source: Uttlesford District Council (www.uttlesford.gov.uk)

Footways

3.9.8 Due to the rural nature of the district, footways are generally not provided alongside carriageways outside of residential areas. The reasons for this are likely due to the low levels of footfall and the historic growth of vehicular traffic taking over the road space, particularly in rural areas. However, there is a good level of footway network provided with dedicated crossing points within all three major settlements within the district.

Patterns of Movement

3.9.9 Uttlesford has similar levels of walking to that of the rest of Essex but has lower levels of cycling to work than the Essex average; in fact the only districts in Essex with lower cycling levels are Brentwood and Epping Forest. This could be a characteristic of the lack of formal cycling facilities on the road network within Uttlesford, as well as the rural nature of the district which means cycle distances are often considerable. It's possibly also influenced by the local

hilly topography within the larger settlements. In total, 11% of trips to work are via active modes, with 91% of these being on foot.

3.9.10 Cycling and walking is particularly prevalent around Saffron Walden with its wards having, on average, 21% of trips to work being undertaken by active modes. It is notable that the level of cycling in Saffron Walden does not deviate much from the district as a whole; it is predominantly walking that increases the active travel mode share in this area.

3.9.11 In other parts of the district, there are fluctuations. Hatfield Heath, towards the southwest of the district has a total active mode share of 8%. In Clavering, the active mode share drops to 5%.

3.9.12 The Department for Transport collects vehicular flow data at various locations on the 'A' road network around the country. These counts record all vehicles using the carriageway, including cyclists. There are however, few classified 'A' roads within Uttlesford district where cycling is permitted.

3.9.13 Traffic counts undertaken by the Department for Transport within Essex at sites where cycling is permitted demonstrate that the volume of cycles counted at the respective count sites has remained reasonably constant from 2000 to 2015. In 2000, 5,637 cycle miles were recorded across 243 count points. In 2015, 4,982 cycle-miles were recorded across 249 count points throughout Essex.

3.9.14 The only traffic count site that indicates a "noteworthy number of cyclists" is on the A1250 Dunmow Road on the outskirts of Bishop's Stortford, where 68 cyclists were recorded in 2012 over 12 hours.

3.9.15 By looking at these various sets of data, it is concluded that in comparison to Essex and England Uttlesford has average levels of walking but a lower level of cycle use. Levels of travel by these modes have generally remained constant within the past decade.

3.9.16 There may be scope for localised increases in cycling and walking if comprehensive sustainable transport measures were implemented as part of future development, particularly in towns like Saffron Walden. This is likely to be especially relevant to cycling, given the fact that the cycling mode share is currently not significantly greater within urban centres in Uttlesford. Opportunities may therefore exist to encourage greater cycle use within the urban centres

where key amenities are generally concentrated in similar areas and therefore trips are shorter and conducive to travel by bike.

Network Gaps/Deficiencies

3.9.17 The district is mainly rural, with footways generally not provided alongside carriageways outside of urban areas. In general, there is a well-connected walking network in the larger settlements. Walking mode share is reasonably high, and increases with density of local amenities, as could be expected.

3.9.18 There is a lack of dedicated cycling infrastructure in the district, including both 'town centre' cycling facilities and commuter routes. This is characteristic of the predominantly rural nature of the district.

3.9.19 Cycling and walking is promoted in Uttlesford through measures including various cycling maps, the Essex Cycling app and cycle training provided by the national cycling charity CTC as well as by the Department for Transport through the Bikeability program. From an initial desktop inspection, including a review of the Essex Highways Uttlesford Cycle Strategy 2014, it is clear that there are a number of key infrastructure requirements that would aid the creation of a core cycle network and encourage a higher cycling mode share.

3.9.20 Essex County Council has identified new on and off road cycle routes in the main Uttlesford towns and other key locations. The Uttlesford Cycling Strategy states that two schemes should be prioritised; the Wenden Road scheme and Audley End cycle parking; and Flitch Way route.

3.9.21 Overall, key potential network improvements include measures specific to Saffron Walden, Great Dunmow, Stansted Mountfitchet/Elsenham, and respective access improvements to Stansted Airport and Bishop's Stortford. The proposed measures range from localised measures, such as the provision of bicycle parking, to the creation of dedicated off-road routes, high quality signing along less trafficked on-road routes, convenient 'cut-through' routes or new segregated off-road cycle tracks.

3.9.22 Potential improvements for Saffron Walden include; creating a high quality cycle route to, and providing additional cycle parking at, Audley End Station; improving permeability through the town centre, upgrading cycle parking across the town; creating a safe cycle route to Great Chesterford and Audley End House; Providing a safe off-road route from Carver Barracks; and

improving and promoting use of the Byway along Whitechurch Lane. Together, these measures would form a core cycling network for Saffron Walden.

3.9.23 Infrastructure upgrades for Great Dunmow include resolving the gap in the Flitch Way around Great Dunmow, upgrading the Woodlands Park Access, providing priority to active modes on the High Street, constructing Chelmer Valley Leisure Route, increasing cycle parking through the town and providing a cycle link to Barston via the existing footway along Chelmsford Road.

3.9.24 Stansted Mountfitchet/Elsenham would benefit from improved cycling access to Stansted Mountfitchet Station, improved connectivity to Elsenham by reprioritising the existing footway to accommodate cycling, making M11J8 safer for pedestrians and cyclists, providing a footpath from Stansted Mountfitchet to Bishop's Stortford and providing cycle parking in key locations.

3.10 FREIGHT

Road Freight

3.10.1 Essex County Council applies a standard hierarchy of roads for freight movements. Heavy goods vehicles (HGV) are encouraged to use the highest category roads available and through traffic is not encouraged to use lower category roads. Roads forming the recommended network for freight through traffic movements include Motorways, Trunk Roads and County primary roads, which within Uttlesford are the M11 motorway and the A120(T).

3.10.2 In certain areas heavy goods vehicles are prohibited through the use of location specific or area-wide mandatory vehicle weight limits. All existing weight limits within the district are indicated on **Figure 12**.

3.10.3 **Figure 6** depicts the road network within the district with 2016 vehicle flows and percentage HGVs (2-way AADT) indicated. Observation of the flows and HGV percentages confirms that the main freight routes through the district are the M11 and the A120(T). This is as would be expected as these routes form part of the wider strategic highway network, providing links between the midlands and the north of the country, London and the southeast as well as sea ports on the south/south eastern coasts.

Rail Freight

3.10.4 Uttlesford district is served by the West Anglia Main Line from London Liverpool Street to Cambridge which is an electrified line that runs south to north through the western side of the district (parallel with the M11) with a dedicated branch line serving Stansted Airport.

3.10.5 The West Anglia Main Line accommodates rail freight as well as passenger train movements. Existing and forecast rail freight movements on the West Anglia Main Line have been taken from Network Rail's Freight Market Study report dated October 2013 and these are summarised below.

Table 14 – Rail Freight Use of the West Anglia Main Line

West Anglia Main Line Route Section	Current and Forecast Average Freight Trains (Paths per off-peak hour for all commodities, one direction)		
	2012	2033	2043
D.01 Bethnal Green – Stansted Airport	Up to 0.25	Up to 0.25	Up to 0.25
D.05 Stansted – Ely	Up to 0.25	Up to 0.25	Up to 0.25

3.10.6 As can be seen from the summary existing freight use of the West Anglia Main Line is low and no growth is forecast on this line.

Air Freight

3.10.7 London Stansted Airport offers air freight services. It currently handles around 240,000 tonnes of air freight and mail per annum. An extensive portfolio of cargo operators operate from the airport and provide connections with Asia, the Middle East, Africa, North and South America and major cities throughout Europe.

3.10.8 London Stansted Airport is the UK cargo hub for IAG Cargo (British Airways/Iberia) and FedEx, and also serves express carriers UPS & TNT as well as the Royal Mail. On a daily basis the airport handles more than 30 cargo only aircraft flights. Key features of the airports cargo capability include:

- 3,048m long runway
- Two dedicated cargo aprons with additional overflow options
- Able to handle multiple wide-body freighter aircraft simultaneously
- Able to handle outsize freight
- Less than one hour from the City of London

Water-Borne Freight

3.10.9 There are no navigable waterways within Uttlesford and therefore no opportunity exists for water-borne freight.

4 Committed Transport Infrastructure and Land-Use Developments

4.1 INTRODUCTION

4.1.1 For the purposes of this study committed infrastructure schemes have been assumed to be any proposed changes to existing transport infrastructure or transport services within the district where funding and/or delivery timescales have been confirmed.

4.1.2 Committed Infrastructure Schemes have been identified through a combination of discussion with Essex County Council, Highways England and online research. Committed land-use developments within the district and within adjacent authority areas have been identified through the preparation of an Uncertainty Log which has been produced in accordance with DfT Transport Analysis Guidance (TAG) Unit M4. This is discussed later in this chapter.

4.1.3 A summary of identified committed transport infrastructure schemes is as follows;

Rail Improvements:

- West Anglia Mainline - Cambridge to Stansted Improvements - Abellio recently secured new long-term franchise to operate services. Introducing new rolling stock to increase capacity of existing services into London. Limited additional services (although outside of peak periods), Wifi and customer service enhancements.
- Braintree Branch line – Cressing Loop - Network Rail has accepted the need for a passing loop at Cressing to allow two trains to pass on the single line thereby doubling service capacity between Braintree and London. Work is expected to commence during Control Period 6 (2019 to 2024). An additional passing loop north of Witham station is also included in Control Period 6 investment.

Walking and Cycling Improvements:

- Wenden Road cycle route scheme - Saffron Walden to Audley End station cycle route improvements were delivered in 2015.
- Flitch Way improvements – new walking and cycling connections planned south of Great Dunmow.
- M11 J8 – walking and cycling routes and crossing facilities to be incorporated as part of planned junction improvement scheme to improve connectivity for these modes.

Highway Improvements:

- Short to medium term improvement to increase traffic capacity at M11 Junction 8 developed by ECC. Scheme planned for joint funding by Highways England's Growth & Housing Fund and LEP. Preliminary scheme approved by Highways England for further detailed business case assessment.

4.2 BUS TRANSPORT

4.2.1 There are currently no outstanding major committed developments related to bus transport. Consideration of bus movements is inherent in highway upgrade schemes, which may result in some priority corridors and bus stop infrastructure in coming years, in tandem with major highway schemes.

4.2.2 Essex County Council commissioned a review of bus services in 2015 and 2016, the most recent stage of which was implemented in April 2016. The reviews incorporated a number of changes from conventional bus services to more cost-effective and tailored bus services, including using smaller buses, introducing three 'dial-a-ride' services and entering agreements with private bus operators, where beneficial. A community survey will be undertaken in Autumn 2016 regarding bus services across Essex, however it is not anticipated that any notable changes will be made to Uttlesford services, given the considerable recent changes over 2015 and 2016.

4.2.3 Essex County Council also has an annual capital budget allocation for small-scale infrastructure works. This funds minor infrastructure upgrades, such as bus stop upgrades. Funding is awarded on an annual basis.

4.3 PASSENGER RAIL

Short-Term

4.3.1 Network Rail's strategic planning is structured around a 5-year control period process. The current Control Period (CP5) covers 2014 to 2019 and schemes for implementation during CP5 are summarised in the Network Rail document 'CP5 Enhancements Delivery Plan (update March 2016)'.

4.3.2 This document identifies the following committed improvement works during CP5 that will benefit rail commuters on the West Anglia Main Line into London Liverpool Street:

- West Anglia Main Line Capacity Increase – this scheme is aimed at relieving overcrowding and at addressing the medium-term demand from employment and residential developments in the vicinity of Lea Bridge, Tottenham Hale, Northumberland Park and Angel Row stations with a view to achieving an additional two trains per hour in the AM peak between Stratford and Angel Road Stations. This is to be achieved through the provision of additional track between Coppermill Junction and Angel Road with associated signalling modifications, new platforms and access bridges at Tottenham Hale, Northumberland Park and Angel Row stations and closure of Northumberland Park level crossing.
- Anglia Traction Power Supply Upgrade – to provide enhancements to existing traction power infrastructure required to support the forecast increase in electrically operated rolling stock for CP5. This will help to support the two additional trains per hour between Stratford and Angel Road Stations in the AM peak hour mentioned above.

4.3.3 On the 10th August 2016 it was announced that Abellio East Anglia will run the East Anglia rail franchise which includes the West Anglia Main Line. Abellio East Anglia will oversee a £1.4 billion boost to rail services within the region including the provision of more than 1,040 new carriages. For the West Anglia Main Line serving Uttlesford this will result in the following benefits; new trains with free Wi-Fi from February 2019, one additional train per hour (off-peak) between London and Cambridge, one additional evening peak service between London and Ely, two new trains per hour between Stratford and Angel Road stations, improved journey times and improved customer service.

4.3.4 The announced improvements will therefore provide new train carriages and a small amount of additional capacity in the evening peak but will not fundamentally change the existing peak period services serving the district.

Long Term

4.3.5 Long term planning for the next control period (CP6) which covers 2019 – 2024 begins with the rail industry publishing its plan of investment options and priorities, the 'Initial Industry Plan', which is informed by various studies and strategies. The 'Anglia Route Study' discussed in Section 3.7 is one of the documents supporting the strategic planning of CP6 and this acknowledges that the West Anglia Main Line carries busy commuter and leisure traffic from Stansted Airport and Cambridge into London and has potential for significant additional demand due to proposals for major growth in housing and employment within the region.

4.3.6 Overall there is expected to be a capacity gap of approximately 1,000 passengers on the Cambridge and Stansted Airport services into London Liverpool Street in the AM peak by 2023 and a gap of 2,100 passengers by 2043.

4.3.7 To address this shortfall the study identifies that significant interventions such as the provision of additional track capacity (i.e. four tracks) and Crossrail 2 will be required by 2043 to meet connectivity and capacity outputs on this corridor. It notes there is an aspiration for Crossrail 2 to be operational by around 2030 and that the provision of Crossrail 2 would also support the delivery of additional track capacity (i.e. four tracks) on the West Anglia Main Line which would improve journey times by enabling the segregation of fast and stopping services. The study identifies that four-tracking the West Anglia Main Line in advance of Crossrail 2, with an explicit future commitment to Crossrail 2, could help to unlock significant housing and employment growth before 2030.

4.3.8 In the shorter term, the study identifies that potential improvements to off-peak journey times should be achievable through; rolling stock changes, line speed improvements and calling pattern amendments. No improvements to journey times in the peak periods can be made due to a combination of capacity constraints and the mix of services on the route.

4.3.9 In February 2015 the West Anglia Taskforce was announced by the Chancellor and the Mayor of London to work with the Department for Transport, Network Rail, Transport for London and LEPs to look at opportunities to improve rail connections to Stansted and Cambridge from London Liverpool Street and Stratford stations. In October 2016 the Taskforce published a report with a five point call for action:

- Cambridge in 60 minutes and Stansted in 40 minutes from London Liverpool Street
- Improving service levels to other communities along the route to support growth
- A new timetable by 2020 to take advantage of new, faster and longer trains
- Four-tracking the railway in the mid-2020s as a precursor to Crossrail 2 opening in 2033
- Progressing Crossrail 2 ahead of submitting a Hybrid Bill by 2019

4.3.10 The West Anglia Taskforce is calling for investment into a package of improvements that include two new rail tracks between London and Hertfordshire. They would provide an additional four trains per hour to some stops and significantly reduced journey times from Cambridge to London.

Level Crossing Closures

4.3.11 Network Rail has a general policy of seeking to eliminate risk which, as far as level crossings are concerned, is best achieved by seeking their removal where possible. As such Network Rail consulted in June 2016 on the potential closure of nine level crossings within Uttlesford District, as discussed in Section 3.7. The nine crossings being considered for closure are all footpath or private road crossings and are; Fullers End, Elsenham Emergency Hut, Ugley Lane, Henham, Elephant, Dixies, Windmills, Wallaces and Littlebury Gate House. There are no proposals to close existing level crossings on the public highway.

4.3.12 The proposed level crossing closures are not expected to have any effect on potential housing or employment development within the District and existing access routes will be protected through the provision of replacement crossing facilities, as appropriate.

4.4 WALKING AND CYCLING

4.4.1 Two schemes in the Uttlesford Cycling Strategy are noted for prioritisation, i.e. the Wenden Road cycle route scheme, including Audley End cycle parking, and the Flitch Way route.

4.4.2 One of these key schemes has recently been implemented. A cycling improvement scheme was put in place on Wenden Road, Saffron Walden to help provide a safe route for travel to the nearby Audley End Rail Station by cyclists. This was funded under the Government's Local Pinch Point fund, which was set up in 2012 to remove bottlenecks on the local highway network that impede growth by restricting the movement of goods and people.

4.4.3 The scheme encompasses reallocation of road-space from driving to cycling for the section of Wenden Road between the Abbey Farm access road and the Audley End Road junction, by making it one-way for cars in the direction towards Saffron Walden. The southern section of Wenden Road remains two-way to maintain property access, and is subject to traffic calming with the road narrowed in several places to slow down traffic and vehicles travelling southbound give way to oncoming traffic.

4.4.4 The Flitch Way is an east-west route that is predominantly off-road and follows the former Bishop's Stortford to Braintree railway line. Improvements focus on addressing the existing gap in the route to the south of Great Dunmow where the B1256 carriageway was built on the line of the former railway. Walkers and cyclists currently have to divert onto roads through the town at this point involving the negotiation of busy junctions and uncontrolled crossings.

4.4.5 It is anticipated that planned developments to the south of Great Dunmow will incorporate a new walking/cycling route into their layout to help address the gap.

4.4.6 Major cycle improvements will also take place at M11 Junction 8. The highway environment in the vicinity of M11 Junction 8 is currently not amenable for cyclists. Highways England has been given a remit to retrofit cycle infrastructure to its network where appropriate. Provision for non-motorised users will be made at this location in tandem with future junction improvements.

4.4.7 Other schemes specified in the Uttlesford Cycling Strategy will be progressed on an individual basis when funding or development opportunities arise. Similarly, the priority cycling projects specified in the Stansted Airport Sustainable Development Plan's Cycle Strategy, primarily aimed at improving safe routes to the west and north to Bishop's Stortford, Birchanger, Stansted Mountfitchet and Elsenham; and extending the Sawbridgeworth – Bishop's Stortford link; as well as providing storage, shower and secure cycle parking at key locations on site; will be implemented as funding becomes available.

4.5 HIGHWAYS

M11 Motorway

4.5.1 In the Autumn Statement of 2014 the Department for Transport announced a £1.5 billion investment in the roads of the east of England as part of the new Road Investment Strategy (RIS1). The investment covered 15 new schemes which included technology improvements to the M11 motorway between Junction 8 at Stansted Airport to Junction 14 (Girton Interchange in Cambridge).

4.5.2 The technology improvements are aimed at helping to deal with congestion and include emergency roadside telephones, signals on slip roads, Motorway Incident detection and automatic signalling, variable message signs, CCTV cameras and gantries. The works also include an upgrade to M11 Junction 7 to provide extra capacity.

4.5.3 The improvements will therefore not provide any additional traffic capacity directly, but may help to improve capacity indirectly through improved incident management. The works are planned to take place in three phases during the period covering 2015/16 to 2019/20.

M11 Junction 8

4.5.4 M11 Junction 8 serves as the main point of access to the strategic road network for the town of Bishop's Stortford and its surrounding area, as well as Stansted Airport. It also provides access to the A120, an east-west route connecting Standon at the most westerly point with Harwich on the east coast; and the B1256, which provides an alternative access to the strategic road network for Uttlesford District.

4.5.5 Junction 8 is a grade separated junction with the M11 passing beneath a large signal controlled roundabout. North and south facing slip roads connect the roundabout to the M11 and north-facing slip roads connect the M11 directly to the A120 to the east at Junction 8A, which also provides access to Stansted Airport.

4.5.6 Transport assessment work undertaken in connection with local development proposals (WSP Transport Assessment for the Bishop's Stortford North development, dated January 2013) has identified that the M11 Junction 8 roundabout is under MOVA control and currently operates satisfactorily during the AM and PM peaks although it is approaching capacity on some arms.

4.5.7 Growth is planned both in and around Bishop's Stortford (within East Hertfordshire District) and within Uttlesford district, in addition to potential expansion of Stansted Airport, which will lead to increased traffic demands at Junction 8.

4.5.8 Highways England has confirmed that funding is available to renew the existing carriageway markings at M11J8 that have worn away and that renewal of the road markings should be going ahead soon.

4.5.9 Short to medium-term proposals to increase capacity through the interchange have also been identified by Essex County Council and have recently been approved to proceed to the next stage of assessment for delivery via Highways England's Growth and Housing Fund (see copy letter in **Appendix E**). The next stage is preparation of a Business Case which Highways England will undertake in-house with inputs from Essex County Council. If successful the Growth and Housing Fund will meet £5m of the total scheme cost (currently estimated at c. £13m including 40% optimism bias/contingency). The balance will be funded by Essex County Council who have already made a submission to the SELEP for the balance of the cost. A start on site during the 2018/19 FY is anticipated. The proposals include modifications to the A120/A1250 roundabout immediately west of M11J8 which has direct impacts on M11J8 and

its improvement is integral to delivering additional capacity at M11J8. Preliminary plans depicting the proposed improvements works can be found in **Appendix F**.

4.5.10 Highways England and Essex County Council have indicated that longer-term significant improvements will be needed at Junction 8 to support any further expansion of Stansted Airport that might be permitted and growth identified by the West Essex/East Hertfordshire Housing Market Area. Highways England is developing the next round of Route Strategies, which will be a key building block in the Government's next Road Investment Strategy. Route Strategies bring together information from motorists, local communities, construction partners, environmental groups and across the business to help better understand the performance of the strategic road network and shape investment priorities to improve the service for road users and support a growing economy. The evidence collected and the indicative solutions identified, along with the outcomes of the strategic studies, will be the foundation of Highways England's first 'Strategic Road Network Initial Report' to be submitted to Government in 2017.

4.5.11 Through the Route Strategies Essex County Council, Uttlesford District Council and surrounding districts are committed to highlighting the need for investment in Junction 8.

M11 Junction 7 & 7A

4.5.12 M11 Junction 7 serves as the main point of access to the strategic road network for the town of Harlow and the surrounding areas. It also provides access to the A414 (a county principal road), which connects Chelmsford (to the east) and Hertford (to the west) and beyond; and the B1393, which forms a local link between the settlements of Epping and Harlow and provides access to the strategic road network for much of Epping Forest District

4.5.13 The M11 Junction 7 interchange is nearing capacity, which is constraining access for Harlow to and from the M11. This in turn is constraining Harlow town's growth opportunities. Highways England and Essex County Council are investigating solutions and are working together to develop improvements to Junction 7, and a proposal for a new Junction 7A. These solutions will deliver the best benefits within project constraints for Harlow district, and the surrounding districts, by enhancing access to the M11 and acting as an enabler for the housing and economic growth as set out in the 'Distribution of Objectively Assessed Need across the West Essex/East Hertfordshire Housing Market Area MoU', and in the emerging local plans of Harlow DC, Epping Forest DC, East Hertfordshire DC, and Uttlesford DC.

4.5.14 Highways England is developing the Road Investment Strategy Period 1 scheme: M11 Junction 7 upgrade – extra capacity on Junction 7 near Harlow, which aims to reduce the current congestion around the junction. Highways England is at the very early stages of developing these proposals and once they have been refined, the scheme will go out to public consultation. Works are expected to start by 2020.

4.5.15 Essex County Council are leading on proposals to create a new junction on the M11 (7A) to the east of Harlow that will enable housing and commercial development to take place within and around Harlow and relieve some of the pressure on the existing Junction 7 to the south. The preferred location for the junction and proposals for improving the link to Gilden Way were approved by Essex County Council cabinet members in December 2016 following a public consultation exercise. Funding is yet to be identified and all authorities have committed to promoting this scheme for funding by the future Road Investment Strategy programme.

4.5.16 Essex County Council and Highways England have formed the Essex Strategic Highway Programme Group that meets monthly and will provide guidance in helping the project teams to work collaboratively.

A120 Bishop's Stortford Bypass

4.5.17 A new sustainable urban extension called 'Bishop's Stortford North' is proposed to deliver up to 2,200 new dwellings and associated facilities on land to the north of Bishop's Stortford, within the A120 Bishop's Stortford bypass, north of the existing residential areas, between Hadham Road in the west and Rye Street/Farnham Road in the east.

4.5.18 Detailed planning permission was granted for the first phase of development (857 homes) in April 2014 by East Hertfordshire Council and the first dwellings are expected to be ready for occupation in 2017. Highway improvements were identified to mitigate the traffic impacts of the proposed development including improvements to the A120/B1383 roundabout and M11 Junction 8 within Uttlesford.

4.5.19 The improvements at M11 Junction 8 were relatively minor in nature and comprised road markings and signal timing changes and amendments to the A120/B1383 roundabout to help address queuing on the western arm.

4.5.20 Essex County Council and Highways England have confirmed that more significant improvements will be required at M11 Junction 8 and the A120/A1250 roundabout (i.e.

delivery of the short to medium term improvement) and ECC have identified a need for a more comprehensive improvement to the A120/B1383 roundabout, discussed in the next section.

4.5.21 Essex and Hertfordshire Councils have also identified that with any long term intervention at M11 Junction 8 consideration will need to be given to the impact on the A120 around Bishop's Stortford as to whether interventions over and above those already identified will be required.

A120/A1250 Roundabout

4.5.22 This junction is located immediately to the west of M11J8 within Uttlesford. The junction is currently congested in peak periods and its operation has a knock-on detrimental effect on the operation of M11J8. Growth planned in and around Bishop's Stortford (within East Hertfordshire District) will make this situation worse.

4.5.23 The M11 Junction 8 improvement proposals mentioned earlier include modifications to the A120/A1250 roundabout and its improvement is integral to delivering additional capacity at M11J8. Preliminary plans depicting the proposed improvements works can be found in **Appendix F**.

A120/B1383 Stansted Road Roundabout

4.5.24 This junction is located to the west of M11 junction 8 within Uttlesford close to the boundary with East Hertfordshire District. The junction is currently congested in peak periods and planned development to the north of Bishop's Stortford (see previous section) will make this situation worse.

4.5.25 A scheme to provide additional traffic capacity has therefore been identified by Essex County Council that involves the provision of dedicated left turn lanes between the A120 west and the B1383 north, between the B1383 north and the A120 east and between the A120 east and the B1383 south.

4.5.26 A preliminary layout plan showing the improvement can be found in **Appendix G**. It is expected that the improvement scheme will be funded by S106 financial contributions from the Bishop's Stortford North development and the works will supersede the improvements identified in the Transport Assessment submitted in support of the planning application.

4.6 OTHER RELEVANT STUDIES

A120(T) between Braintree and A12(T)

4.6.1 Essex County Council is leading on a feasibility study to deliver options for improving the A120(T) between Braintree and the A12(T) to the east. Although the A120 is a Trunk Road, and therefore the responsibility of Highways England, the government has agreed for Essex County Council, with support from Highways England, to lead on the work to develop options for widening the route.

4.6.2 The A120(T) between Braintree and Junction 25 of the A12(T) is one of the most important east-west routes in Essex but is also one of the most congested roads in the county and regularly suffers congestion and delays.

4.6.3 The study will identify potential improvement options with a view to identifying a preferred improvement scheme for inclusion in the next Government Road Investment Strategy (RIS2) which will run from 2020 to 2025. Work has only recently commenced on the study and there are no findings available at the time of writing.

Joint Housing Market Area Study

4.6.4 The West Essex and East Hertfordshire Housing Market Area (HMA) comprises the Epping Forest, Harlow, Uttlesford and East Hertfordshire districts. The Councils have jointly appointed consultants to undertake a study to develop and test housing options for the West Essex and East Hertfordshire HMA.

4.6.5 The strategic level study is under preparation at the time of writing and is investigating options for where best to locate the Objectively Assessed Housing Need (OAHN) within the HMA taking into account implications for; transport, sustainability, deliverability and Habitat Regulations.

4.6.6 Key early findings from the Joint Housing Market Area Study that are relevant to this study, within the Local Plan period, are summarised as follows:

- 35-40% increase in trips on HMA network by 2033 based on 14,000 homes in the wider Harlow area (48,000 homes in total across the HMA)
- Major improvement at M11 J7 and M11 J7A both essential to deliver growth
  M11 J8 major improvement essential for HMA growth and potential Stansted Airport expansion beyond the consented 35mppa and to be promoted for RIS2

- Essential to provide a robust policy framework to promote and deliver sustainable travel, to help manage overall travel demand

Saffron Walden Transport Study

4.6.7 Essex County Council is currently undertaking a detailed study of traffic conditions within the Market Town of Saffron Walden. The study will build on previous work undertaken in 2013/14 to examine existing and future transport conditions with committed and potential future Local Plan development in place. The objective of the study is to identify a coordinated package of transport mitigation to facilitate future development within the town for funding and delivery via S106 financial contributions secured through the planning approval process.

4.6.8 Vehicle number plate recognition surveys were undertaken across the town in early 2016 to determine patterns of traffic movement within and through the town to check the assumptions that were made for the Highways Assessment work undertaken by Essex Highways in 2013. Work on the study is ongoing and no findings are available at the time of writing.

UDC Employment Land Review Update 2016

4.6.9 Study notes that within the Plan period the focus of demand for new employment floor space is most likely in the south of the district related to good access to the strategic road network and Stansted Airport,.

UDC Retail Study 2016

4.6.10 The study notes the presence of town centres in Saffron Walden and Great Dunmow with extensive rural catchment areas and identifies the need for non–food floor space within Saffron Walden during the Plan period.

4.7 FREIGHT

4.7.1 No specific committed schemes or developments have been identified that will materially affect existing freight infrastructure or activity within the district.

4.7.2 Committed employment developments within the district and adjacent areas may give rise to increased heavy goods vehicle movements within the district. However, for the purposes of this strategic study, any increase in heavy goods vehicle movements within or through the district has been assumed to be proportional with total traffic volumes and heavy goods vehicle percentages have been assumed to remain constant.

4.8 LAND-USE DEVELOPMENTS

4.8.1 Technical Note 4 (TN4) details the methodology used to take committed land-use developments into account in the study and this is included in **Appendix H**.

4.8.2 An Uncertainty Log has been produced in accordance with DfT Transport Analysis Guidance (TAG) Unit M4. The Uncertainty Log is a register of known proposed developments within the study area and adjacent areas.

4.8.3 Each log entry provides details of an individual development together with an assumed likelihood that the development will proceed. TAG standard definitions of likelihood have been applied which use the following four categories:

- **Near Certain**: The outcome will happen or there is a high probability that it will happen. (e.g. developments under construction, sites with planning permission)
- **More Than Likely**: The outcome is likely to happen but there is some uncertainty. (e.g. sites where a planning application has been submitted or is imminent)
- **Reasonably Foreseeable**: The outcome may happen, but there is significant uncertainty. (e.g. allocated sites)
- **Hypothetical**: There is considerable uncertainty whether the outcome will ever happen. (e.g. possible development sites that are currently unallocated)

4.8.4 In accordance with TAG guidance all developments categorised as 'Near Certain' or 'More Than Likely' have been taken into account in the study as part of the Reference Case scenario. This is known as the Core Scenario, and represents the most likely scenario.

4.8.5 All developments that fall into the Core Scenario described above have been included in the modelled Reference Case. No sites were excluded due to the scale or size of development (i.e. smaller development sites were not excluded).

4.8.6 The Uncertainty Log covers Uttlesford District as well as the following authority areas adjacent to Uttlesford:

- South Cambridgeshire
- Braintree
- Chelmsford
- Epping Forest
- Harlow

- East Hertfordshire

4.8.7 A summary of the housing and employment development numbers identified in the Uncertainty Log Core Scenario are presented in **Table 15** below.

Table 15 – 2033 Core Scenario Residential Dwelling & Employment Totals

District	Uncertainty Log Dwellings	Uncertainty Log FTE Jobs
Uttlesford	6,706	3,664
Braintree	0	0
Cambridge City	4,488	-1,033[5]
Chelmsford	3,472	0
East Hertfordshire	3,792	0
Epping Forest	457	1,215
Harlow	3,725	8,531
South Cambridgeshire	7,927	11,568
Totals	30,567	23,945

Note: Where no data was available TEMPRO growth was applied.

Stansted Airport

4.8.8 As mentioned in Section 3.8 Stansted Airport has a current throughput of about 23.6 million passengers per annum (mppa) and planning permission to expand to 35mppa. The airport is forecast to be approaching its current planning capacity of 35mppa within the next 10 years.

4.8.9 Essex County Council provided forecast traffic flow increases in the AM and PM peaks between the 2016 base year and 2033 to/from the airport assuming expansion up to the consented 35 mppa. This data was taken from a separate study that is currently being prepared by the County Council into the transport effects of future expansion at the airport.

4.8.10 The airport flows were supplied in the form of model zones representing the airport with AM/PM peak hour flows between the zones and the wider highway network. This information was incorporated into the VISUM model that is discussed in Section 6.1 and taken into account as committed development in the Core Scenario.

Comparison

4.8.11 The total committed development identified in the Core Scenario was compared against TEMPRO growth for the respective authority areas and adjusted where necessary. Where no

[5] Negative FTE job numbers relate to proposals to convert employment uses to other, non-employment uses (e.g. residential)

committed development data was available TEMPRO growth assumptions were applied. This process is described in Technical Note 6 (TN6) in **Appendix I** and in Section 6 of this report. A summary of the comparison and the final numbers applied for the assessment is presented in the following tables.

Table 16 – 2033 Comparison against TEMPRO - Residential

District	Uncertainty Log Dwellings	TEMPRO Dwellings	Final Dwellings
Uttlesford	6,706	Not assessed	6,706
Braintree	0	4,876	4,876
Cambridge City	4,488	17,386	17,386
Chelmsford	3,472	16,406	16,406
East Hertfordshire	3,792	5,489	5,489
Epping Forest	457	3,468	3,468
Harlow	3,725	6,047	6,047
South Cambridgeshire	7,927	18,942	18,942
Totals	30,569	72,614	79,320

Table 17 – 2033 Comparison against TEMPRO - Employment

District	Uncertainty Log FTE Jobs	TEMPRO FTE Jobs	Final FTE Jobs
Uttlesford	3,664	Not assessed	3,664
Braintree	0	2,116	2,116
Cambridge	-1,033[6]	12,474	12,474
Chelmsford	0	6,322	6,322
East Herts	0	-1,612[7]	0
Epping Forest	1,215	1,585	1,585
Harlow	8,531	7,180	8,531
South Cambs	11,568	11,126	11,568
Totals	23,945	39,191	46,260

[6] The negative FTE job numbers relate to development proposals to convert employment uses to other, non-employment uses (e.g. residential)
[7] TEMPRO employment forecasts are based on GDP and car ownership forecasts which can down as well as up.

5 Proposed Local Plan Development

5.1 AREAS OF SEARCH (AOS)

5.1.1 The original list of Areas of Search (AoS) was taken from the 'Uttlesford Local Plan Issues and Options Consultation Document 22 October – 4 December 2015'. This identified nine AoS for potential garden communities, three Market Towns and seven key villages for potential new Local Plan development. These are illustrated in **Appendix J**.

5.2 ACCESSIBILITY APPRAISAL

5.2.1 Accessibility is the extent to which individuals and households can access day to day services, such as employment, education, healthcare, food stores and town centres. Locating new residential development in locations with good accessibility to key facilities and services helps to minimise the need to travel and this principle is at the core of the NPPF.

5.2.2 An appraisal was therefore undertaken of the relative accessibility of the AoS identified in the Issues and Options Consultation Document to determine which areas of the district had the greatest existing, or potential, accessibility by sustainable transport modes. This process is described in **Technical Note 3** which can be found in **Appendix K**.

5.2.3 The first stage of the accessibility appraisal was to reduce the list of AoS presented in the Issues and Options Consultation Document by eliminating those areas where future development was ruled out by virtue of their location being within the Green Belt or Countryside Protection Zone, or where no potential development interest had been received by the council through the Call for Sites Consultation process. Taking these factors into account the reduced list of AoS is as summarised in **Table 18** on the following page.

Table 18 – Resultant Areas of Search

Ref	AoS
Garden Communities	
NS1	M11 Junction 9a East
NS3	Elsenham
NS7	North of A120, West of Gt. Dunmow
NS9	West of Braintree
Market Towns	
MT1	Saffron (7 sites)
MT2	Gt. Dunmow (6 sites)
Key Villages	
KV1	Elsenham
KV2	Gt. Chesterford
KV4	Newport
KV5	Stansted Mountfitchet (North only)
KV6	Takeley
KV7	Thaxted

5.2.4 Relative accessibility across the District was then determined using DfT national accessibility statistics on households at Local Authority (LA) and Lower Super Output Area (LSOA) level. The accessibility statistics measure access to the ten following key services:

- Employment centres (small = 100 to 499 jobs)
- Employment centres (medium = 500 to 4,999 jobs)
- Employment centres (large = > 5,000 jobs)
- Primary schools
- Secondary schools
- Further Education institutions (sixth form schools/colleges)
- GPs
- Hospitals (large NHS hospitals managed by Acute (non-specialist) Trusts)
- Food stores
- Town Centres

5.2.5 Existing accessibility was examined using destination indicators (i.e. the number of key services available to users in a particular LSOA). Plots were produced using GIS to illustrate the areas of the district with accessibility to the greatest number of key services within set travel time bands when travelling by sustainable modes.

5.2.6 A similar exercise was then undertaken which examined the areas of the district with accessibility to the greatest number of only five of the key services within set travel time bands when travelling by sustainable modes. The following five key services were applied for this

assessment because they are considered to be the services that new development has the least potential to influence through the provision of new/improved infrastructure (i.e. assuming that all large sites could equally enhance their accessibility through the on-site provision of new education, health, retail facilities etc travel would still be required between those sites and the following key services):

- Employment centres (small = 100 to 499 jobs)
- Employment centres (medium = 500 to 4,999 jobs)
- Employment centres (large = > 5,000 jobs)
- Hospitals (large NHS hospitals managed by Acute (non-specialist) Trusts)
- Town Centres

5.2.7 The results of the appraisal can be found in **Appendix K** and demonstrate that there is a clear correlation between the most accessible LSOAs and the key transport corridors within the District:

- North/South - M11, B1383, West Anglia Main Line
- East/West – A120, B1256

5.2.8 In addition, LSOAs adjacent to, or between key settlements within Uttlesford District (Saffron Walden, Stansted Mountfitchet, Great Dunmow, Takeley) or within adjacent authority areas (Bishop's Stortford, Braintree, Harlow) have the greatest relative accessibility whilst the rural areas of the District have the lowest.

5.2.9 Due to the limitations of the DfT data and the relatively large size of the LSOAs it has not been possible to identify specific AoS that have the greatest accessibility. However, the results of the assessment support the District Council's selection of the garden community AoS for future Local Plan growth as these are located within, or close to LSOAs with relatively high accessibility. In addition, no significant difference in accessibility was identified between the AoS under consideration.

5.2.10 The assessment also confirmed that the rural areas of the District have lower relative accessibility and are therefore considered less suitable for significant Local Plan growth.

5.2.11 Given the limitations of the DfT data an appraisal has also been undertaken of the accessibility of each of the AoS considered in the study. This summarises existing and potential opportunities to improve sustainable transport and movement networks within the district and

provides guidance on the selection of Areas of Search (AoS) to be promoted for development on the basis of their accessibility by sustainable transport modes. The methodology and results of this appraisal are presented in Technical Note 5 (TN5) which can be found in **Appendix L**.

5.3 PROPOSED DEVELOPMENT SCENARIOS

5.3.1 Uttlesford District Council initially provided eleven development scenarios for testing which distributed development across the AoS as summarised in **Table 19**, **Table 20**, **Table 21** and **Table 22** below.

Table 19 – 2033 Development Scenarios Tested – Summary

Scenario	Development Focussed at	Total Dwellings	Total Employment (sqm)
1	Great Chesterford	11,206	217,800
2	Elsenham& West of Great Dunmow	11,206	218,250
3	Elsenham& West of Braintree	11,206	215,250
4	West of Great Dunmow & West of Braintree	11,206	185,500
5	Great Chesterford, Elsenham, West of Great Dunmow, West of Braintree	24,206	316,000
6	Elsenham, West of Great Dunmow, West of Braintree	36,206	313,000
7	Elsenham, West of Braintree	26,206	313,000
8	West of Great Dunmow, West of Braintree	32,206	304,000
9	Smaller Settlement Spread	11,207	154,000
10	West of Great Dunmow & West of Braintree & Smaller Settlement Spread	11,206	185,500
11	Great Chesterford& West of Braintree & Smaller Settlement Spread	11,206	185,500

Table 20 – 2033 Development Scenarios Tested – Residential Details

Location/AoS	Growth Scenario										
	1	2	3	4	5	6	7	8	9	10	11
Committed Developments (Dwelling Numbers)											
Committed Developments	6,706	6,706	6,706	6,706	6,706	6,706	6,706	6,706	6,706	6,706	6,706
Garden Communities (Dwelling Numbers)											
M11 Junction 9a East	2,250				5,000						1,400
Elsenham	750	2,250	2,250		3,000	4,000	4,000				
N of A120, W of Gt. Dunmow	750	2,250		2,250	3,000	10,000		10,000		1,400	
West of Braintree	750		2,250	2,250	3,000	12,000	12,000	12,000		1,400	1,400
Market Towns (Dwelling Numbers)											
Saffron (7 sites)					840	840	840	840	1,000	700	700
Gt. Dunmow (6 sites)					720	720	720	720	900	700	700
Villages (Dwelling Numbers)											
Elsenham					40	40	40	40	70	40	40
Gt. Chesterford					200	200	200	200	200	30	30
Newport					120	120	120	120	120	30	30
Stansted Mountfitchet					140	140	140	140	180	40	40
Takeley					1,000	1,000	1,000	1,000	1,500	30	30
Thaxted					30	30	30	30	65	30	30
Clavering					14	14	14	14	31	10	10
Debden					25	25	25	25	25	10	10
Hatfield Broad Oak					8	8	8	8	38	10	10
Henham					36	36	36	36	36	10	10
Farnham					15	15	15	15	25	10	10
Felsted					230	230	230	230	230	10	10
Great Easton					40	40	40	40	40	10	10
Great Sampford					5	5	5	5	5	5	5
Quendon&Rickling					31	31	31	31	30	10	10
Stebbing					6	6	6	6	6	5	5
Radwinter										10	10
Total Dwellings	11,206	11,206	11,206	11,206	24,206	36,206	26,206	32,206	11,207	11,206	11,206

Table 21 – 2033 Development Scenarios Tested – Employment Floor Areas

Name	Use-Class	Employment Growth Scenarios (Sqm)										
		1	2	3	4	5	6	7	8	9	10	11
Elsenham Meadows (TriSail)	B1	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Land north east of Bury Lodge	B8	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000	37,000
Land north east of Bury Lodge	B1	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000
Chesterford Research Park	B1	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000
M11 Junction 9a East (Stump Cross)	B1 / B8	37,800	0	0	0	84,000	0	0	0	0	0	0
Elsenham	B1 / B8	8,666	47,000	47,000	0	26,000	84,000	84,000	0	0	0	0
North of A120, West of Gt. Dunmow	B1 / B8	8,667	17,250	0	17,250	26,000	75,000	0	75,000	0	17,250	17,250
West of Braintree	B1 / B8	8,667	0	14,250	14,250	26,000	0	75,000	75,000	0	14,250	14,250
Totals		217,800	218,250	215,250	185,500	316,000	313,000	313,000	304,000	154,000	185,500	185,500

Table 22 – 2033 Development Scenarios Tested – Employment Job Numbers

Name	Use-Class	Employment Growth Scenarios (Estimated Job Numbers)										
		1	2	3	4	5	6	7	8	9	10	11
Elsenham Meadows (TriSail)	B1	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Land north east of Bury Lodge	B8	541	541	541	541	541	541	541	541	541	541	541
Land north east of Bury Lodge	B1	1,267	1,267	1,267	1,267	1,267	1,267	1,267	1,267	1,267	1,267	1,267
Chesterford Research Park	B1	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013	1,013
M11 Junction 9a East (Stump Cross)	B1 / B8	1,536	0	0	0	3,414	0	0	0	0	0	0
Elsenham	B1 / B8	352	1,910	1,910	0	1,057	3,414	3,414	0	0	0	0
North of A120, West of Gt. Dunmow	B1 / B8	352	701	0	701	1,057	3,048	0	3,048	0	701	701
West of Braintree	B1 / B8	352	0	579	579	1,057	0	3,048	3,048	0	579	579
Totals		9,414	9,432	9,310	8,101	13,405	13,283	13,283	12,917	6,821	8,101	8,101

6 Transport Impacts

6.1 METHODOLOGY SUMMARY

6.1.1 To determine the cumulative transport effects of the Reference Case development identified in Section 4.8 and the Local Plan development scenarios summarised in Section 5.3 peak period person trip generation has been estimated using trip rates obtained from the TRICS (v7.2.4) database. The trip generation methodology used was agreed with Essex County Council and is detailed in Technical Note 2 (TN2) which can be found in **Appendix M**.

6.1.2 Trips by mode were then estimated by applying 2011 Census 'Travel to Work' modal splits to the person trip generation. For residential uses 2011 Census 'Resident Mode of Travel' was applied, and for employment uses 'Workplace Mode of Travel' data was applied. Average modal splits for rural and urban areas were calculated and the appropriate split applied depending on the location of development. Using observed modal split data in this way implicitly takes into account the local car ownership/usage characteristics discussed in Section 3.3.

6.1.3 AM/PM peak period car trips were then assigned onto the highway network within the study area using a strategic VISUM model that was built for this purpose. The methodology used to build the model and assign development traffic onto the highway network is detailed in Technical Note 6 (TN6) which can be found in **Appendix I**.

6.1.4 By design there are no base traffic flows in the model. The VISUM model has been used solely to assign future development flows onto the study area network. The assigned link flows are then output to a spreadsheet calculation that converts AM/PM peak period trips into Annual Average Daily Traffic (AADT) equivalent flows using conversion factors derived from local Automatic Traffic Count (ATC) data.

6.1.5 As mentioned in Section 3.4 Congestion Reference Flows (CRF) have been used as a measure of the performance of road links within the study area. The CRF of a link is a standard measure and is an estimate of the Annual Average Daily Traffic (AADT) flow at which the carriageway is likely to be 'congested' in the peak periods on an average day. Congestion is defined as the situation when the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link. When this condition occurs, the effects on traffic flow are likely to be one or more of the following:

- Flows break down with speeds varying
- Average speeds drop
- Journey times become longer and unreliable
- Sustainable throughput is reduced; and/or
- Queues are likely to form

6.1.6 The implications of these types of peak period traffic conditions can include; increased frequency of accidents due to unpredictable queuing on links, peak spreading as drivers travel earlier or later than the 'traditional' highway peak periods to avoid delays, and trips re-assigning onto alternative routes to avoid congestion (i.e. 'rat-running') where alternative routes are available.

6.1.7 The spreadsheet calculation therefore uses surveyed link flows and forecast flows to determine Congestion Reference Flows (CRF) and based on these calculated reference capacities link "stress" levels have been identified where "stress" is defined as the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow expressed as a percentage.

6.1.8 A stress level of 100% (i.e. when the demand flow equals the CRF value) is the critical point at which link flows breakdown resulting in queuing and reduced throughput. Therefore for the purposes of this study the following stress thresholds have been applied to identify when links are approaching, or exceeding their theoretical maximum capacity:

- **Less than 90% stress** - the link operates within capacity, although journey times may become less reliable over 75% stress (see below).
- **Between 90% and 100% stress** - The link is approaching capacity and is increasingly susceptible to flow breakdown.
- **Greater than 100% stress** - The link operates over capacity and is likely to experience flow breakdown on a regular basis.

6.1.9 The above thresholds have been applied to easily identify when link capacity is approaching critical conditions (i.e. 100% stress). However, it should be noted that 75% stress is generally accepted as the threshold level for adverse effects on journey time reliability. Therefore, links with between 75% and 99% stress will still be operating within capacity but journey times are likely to be less reliable than on links with less than 75% stress.

6.1.10 It should be noted that CRF is a measure of the performance of the links between junctions however; junctions will typically reach their operational capacity and suffer congestion and

delays before a link reaches capacity. It is therefore implicit that where links are forecast to be at, or close to capacity the junctions on the link are also likely to experience problems. Junction operation is discussed separately, later in this section.

6.2 REFERENCE CASE

6.2.1 CRF link stress values for the Reference Case (i.e. Base + Committed) are illustrated on **Figure 14**. For ease of reference link stress levels of less than 90% are shown in green, 90%-100% are shown in yellow and greater than 100% are shown in red.

6.2.2 **Figure 14** indicates that several links within Uttlesford and several links within adjacent districts are forecast to operate close to, or over their theoretical capacity (100% stress) at 2033 with the addition of the committed development identified in Section 4.8. The links listed in **Table 23** below have stress levels in excess of 90% and could be expected to experience longer, less reliable journey times and potential queuing in peak periods as a result.

Table 23 – Links Close to or Exceeding Capacity in the 2033 Reference Case

Link Location	Maximum Stress	Local Authority
M11 south of J7	128%	Epping Forest
M11 J7 to J8	101%	Epping Forest/Uttlesford
M11 J8 to J9	99%	Uttlesford
M11 north of J9	107%	South Cambridgeshire
A414 Southeast of M11 J7	154%	Epping Forest
A120 Bishop's Stortford Bypass	131%	East Hertfordshire
A120(T) M11 J8 to Stansted Airport	155%	Uttlesford
A120(T) north of Takeley	98%	Uttlesford
Pod's Brook Road north of A120(T)	107%	Braintree
A131 north east of Braintree	128%	Braintree
A120 east of Braintree	152%	Braintree
B1018 south east of Braintree	97%	Braintree
A131 between Great Leighs and the B1008	150%	Chelmsford
B1008 between Barnston and the B1417	123%	Chelmsford
A131 Essex Regiment Way south of B1008	120%	Chelmsford
B1256 west of Great Dunmow	169%	Uttlesford
B1383 Stansted Mountfitchet	150%	Uttlesford
A505 between the M11 and the A11	146%	South Cambridgeshire
A505 east of M11 at Duxford	159%	South Cambridgeshire
A1307 between the A11 and Linton	144%	South Cambridgeshire

6.2.3 As discussed in Section 4.8 the committed development assumed in the Reference Case has been derived from an uncertainty log cross referenced against TEMPRO. In accordance with WebTAG guidance the methodology assumes a 'Core Scenario' (i.e. only takes into account sites that are 'Near Certain' or 'More than Likely') and as such is considered to be a realistic assessment. However, the results in **Table 23** do require all 'Core Scenario' developments to be complete and occupied by 2033, including expansion of Stansted Airport to the consented 35 mppa.

6.2.4 It should be noted that the Reference Case assumptions and modelling methodologies applied in this study may differ from those applied in other studies currently being undertaken within Uttlesford (e.g. the modelling work being undertaken by Essex County Council in support of the proposed new M11 J7A). One significant difference relates to the reassignment of trips to avoid delays on the network which is not taken into account in this study as trips have been assigned on a 'Demand' basis (i.e. using the shortest/quickest routes ignoring network delays). All the links identified in **Table 23** as being close to or exceeding capacity may not therefore be reflected by the findings of the M11 J7A modelling work.

6.2.5 Based on the results presented in **Table 23** available traffic capacity on the Strategic Road Network (SRN) and the local road network within the study area could be a potential constraint to Local Plan development, if all the Reference Case growth is realised. In particular on the following routes within Uttlesford:

- M11 Junction 7 to Junction 9
- A120 from the B1383 west of M11J8 to M11J8
- A120(T) from M11J8 to Stansted Airport
- B1256 west of Great Dunmow
- B1008 south of Great Dunmow through Barnston
- B1383 at Stansted Mountfitchet

6.2.6 The Reference Case results in **Table 23** and in **Figure 14** have been used as the benchmark against which the impacts of the development scenarios have been measured.

6.3 LOCAL PLAN DEVELOPMENT SCENARIOS

6.3.1 CRF link stress values for the 'with development' scenarios (i.e. Base + Committed + Development) are illustrated on **Figures 15** to **25**. The pattern of traffic impacts across the study area vary depending on where development is focussed and the quantum of

development in each scenario, which is summarised in **Table 19** (page 75). **Table 20** and **Table 21** provide more detail of each scenario.

6.3.2 It can be seen from **Table 19** that the total of 11,206 dwellings is the same in all scenarios except 5, 6, 7, and 8 which have higher dwelling numbers (between 24,206 and 36,206 dwellings). These four scenarios also have the highest total employment floor areas.

6.3.3 To assist with comparing the relative impacts of each development scenario **Table 24** on the next page summarises the total link lengths by road category within the study area that exceed 100% stress. The total link lengths exceeding 100% for all road categories is then expressed as a percentage change in comparison to the Reference Case.

Table 24 – Total Link Length with Greater than 100% Stress (km)

Road Classification	Reference Case	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9	Scenario 10	Scenario 11
Motorway	26.90	48.70	48.70	48.70	48.70	48.73	53.14	50.13	53.14	48.70	48.70	48.70
A Road	33.98	45.03	40.91	43.76	42.96	54.19	54.75	54.02	52.09	39.49	43.76	46.22
B Road	7.03	8.48	12.53	11.88	8.48	30.20	37.81	30.05	33.46	11.47	9.43	9.53
Minor Road	0.00	0.87	4.73	2.93	1.42	5.30	11.59	7.50	11.59	0.87	0.87	0.87
% Change to Ref' Case	100%	152%	157%	158%	150%	204%	232%	209%	221%	148%	151%	155%

6.3.4 Scenarios 5, 6, 7 and 8 result in large increases in link lengths exceeding 100% stress in comparison to the reference case. **Figures 19**, **20**, **21** and **22** show that both strategic routes through the district, the M11 and A120(T), exceed 100% stress in these scenarios in addition to numerous lower category links, most notably within Saffron Walden and the villages of Newport, Elsenham, Stansted Mountfitchet and the B1008 between Great Dunmow and Chelmsford.

6.3.5 On the basis of these results Development Scenarios 5, 6, 7 and 8 were not considered further as the potential level of highway mitigation required to accommodate these scenarios would be more extensive than for the other scenarios (i.e. the total length of road with greater than 100% stress is approximately double the other scenarios).

6.3.6 From **Table 24** the results for the remaining scenarios are very similar with Scenario 9 resulting in the least increase in link lengths exceeding 100% stress in comparison to the reference case (48% increase).

6.3.7 However, Scenario 9 doesn't include any garden communities and spreads development across towns and villages within the district. As a result vehicle trips are more widely dispersed across the highway network within the study area with a greater proportion of trips on rural roads which, by their nature are less busy and have more spare traffic capacity. Fewer links are therefore forecast to exceed 100% stress in Scenario 9.

6.3.8 However, as identified by the accessibility appraisal in Section 5.2 the rural areas of the District have the lowest relative accessibility and are therefore considered less suitable for significant Local Plan growth. Distributing all development across the towns and villages within the district therefore offers less potential to encourage travel by sustainable modes as all development is dispersed with a greater proportion in less accessible areas of the district. Scenario 9 is therefore considered less preferable and has not been considered further.

6.3.9 Scenarios 1, 2, 3, 4, 10 and 11 result in increases of between 50% to 58% in comparison to the Reference Case and it can be seen from the respective network stress plans that the pattern of links exceeding 100% stress is similar in these scenarios.

6.3.10 Key differences are however observed for Scenarios 2 and 3 that both include significant new residential development in Elsenham (2,250 dwellings in each scenario). The results forecast that sections of the B1051, Hall Road and the B1383 through Elsenham and Stansted Mountfitchet exceed 100% stress with stress values of up to 225% (see **Figures 16** and **17**).

6.3.11 These routes pass through the centres of Elsenham and Stansted Mountfitchet villages and a preliminary review suggests there is limited potential for significant additional link capacity to be provided due to constraints including;

- B1051 bridge over the West Anglia Main Line railway
- B1051 bridge over the M11
- B1051/Hall Road junction in Elsenham
- B1051/Station Road/Robin Hood Road double mini-roundabout junction in Elsenham
- B1051 Grove Hill signals in Stansted Mountfitchet
- B1051 Lower Street/Chapel Hill/Church Road junction in Stansted Mountfitchet
- B1051 Chapel Hill/B1383 Silver Street/Bentfield Road junction in Stansted Mountfitchet

- Urban nature of the B1051 and B1383 routes through Elsenham and Stansted Mountfitchet (i.e. narrow carriageway widths, existing frontage development including schools, on-street car parking, numerous side road junctions, direct private accesses, pedestrian crossings etc.).

6.3.12 Elsenham and Stansted Mountfitchet are identified in the accessibility appraisal as being relatively accessible areas of the district, which is assisted by the presence of railway stations in both villages. However, Scenarios 1, 4, 10 and 11 all result in significantly lower link stress levels through Elsenham and Stansted Mountfitchet villages compared to Scenarios 2 and 3. It is considered unlikely that modal shift alone would be sufficient to reduce the link stress levels forecast to comparable levels and as a result Scenarios 2 and 3 are considered less favourable and have not been considered further.

6.3.13 For the remaining Scenarios 1, 4, 10 and 11 the total lengths of links exceeding 100% are very similar as are the pattern of impacts. The main differences being Scenarios 1 and 11, which focus more development at Great Chesterford, result in the A1301 between Great Chesterford and the A505 exceeding 100% stress whereas Scenarios 4 and 10 that focus more development at Great Dunmow and west of Braintree result in greater stress levels on the A120(T) between Great Dunmow and M11 Junction 8.

6.3.14 Comparing the development in Scenarios 1 and 11 the key differences are that Scenario 1 has more housing and employment focussed at Great Chesterford which results in higher forecast stress levels on the A1301 between Great Chesterford and the A505 (maximum of 127% stress, see **Figure 15**) than Scenario 11 which has less housing and no employment at Great Chesterford and results in lower forecast stress levels on the same section of the A1301 (maximum of 119% stress, see **Figure 11**).

6.3.15 Scenario 11 focuses more development on the A120(T) corridor west of Braintree than Scenario 1 however; it also distributes some residential development across the towns and villages within the district. Scenario 11 therefore strikes a balance between garden communities and development within towns and villages thereby helping to disperse traffic impacts whilst also offering opportunities for sustainable travel. As a result the forecast stress levels on the A120(T) are similar between Scenarios 1 and 11, with only slightly higher stress levels observed on the A120(T) in Scenario 11.

6.3.16 It should be noted that the A1301 between Great Chesterford and the A505 is within South Cambridgeshire District and is the responsibility of Cambridgeshire County Council. Both Scenarios 1 and 11 result in stress levels in excess of 100% on the A1301.

6.3.17 Overall, in link stress terms there is little between Scenarios 1 and 11. However Scenario 1 is considered to be unrealistic in planning terms as there is zero growth located in towns and villages contrary to national policy. Scenario 11 is therefore considered to be the preferable of the two.

6.3.18 Scenarios 4 and 10 focus residential development on the A120(T) corridor at Great Dunmow and west of Braintree. Both scenarios have the same total residential and employment development with the only difference being that in Scenario 10 some residential development has also been distributed across towns and villages within the district whereas in Scenario 4 all residential development is split equally between Great Dunmow and west of Braintree. Scenario 10 therefore strikes a balance between garden communities and development within towns and villages thereby helping to disperse traffic impacts whilst also offering opportunities for sustainable travel.

6.3.19 The stress plans for Scenarios 4 and 10 (**Figures 18** and **24**) show that distributing some residential development across the villages has the benefit of dispersing some development related traffic with slightly reduced stress levels forecast on the A120(T) and M11 as a result.

6.3.20 Overall, in link stress terms there is little between Scenarios 4 and 10 however; Scenario 4 is considered to be unrealistic in planning terms as there is zero growth located in towns and villages. Scenario 10 is therefore considered to be the preferable of the two.

6.3.21 Taking into account the findings of this stage of the transport study and other planning considerations Uttlesford District Council therefore confirmed that Scenarios 10 and 11 were the most preferable of the scenarios tested.

6.4 REVISED LOCAL PLAN DEVELOPMENT SCENARIOS

6.4.1 On 25th August 2016 the Secretary of State for the Department of Communities and Local Government released appeal decisions for land at Great Dunmow (appeal by LS Easton Park Investments Ltd on land west of Great Dunmow, reference UTT/13/1043/OP) and land at Elsenham (appeal by Fairfield Elsenham Ltd on land north east of Elsenham, reference

UTT/13/0808/OP). These decisions were issued after the assessment work discussed above was undertaken.

6.4.2 Both appeals were dismissed by the Secretary of State so the Great Dunmow site, which was included in the uncertainty log as having a delivery certainty of 'More than Likely' and therefore included as a committed development in the Core Scenario, was removed from the Reference Case. This resulted in a net reduction of 790 dwellings from the Reference Case that UDC confirmed for the purposes of the study should not be replaced elsewhere within the district.

6.4.3 The appeal site at Elsenham was also included in the uncertainty log. However, as this had a delivery certainty of Reasonably Foreseeable it had not been included in the Core Scenario (see Section 4.8 for details). No further amendments were therefore required to the Reference Case assumptions.

6.4.4 In addition to the amendments made to the Reference Case to reflect the appeal decisions local Councillors requested that a further scenario be tested to ensure that all options for the spatial distribution of garden communities had been addressed. This request came from a Councillor workshop held on 7th September 2016. The new scenario (scenario 12) was a slight variation on scenarios 10 and 11 already assessed, with garden communities assumed at Great Chesterford and west of Great Dunmow, with no garden community west of Braintree.

6.4.5 Minor amendments were also made to the distribution of employment floor space in scenarios 10 and 11. The revised scenarios are summarised in the following tables.

Table 25 – Revised Development Scenarios Tested – Summary

Scenario	Development Focussed at	Total Dwellings	Total Employment (sqm)
10	West of Great Dunmow & West of Braintree & Smaller Settlement Spread	10,416	173,500
11	Great Chesterford & West of Braintree & Smaller Settlement Spread	10,416	186,520
12	Great Chesterford & West of Great Dunmow & Smaller Settlement Spread	10,416	188,020

Table 26 – Revised Development Scenarios Tested – Residential Details

Location/AoS	Growth Scenario		
	10	11	12
Committed Developments (Dwelling Numbers)			
Committed Developments	5,916	5,916	5,916
Garden Communities (Dwelling Numbers)			
M11 Junction 9a East (Gt Chesterford)		1,400	1,400
Elsenham			
N of A120, W of Gt. Dunmow	1,400		1,400
West of Braintree	1,400	1,400	
Market Towns (Dwelling Numbers)			
Saffron (7 sites)	700	700	700
Gt. Dunmow (6 sites)	700	700	700
Villages (Dwelling Numbers)			
Elsenham	40	40	40
Gt. Chesterford	30	30	30
Newport	30	30	30
Stansted Mountfitchet	40	40	40
Takeley	30	30	30
Thaxted	30	30	30
Clavering	10	10	10
Debden	10	10	10
Hatfield Broad Oak	10	10	10
Henham	10	10	10
Farnham	10	10	10
Felsted	10	10	10
Great Easton	10	10	10
Great Sampford	5	5	5
Quendon&Rickling	10	10	10
Stebbing	5	5	5
Radwinter	10	10	10
Total Dwellings	10,416	10,416	10,416

Table 27 – Revised Development Scenarios Tested – Employment Floor Areas

Name	Use-Class	Employment Growth Scenarios (Sqm)		
		10	11	12
Elsenham Meadows (TriSail)	B1	60,000	60,000	60,000
Land north east of Bury Lodge	B8	37,000	37,000	37,000
Land north east of Bury Lodge	B1	19,000	19,000	19,000
Chesterford Research Park	B1	38,000	38,000	38,000
M11 Junction 9a East (Stump Cross)	B1 / B8	0	23,520	23,520
Elsenham	B1 / B8	0	0	0
North of A120, West of Gt. Dunmow	B1 / B8	10,500	0	10,500
West of Braintree	B1 / B8	9,000	9,000	0
Totals		173,500	186,520	188,020

Table 28 – Revised Development Scenarios Tested – Employment Job Numbers

Name	Use-Class	Employment Growth Scenarios (Estimated Job Numbers)		
		10	11	12
Elsenham Meadows (TriSail)	B1	4,000	4,000	4,000
Land north east of Bury Lodge	B8	541	541	541
Land north east of Bury Lodge	B1	1,267	1,267	1,267
Chesterford Research Park	B1	1,013	1,013	1,013
M11 Junction 9a East (Stump Cross)	B1 / B8	0	956	956
Elsenham	B1 / B8	0	0	0
North of A120, West of Gt. Dunmow	B1 / B8	427	0	427
West of Braintree	B1 / B8	366	366	0
Totals		7,613	8,143	8,204

6.4.6 Stress plans were produced for the revised development scenarios following the same methodology as previously (see **Figures 26**, **27**, **28** and **29**). A summary of the relative impacts of each revised development scenario is presented in **Table 29** below. This summarises the total link lengths by road category within the study area that exceed 100% stress. The total link lengths exceeding 100% for all road categories is then expressed as a percentage change in comparison to the revised Reference Case.

Table 29 – Total Link Length with Greater than 100% Stress (km)

Road Classification	Reference Case	Scenario 10	Scenario 11	Scenario 12
Motorway	13.11	48.70	48.70	48.70
A Road	33.98	43.76	46.19	46.19
B Road	6.11	7.20	8.25	8.25
Minor Road	0.00	0.87	0.87	0.87
% Change to Ref' Case	100%	189%	196%	196%

6.4.7 It should be noted that a direct comparison between the scenario results presented in **Table 24** and **Table 29** isn't possible because the removal of the Great Dunmow appeal site changes the Reference Case results that the scenario results are compared against in each table. Comparing **Figures 14** and **26** which depict the original and revised Reference Case stress plans it can be seen that the main difference is on the M11 between junction 7 to junction 8 which reduces from 101% to 100% and a slightly reduced length of the B1256 into Great Dunmow exceeds 100% stress.

6.4.8 **Figures 26**, **27**, **28** and **29** show the stress plans for the revised Reference Case, revised scenario 10, revised scenario 11 and scenario 12 respectively.

6.4.9 From **Table 29** in link stress terms there is no difference between the revised scenario 11 and the new scenario 12. This is because both scenarios focus development at Great Chesterford and on the A120(T) corridor either west of Great Dunmow or west of Braintree. The only difference between the two scenarios being the point at which traffic from the garden community on the A120(T) would load onto the highway network. However, both scenarios result in a greater length of 'A' and 'B' category roads within the study area exceeding 100% stress than scenario 10.

6.4.10 Comparing **Figure 27** (revised scenario 10 stress plan) against **Figures 28/29** (revised scenario 11 and the new scenario 12) the key differences are as summarised in **Table 30** below.

Table 30 – Comparison between Revised Scenarios 10, 11 & 12

Link Description	Maximum % Stress on Link		
	Revised Scenario 10 (West of Great Dunmow & West of Braintree & Smaller Settlement Spread)	**Revised Scenario 11 /New Scenario 12** (Great Chesterford & A120(T) Corridor & Smaller Settlement Spread)	Difference
A505 East of M11 J10	153%	161%	+8%
A505 west of M11 J10	160%	162%	+2%
A1301 south of A505	104%	121%	+17%
M11 J8 to J9	102%	105%	+3%
M11 J7 to J8	107%	106%	-1%
A120 west of M11J8	141%	138%	-3%
A120(T) - M11J8 to Stansted	173%	166%	-7%
A120(T) - Stansted to Gt Dunmow	116%	107%	-9%
B1256 west of Great Dunmow	177%	173%	-4%

6.4.11 As can be seen from the summary revised scenario 10 results in greater impacts on the A120(T) corridor with lower impacts on roads within the study area immediately to the north of the district within South Cambridgeshire. Whereas scenarios 11 and 12 result in lower impacts on the A120(T) and higher impacts on roads in the vicinity of Great Chesterford including the A505 and the A1301 which are both within South Cambridgeshire. The Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) identifies increasing congestion along the A1031 and the A505 as a threat to the Saffron Walden to Cambridge corridor. Therefore, scenario 10 which results in the lowest impacts on this corridor is likely to be favourable

especially given the comments of South Cambridgeshire Council (see paragraph 2.3.31) and Cambridgeshire County Council with regards LTP3 (see paragraph 2.3.22).

6.4.12 Of the three scenarios summarised in **Table 29** Scenario 10 results in the least total link length within the study area exceeding 100% stress and can therefore be considered the most favourable in traffic impacts terms.

6.4.13 The relative strengths and weaknesses of the garden communities in the scenarios are summarised in SWOT analysis that are provided in Technical Note 5 (TN5) and can be found in **Appendix L**.

6.5 TRIPS BY MODE

6.5.1 Estimated trips by mode of travel for Scenarios 10, 11 and 12 are presented in **Table 31** on the following page. These have been estimated by applying 2011 Census 'Travel to Work' modal splits to the total 2-way vehicle trips extracted from the VISUM model matrices. Using total vehicle trips extracted from the VISUM model matrices eliminates any trip 'double-counting' between residential and employment development sites within the district as these trips are already discounted in the model matrix. Average modal splits for the district have then been used to estimate trips by each mode of travel.

6.5.2 Total person trips are approximately 10% lower in the PM peak so only AM data is presented as the 'worst case'. It is acknowledged that not all trips in the AM peak will be 'travel to work' however; work-related trips are typically the dominant trips so it is considered appropriate to use 'travel to work' modal splits for the purposes of this estimate.

Table 31 – Total 2-Way Person Trips by Mode – AM Peak

Scenario	Total 2-Way Person Trips by Mode - AM Peak						
	Train	Bus	Car	M/Cycle	Bicycle	Walk	Other
Revised Scenario 10 (West of Great Dunmow & West of Braintree & Smaller Settlement Spread)	809	126	5,995	51	98	798	51
Revised Scenario 11 (Great Chesterford & West of Braintree & Smaller Settlement Spread)	826	129	6,120	52	100	814	52
New Scenario 12 (Great Chesterford & West of Great Dunmow & Smaller Settlement Spread)	829	129	6,146	52	100	818	52

Notes:

1. Train includes train, underground, light rail and tram
2. Bus includes bus, minibus and coach
3. Motorcycle includes motorcycle, scooter and moped
4. Car includes car and van drivers, car passengers and taxi

6.6 IMPACTS ON SUSTAINABLE MODES OF TRAVEL

6.6.1 The dominant mode of travel, with circa 6,000 person trips in each scenario, is the car (*Note*: in the tables trips by car include; car and van drivers, car and van passengers and taxis). The next highest modes are rail with circa 830 person trips and walking with circa 820 person trips in each scenario, then bus at circa 130 person trips, circa 100 by cycle, circa 50 by motorcycle and circa 50 by other modes.

6.6.2 The existing model share reflects the predominantly rural nature of the district with a disperse pattern of small settlements, relatively long journey distances that preclude walking and cycling and limited sustainable travel infrastructure and services.

6.6.3 In accordance with the NPPF the new Local Plan will ensure that developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised. Garden communities will be required to deliver a mix of uses and key facilities such as employment, education and retail within walking distance of most residential properties to minimise the need to travel.

6.6.4 New development will also be required to deliver Sustainable Transport measures that provide travel choice to help reduce reliance on the private car, thereby helping to reduce development car trips. Change in travel mode will be delivered through planning conditions and travel monitoring in accordance with Local Plan policies.

6.6.5 Given the predominantly rural characteristics of the district, aspirations for the future level of use of sustainable modes need to be realistic and achievable. Essex County Council's 'Guidance Notes for a Residential Travel Plan Template for new residential developments' identifies the following targets for new residential developments:

> "*Targets should aim to achieve between a 5% and 10% reduction in single occupancy car use over a set period. Alternatively where baseline data is already considered to be at a reasonable level, it may be accepted that the target should aim to maintain the baseline*."

6.6.6 For employment developments the corresponding guidance is contained within the document 'Helping you create a Business Travel Plan' which identifies the following targets for new employment developments:

> "*Whilst developing your Travel Plan and considering the targets it is also worth remembering that, a plan containing only marketing and promotion is unlikely to achieve any modal shift. A plan with the above plus car sharing and cycle measures may achieve a 3-5% reduction in drive alone commuting.*
>
> - *A plan with the above measures plus substantial discounts on public transport plus works buses / additional public transport links will achieve around a 10% reduction.*
> - *The combination of all of the above measures plus disincentives to car use can achieve a larger (15-30%) reduction in drive alone commuting."*

6.6.7 The Essex County Council guidance supports the identification of site specific modal shift targets based on the merits of each site. However, based on the guidance a 10% modal shift away from car use towards more sustainable modes of travel is also considered to be a reasonable 'rule of thumb' for the purposes of estimating the effects of modal shift on existing transport infrastructure.

6.6.8 For example, assuming a 10% modal shift away from car use would see person trips by car reduce by 615 (based on new Scenario 12 in **Table 31**). Distributing these 615 person trips across rail, bus, walking and cycling in the same proportions as per 2011 Census modal splits would see an additional; 272 persons travelling by train (44%), 42 by bus (7%), 33 by bicycle (5%) and 268 walking (44%).

6.6.9 For Scenario 12 this would mean a total increased demand of 1,100 two-way person trips travelling by train in the AM peak. Splitting this in half (as a rough approximation) to reflect inbound and outbound trips and assuming all outbound persons catch the train at Audley End station and are split equally between the four peak hourly services that currently travel between Audley End and London Liverpool Street Stations, this would equate to approximately 11 additional passengers per carriage, assuming 12 car length trains.

6.6.10 This is a very approximate estimation and in practice the directional splits may not be equal and demand would be spread across more stations and other destinations (e.g. trips to Cambridge) but the estimate suggests that the approximate scale of additional rail demand anticipated should be accommodated by existing/proposed infrastructure and services.

6.6.11 Similarly, the levels of increased walking, cycling and bus trips that are estimated across the district would be accommodated by existing infrastructure/services with local improvements to enhance connectivity to new developments.

6.7 TRAFFIC IMPACTS ON HIGHWAY LINKS

6.7.1 **Table 32** summarises two-way traffic flow increases in the AM peak on the links that are either forecast to exceed 100% stress in the Reference Case, or have junctions that already experience traffic congestion.

6.7.2 The flows presented in **Table 32** are two-way AM peak hour flows that have been taken from the WYG strategic VISUM model used to assign Local Plan development trips onto the highway network. As the model does not contain base traffic flows it is not possible to provide a comparison against existing flows[8]. The development traffic flows in **Table 32** assume no reductions for future improvements to sustainable travel that will be delivered as an integral part of future Local Plan development and can therefore be considered the 'worst case'.

6.7.3 It should also be noted that the VISUM model used to provide these flows is a strategic level model and is relatively simplistic at the local level. For example Local Plan development within Saffron Walden is represented by a single VISUM model zone that loads traffic at a single point onto the highway network (model zone locations and loading points are indicated in **Figure 13**). In the strategic context this level of detail is appropriate however, at the local level it

[8] The VISUM model contains no base traffic flows and has only been used to assign development traffic flows onto the highway network. The model does not take into account junction operation (i.e. there is no trip reassignment due to delays) and the resultant development trip assignment provides 'Demand Flows' that represent the routes taken in the absence of network constraints.

results in a simplistic representation of development trips on local road networks. The flows presented in **Table 32** should therefore be taken in this context and are presented only to indicate the approximate magnitude of flow changes that could be expected at these locations with all Local Plan development complete and fully occupied.

Table 32 – Two-Way AM Peak Hour Local Plan Development Trips (VPH)

Link	District	**Revised Scenario 10**: Development West of Great Dunmow, West of Braintree, Towns and Villages	**Revised Scenario 11**: Development at Great Chesterford, West of Braintree, Towns and Villages	**Scenario 12**: Development at Great Chesterford, West of Great Dunmow, Towns and Villages
M11 south of J7	Epping Forest	670	554	556
M11 J7 to J8	Epping Forest/Uttlesford	877	720	721
M11 J8 to J9	Uttlesford	227	445	444
M11 north of J9	South Cambridgeshire	109	67	67
A414 Southeast of M11 J7	Epping Forest	17	23	23
A120 Bishop's Stortford Bypass	East Hertfordshire	292	206	207
A120(T) M11 J8 to Stansted Airport	Uttlesford	1,470	972	979
A120(T) north of Takeley	Uttlesford	1,330	802	812
Pod's Brook Road north of A120(T)	Braintree	99	94	95
A131 north east of Braintree	Braintree	36	31	31
A120(T) east of Braintree	Braintree	142	136	135
B1018 south east of Braintree	Braintree	45	41	42
A131 between Great Leighs and the B1008	Chelmsford	0	0	0
B1008 between Barnston and the B1417	Chelmsford	99	98	97
A131 Essex Regiment Way south of B1008	Chelmsford	287	285	272
B1256 west of Great Dunmow	Uttlesford	473	408	407
B1383 Stansted Mountfitchet (S of B1051)	Uttlesford	424	428	425
A505 between the M11 and the A11	South Cambridgeshire	172	365	364
A505 west of M11 at Duxford	South Cambridgeshire	42	84	84
A1307 between the A11 and Linton	South Cambridgeshire	106	171	171
B1052 Saffron Walden	Uttlesford	229	194	193
B184 Saffron Walden	Uttlesford	317	370	367
B1383 Newport village	Uttlesford	390	364	365
B1051 Stansted Mountfitchet	Uttlesford	334	338	336
B1383 Stansted Mountfitchet (N of B1051)	Uttlesford	90	90	90
B1256 Takeley village	Uttlesford	212	206	208
B1008 Great Dunmow	Uttlesford	125	127	125

6.7.4 As can be seen from **Table 32** the anticipated additional traffic flows due to Local Plan development in the AM peak are low in most locations for both Scenarios and would be difficult to differentiate from typical daily fluctuations in traffic flow. For example a two-way flow of 360 VPH would be equivalent to one vehicle passing every 20 seconds, on average, in each direction during the peak hour.

6.7.5 Forecast flow increases on the M11 motorway are small, particularly when taken in the context of background traffic flows on the motorway. Development Scenario flows on the A120(T) corridor between M11 Junction 8 and Great Dunmow are greater but reduce significantly west of M11 Junction 8 (on the Bishop's Stortford bypass) and east of Braintree.

6.7.6 Development flows on 'A' and 'B' roads outside of the District are low with the highest flow of 365 VPH forecast on the A505 between the M11 and the A11 within South Cambridgeshire in Scenario 11.

6.7.7 Flows on some local roads with Uttlesford are slightly higher, for example the B1256 west of Great Dunmow (up to 473 VPH in Scenario 10), on the B1383 south of the B1051 in Stansted Mountfitchet (up to 428 VPH in Scenario 11) and on the B1383 through Newport village (up to 390 VPH in Scenario 10).

6.8 TRAFFIC IMPACTS AT JUNCTIONS

6.8.1 As mentioned previously the CRF methodology used to estimate the likely strategic impacts of Local Plan development on the highway network is a broad measure of the performance of links between junctions. The likely impacts of Local Plan development traffic on key junctions within the study area is discussed in this section of the report.

M11 Junction 8

6.8.2 M11 Junction 8 is a critical junction within the district, it is the intersection of the M11 motorway and the A120(T) Trunk Road, both of which form part of the Strategic Road Network (SRN) and carry longer distance through traffic as well as local traffic. M11 Junction 8 also serves Stansted Airport which is a key transport gateway and the largest single-site employer in the east of England.

6.8.3 The operation of the existing signal controlled M11 Junction 8 roundabout and the two priority roundabouts to the west of M11 Junction 8 have therefore been assessed to determine how the addition of Local Plan development traffic will affect their operation.

6.8.4 As mentioned in Section 4.5 a short to medium term proposal to increase traffic capacity through the M11 junction 8 interchange has been identified by Essex County Council and is being promoted via Highways England's Growth and Housing Fund. Preliminary plans depicting the proposed improvements works can be found in **Appendix F**.

6.8.5 The improvements comprise the provision of a dedicated left-turn slip lane between the M11 southbound off-slip to the A120(T) eastbound, replacement of the A120/A1250/Birchanger Lane roundabout with a staggered signal controlled junction and provision of a dedicated left-turn slip lane from the M11 northbound off-slip into Birchanger Services.

A120/B1383 Stansted Road Roundabout

6.8.6 This junction is located to the west of M11 junction 8 within Uttlesford close to the boundary with East Hertfordshire District. The junction is currently congested in the peak periods and the addition of committed development and Local Plan development traffic will make this situation worse.

6.8.7 A scheme to provide additional traffic capacity at the roundabout has been identified by Essex County Council that involves the provision of dedicated left turn lanes between the A120 west and the B1383 north, between the B1383 north and the A120 east and between the A120 east and the B1383 south. A preliminary layout plan showing the improvement can be found in **Appendix G**. It is expected that the improvement scheme will be funded by S106 financial contributions from the Bishops Stortford North development and the works will supersede the less extensive improvements at the junction that were identified in the Transport Assessment submitted in support of the planning application.

Junction Capacity Assessments

6.8.8 The operation of the proposed improved junction layouts for M11 Junction 8, the A120/A1250/Birchanger Lane roundabout immediately west of M11 Junction 8 and the A120/B1383 Stansted Road roundabout further to the west have been assessed to determine how the additional Local Plan development will affect their operation.

6.8.9 The junction capacity assessments have been undertaken using computer models built and managed by Jacobs on behalf of Essex County Council Highways. The models comprise a LINSIG computer model of the signal controlled junctions and Junctions 9 computer models of the priority roundabouts. These are the 'industry standard' traffic modelling computer software packages used for assessing the traffic capacity of signal controlled junctions and priority roundabouts respectively.

6.8.10 The assessments have been undertaken by Jacobs using 2014 'Base' models that have been calibrated against observed junction performance. The operation of the existing junction

layouts has then been undertaken for Local Plan development Scenario 10 and 11[9] for the AM and PM peak hours at a 2014 Base Year (without Development), 2033 Reference Case (Base + Committed) and 2033 Development Year (Base + Committed + Local Plan Development).

6.8.11 For priority roundabouts a Ratio of Flow to Capacity (RFC) value below 0.850 indicates that a junction operates 'within' capacity. An RFC value between 0.850 and 1.000 indicates that there may be occasions during the period modelled when queues will develop and delays occur. An RFC value greater than 1.000 indicates that a junction operates 'above' capacity.

6.8.12 For traffic signal junction assessments, a Practical Reserve Capacity (PRC) is used to indicate whether or not a junction operates 'within' its practical capacity. When there is no PRC, a degree of saturation (DoS) is the percentage by which the traffic flows exceed the practical capacity of the junction. Experience with PRC calculations at existing junctions indicates that queuing becomes increasingly unpredictable as the degree of saturation exceeds practical reserve capacity but not excessive until the degree of saturation reaches 10% (i.e. -10% PRC) and this is approximately comparable to an RFC of 1.0 at a priority junction.

6.8.13 Full details of the LINSIG and Junctions 9 files can be found in **Appendix N** and summaries of the assessment results are presented in **Table 33** and **Table 34** on the following pages. For the sake of simplicity the results presented are the 'worst case' values forecast at each junction. Values exceeding the capacity thresholds discussed above are shown in red.

[9] **Note**: the capacity assessments were undertaken before the SoS's decision was released on the two appeal sites within Uttlesford. The assessment therefore applies the initial Reference Case assumptions (i.e. includes the land west of Great Dunmow appeal site) and the initial assumptions for Local Plan development scenarios 10 and 11. The assessment is therefore considered to be robust. The new Scenario 12 has not been tested. However, as the only difference between Scenario 11 and 12 is the point where garden community traffic joins the A120(T) to the east of M11J8 the Scenario 11 flows at M11J8 are also representative of Scenario 12 at the junction.

Table 33 – Junction Capacity Assessment Results – Existing Junction Layouts

Junction	AM Peak		PM Peak	
	PRC%/ Max. RFC	Max. Queue/Total Delay	PRC%/ Max. RFC	Max. Queue/Total Delay
2014 Base Year (No Development)				
M11(M)/A120(T)/B1256/MSA (M11 Junction 8)	18.7%	15.5	**-3.9%**	28.1
A120/A1250/Birchanger Lane	0.670	2	0.620	2
A120/B1383 Stansted Road	0.650	2	0.700	3
2033 Reference Case Flows (Base + Committed)				
M11(M)/A120(T)/B1256/MSA (M11 Junction 8)	**-70.5%**	504.0	**-98.9%**	666.5
A120/A1250/Birchanger Lane	**1.550**	444	**1.870**	791
A120/B1383 Stansted Road	**1.300**	268	**1.360**	328
2033 Assessment Flows (Base + Committed + Scenario 10)				
M11(M)/A120(T)/B1256/MSA (M11 Junction 8)	**-85.4%**	629.9	**-111.7%**	786.5
A120/A1250/Birchanger Lane	**1.700**	665	**2.010**	994
A120/B1383 Stansted Road	**1.370**	384	**1.530**	538
2033 Assessment Flows (Base + Committed + Scenario 11)				
M11(M)/A120(T)/B1256/MSAs (M11 Junction 8)	**-81.9%**	594.6	**-107.5%**	744.0
A120/A1250/Birchanger Lane	**1.670**	622	**1.960**	920
A120/B1383 Stansted Road	**1.370**	376	**1.510**	513

6.8.14 The results indicate that all three junctions would operate satisfactorily in the base year but would be expected to be over capacity in both peaks at 2033 with the addition of the Reference Case traffic flows. The addition of the Local Plan development traffic flows is shown to have relatively small impacts on the operation of the junctions for both Local Plan development scenarios.

6.8.15 The operation of the proposed improvements discussed above and shown in **Appendix F** and **Appendix G** have also been tested and the results are presented in **Table 34** on the following page.

Table 34 – Junction Capacity Assessment Results – Improved Junction Layouts

Junction	AM Peak		PM Peak	
	PRC%/ Max. RFC	Max. Queue/Total Delay	PRC%/ Max. RFC	Max. Queue/Total Delay
2033 Assessment Flows (Base + Committed + Scenario 10)				
M11(M)/A120(T)/B1256/MSAs (M11 Junction 8)	**-19.4%**	92.4	**-14.6%**	59.7
A120/A1250/Birchanger Lane	**-21.1%**	69.3	**-35.7%**	225.8
A120/Stansted Road	**1.170**	119	**1.110**	90
2033 Assessment Flows (Base + Committed + Scenario 11)				
M11(M)/A120(T)/B1256/MSAs (M11 Junction 8)	**-19.4%**	92.4	**-14.4%**	58.5
A120/A1250/Birchanger Lane	**-17.3%**	61.9	**-34.3%**	203.0
A120/Stansted Road	**1.160**	114	**1.110**	89

6.8.16 It can be seen that, in comparison to the results for the existing junction layouts with the addition of Local Plan development traffic, the proposals improve the capacity of the junctions in both peaks for both Local Plan development scenarios. Traffic capacity with the addition of the Local Plan development scenarios is better than the Reference Case performance of the existing junction layouts however all three junctions are still forecast to be operating over capacity by 2033 with Local Plan development with significant queuing.

6.8.17 The proposed improvements would therefore offer operational benefits by providing short to medium-term congestion relief, effectively extending the 'working life' of the junctions. However, assuming that all of the committed development applied in Reference Case is actually delivered, it is recognised that more major improvements will be required at M11 Junction 8 within the Plan period. Highways England and ECC have confirmed that they are committed to identifying a long-term capacity improvement which will be promoted for delivery as part of RIS 2 (see paragraph 4.5.11 on page 63).

A120(T) between M11 Junction 8 and Braintree

6.8.18 To the east of M11 Junction 8 the A120(T) is dual carriageway until east of Braintree and all junctions until the A120(T) Galley's Corner and A120(T) Mark's Farm at-grade roundabout junctions at Braintree are grade-separated.

6.8.19 Highways England and Essex County Council have confirmed that the existing grade-separated junctions on this section of the A120(T) currently operate with spare capacity and are not expected to represent a constraint to Local Plan development. However, the A120(T) Galley's

Corner and A120(T) Mark's Farm at-grade roundabout junctions are known to experience peak period congestion with significant queuing. Both junctions are located within Braintree District and are currently being examined by Essex County Council as part of the A120(T) Braintree to A12(T) study mentioned in Section 4.5.

6.8.20 It is therefore anticipated that the study will identify appropriate improvement schemes at these junctions for delivery either through developer S106 financial contributions or via inclusion in the next Government Road Investment Strategy (RIS2) which will run from 2020 to 2025. Work has only recently commenced on this study and there are no findings available at the time of writing.

6.8.21 In addition, as future improvement of the A120(T) between Braintree and the A12(T) could result in increased traffic flows on the A120(T) between Braintree and M11 Junction 8 it is recommended that the scope of the study be extended to cover the whole A120(T) corridor between the M11 and the A12(T).

Other Junctions Outside of the District

6.8.22 Other junctions known to experience congestion are the; M11 Junction 10 at Duxford and the A505/A1301 roundabout to the east of M11 Junction 10, both of which are located within South Cambridgeshire, and the A131/B1008 Essex Regiment Way Roundabout within Chelmsford District. All three of these junctions are at-grade priority roundabouts that are known to experience congestion and queuing in the peak periods.

6.8.23 There are no known improvements proposed at the junctions with South Cambridgeshire and it is recommended that Uttlesford District Council liaise with South Cambridgeshire District Council, Highways England and Essex County Council to identify appropriate improvement schemes and mechanisms for their funding and delivery (e.g. through proportional S106 financial contributions from developments within each district).

7 Transport Mitigation

7.1 INTRODUCTION

7.1.1 This Chapter discusses the transport mitigation that is likely to be required to facilitate Local Plan development Scenarios 10, 11 or 12.

7.2 SUSTAINABLE TRAVEL INFRASTRUCTURE/MEASURES

7.2.1 Current best practice recommends that the transport implications of developments should be assessed having regard to:

- **Measures to encourage environmental sustainability** – i.e. reducing the need to travel, especially by car, providing sustainable transport information and choices and measures to assist in influencing travel behaviour.
- **Managing the existing network** – i.e. making best use of existing transport infrastructure, low cost improvements such as signal control systems and intelligent transport systems.
- **Mitigating residual impacts** – through demand management; improvements to public transport networks, walking and cycling infrastructure; and through minor physical improvements to existing roads.

7.2.2 In accordance with the NPPF all developments which generate significant amounts of movement will be required to provide a Travel Plan. As part of the travel planning process developers will be required to nominate a Travel Plan Coordinator and make financial contributions for the annual monitoring of travel plan performance against agreed targets for an agreed time period following occupation of the development. In addition, bond payments will also be sought to cover the provision of supplementary sustainable travel infrastructure/measures in the event that agreed targets are not met.

7.2.3 The detailed content of each Travel Plan will be site specific and will need to be agreed with the highway and planning authorities at the planning application stage but in general terms will set out the process for monitoring future travel behaviour and the site-specific strategies and measures that will be introduced to influence modal choice with a view to reducing dependency upon the private car. The broad aims of Travel Plan reports being to:

- Encourage the use of alternative modes of transport to the private car and to better manage private car usage in order to reduce environmental impacts for all journeys associated with the proposed development;
- Include 'smarter choices' (e.g. car sharing, car clubs, teleworking, teleconferencing, home shopping, electric vehicle infrastructure etc) to help change the way people travel;
- Deliver long-term commitments to changing travel habits by minimising the percentage of single occupancy car journeys associated with the proposal and maximising the proportion of trips made by public transport, by car share, on foot and by cycle;
- Identify and achieve the support of stakeholders for the Travel Plan and encourage a sustainable transport culture, which will develop and grow with time;
- To educate residents and employees regarding the health benefits of walking and cycling;
- To seek to reduce traffic generated by development to a lower level of car trips than would occur without the implementation of a Travel Plan; and
- Promote healthy lifestyles and vibrant communities.

7.2.4 Developers will be required to fund (via S106 Agreements) measures and/or infrastructure improvements required to mitigate the direct transport impacts of developments. This will include funding for items such as; Smarter Choices measures and initiatives, Travel Plans, on and off-site cycling and walking infrastructure, bus network/infrastructure enhancements and possibly bespoke bus services, where these can be demonstrated to be financially self-supporting in the long term.

7.3 MITIGATION OF RESIDUAL TRAFFIC IMPACTS

7.3.1 Developers will also be required to deliver off-site highway infrastructure improvements to mitigate residual traffic impacts. Details of which will need to be determined at the planning application stage through the submission of Transport Assessments produced in accordance with the NPPF. Developers will be required to assess the transport implications of their sites and the cumulative implications of sites in the local area. Appropriate transport mitigation will be identified and agreed with the highway authorities to address residual traffic impacts. Delivery of mitigation will be secured through the planning approval process.

7.3.2 In addition to addressing the direct transport impacts of developments it is recommended that, subject to the 'pooled S106 contributions' rule, developers also provide S106 financial contributions towards the delivery of the improvements required to address the cumulative effects of all Local Plan development, as discussed in this study and as summarised in **Table 35** on the following page.

Table 35 – Summary of Local Plan Development Transport Mitigation Requirements

Link/Junction	Link/Junction Type	District	Mitigation Strategy
Key Links			
M11 Junction 7 to 8	Dual 3-Lane Motorway	Epping Forest/ Uttlesford	'Smart' Motorway measures to be identified and delivered by HE as part of future RIS
M11 Junction 8 to 9	Dual 2-Lane Motorway	Uttlesford	'Smart' Motorway measures to be identified and delivered by HE as part of future RIS
A120(T) M11 J8 to Stansted Airport	Dual 2-Lane Trunk Road	Uttlesford	If improvements required ECC to identify works as part of Stansted Airport study for funding by the airport
Key Junctions			
M11 Junction 8	Signal Controlled Roundabout	Uttlesford	HE/ECC interim improvement scheme funded by combination of HE Growth and Housing Fund and LEP funding (See **Appendix F**). More major improvement required as part of future RIS.
A120/A1250/Birchanger Lane	Priority Roundabout	Uttlesford	HE/ECC improvement scheme funded by combination of HE Growth and Housing Fund and LEP funding (See **Appendix F**)
A120(T)/Round Coppice Road	Priority Roundabout	Uttlesford	If improvements required ECC to identify works as part of Stansted Airport study for funding by the airport
A120/B1383 Stansted Road Roundabout	Priority Roundabout	Uttlesford	ECC improvement scheme funded by S106 contributions from Bishop's Stortford North development (See **Appendix G**)
A120(T) Galley's Corner	Priority Roundabout	Braintree	Improvements to be identified as part of the A120(T) Braintree to A12(T) Study
A120(T) Mark's Farm	Priority Roundabout	Braintree	Improvements to be identified as part of the A120(T) Braintree to A12(T) Study
M11 Junction 10	Priority Roundabout	South Cambridgeshire	Improvement to be identified and delivered by HE & Cambridgeshire County Council and funded by proportional S106 contributions
A505/A1301 roundabout	Priority Roundabout	South Cambridgeshire	Improvement to be identified and delivered by Cambridgeshire County Council and funded by proportional S106 contributions
A131/B1008 Essex Regiment Way Roundabout	Priority Roundabout	Chelmsford	Improvement to be identified and delivered by Essex County Council and funded by proportional S106 contributions
Local Links			
B1383 Stansted Mountfitchet (S of B1051)	Single Carriageway Urban Roads	Uttlesford	Developers to provide sustainable transport infrastructure and promote sustainable transport measures to help reduce reliance on the private car. Local transport mitigation to be identified where appropriate/possible to address residual traffic impacts through Transport Assessments submitted in support of planning applications. S106 funding to be secured from developers through the planning approval process.
B1256 west of Great Dunmow			
B1383 Newport village			
Local Junctions			
Junctions in Saffron Walden	Various	Uttlesford	Coordinated mitigation strategy for junctions within saffron Walden to be identified by the ECC transport study of the town. Appropriate mitigation to be agreed and S106 funding secured from developers through the planning approval process.
To be identified at Planning Application Stage	To be identified at Planning Application Stage	Uttlesford	Development traffic impacts at local junctions to be identified as part of the Transport Assessments submitted in support of planning applications. Mitigation to be identified where appropriate/possible and secured through the planning approval process.

8 Summary

8.1 INTRODUCTION

8.1.1 This Transport Study has been produced to assist with the preparation of Uttlesford District Council's new Local Plan. The comparative transport merits of twelve potential Local Plan development scenarios have been assessed and two preferred scenarios have been identified.

8.1.2 This is a strategic level study that has been produced in accordance with the National Planning Policy Framework (NPPF), relevant transport policies, transport guidance and current best practice. It applies a methodology that is considered to be proportional and robust and has been produced in consultation with the transport and planning authorities responsible for the study area and adjacent districts.

8.1.3 Existing and future multi-modal transport conditions have been examined assuming no Local Plan development. Future committed development within Uttlesford and adjacent districts has been taken into account in accordance with current best practice and assessments then undertaken of the cumulative transport effects of Local Plan development at the end of the plan period (2033).

8.1.4 Strategic transport implications and the key transport infrastructure likely to be required to accommodate forecast conditions at the end of the plan period have been identified and discussed including the need for a major improvement scheme at M11 Junction 8. References are also made to other ongoing relevant transport studies that will identify specific mitigation measures in more detail.

8.2 CONCLUSIONS

8.2.1 Additional demands for sustainable travel as a result of Local Plan development are expected to be largely accommodated by existing infrastructure/services however; developers will be expected to deliver local improvements to integrate development sites, provide sustainable transport options and encourage the use of sustainable transport modes.

8.2.2 Developers will also be required to assess the transport implications of their sites and the cumulative implications of sites in the local area. Appropriate transport mitigation will need to be identified and agreed with the highway authorities to address residual development traffic impacts and mitigation will be secured through the planning approval process.

8.2.3 Likely impacts on links and junctions within the study area have been identified due to the two preferred Local Plan development scenarios and a summary of the mitigation likely to be required to accommodate these Scenarios is presented in **Table 35** on page 104.

8.2.4 Improvement of the M11 Junction 8 interchange is viewed as key to facilitating future Local Plan development. The proposed short to medium-term improvements being promoted by Highways England and Essex County Council should therefore be supported and a longer-term solution should be identified and promoted for Government funding and implementation through the Roads Investment Strategy post 2020 (RIS2).

8.2.5 Relatively small traffic flow increases are anticipated due to the Local Plan development Scenarios on the M11 Motorway. However, link capacity improvements (i.e. smart motorway measures or carriageway widening) on the M11 between J7 and J9 may need to be investigated by Highways England and promoted for Government funding and implementation through future Roads Investment Strategies to address forecast 'stress levels' due to committed development traffic.

8.2.6 Link capacity on the A120(T) between M11J8 (and the A120/A1250 roundabout immediately to the west of M11J8) and the access to Stansted Airport has been identified as a potential constraint to Local Plan development if all Reference Case growth (including Stansted Airport expansion to 35mppa) is realised. This should be investigated further in the context of planned expansion at the airport as part of Essex County Council's transport study. Suitable improvements should be identified for funding and delivery as part of development at the airport.

8.2.7 Improvements planned to the A120/B1383 roundabout to the west of M11J8 within Uttlesford should be supported. These works are expected to be funded via S106 financial contributions from the Bishop's Stortford North development and delivered by Essex County Council.

8.2.8 The A120(T) Galley's Corner and A120(T) Mark's Farm at-grade roundabout junctions within Braintree district are known to experience peak period congestion with significant queuing. Traffic flow increases due to the Local Plan development Scenarios are low at these junctions and the operation of these junctions are currently being examined by Essex County Council as part of the A120(T) Braintree to A12(T) study.

8.2.9 It is therefore anticipated that the Council's study will identify appropriate improvement schemes at both of these junctions for delivery through developer S106 financial contributions or via inclusion in the next Government Road Investment Strategy (RIS2).

8.2.10 As future improvements to the A120(T) between Braintree and the A12(T) could result in increased traffic flows on the A120(T) between Braintree and M11 Junction 8 it is recommended that the scope of the study being undertaken by Essex County Council should be extended to cover the whole A120(T) corridor between the M11 and the A12(T).

8.2.11 Some links on the A120(T) between M11 Junction 8 and Braintree are forecast to meet or exceed capacity by the end of the plan period. However, both Highways England and Essex County Council have confirmed that junctions on this section are of a high standard (grade separated) and operate with spare capacity. Junction capacity is therefore not considered to be a constraint to Local Plan growth on this section of the A120(T) within Uttlesford.

8.2.12 Traffic flow increases are anticipated due to the Local Plan development Scenarios at M11 Junction 10 and the A505/A1301 roundabout junction within South Cambridgeshire and at the A131/B1008 Essex Regiment Way Roundabout in Chelmsford. All of these junctions are known to experience existing congestion and queuing in peak periods.

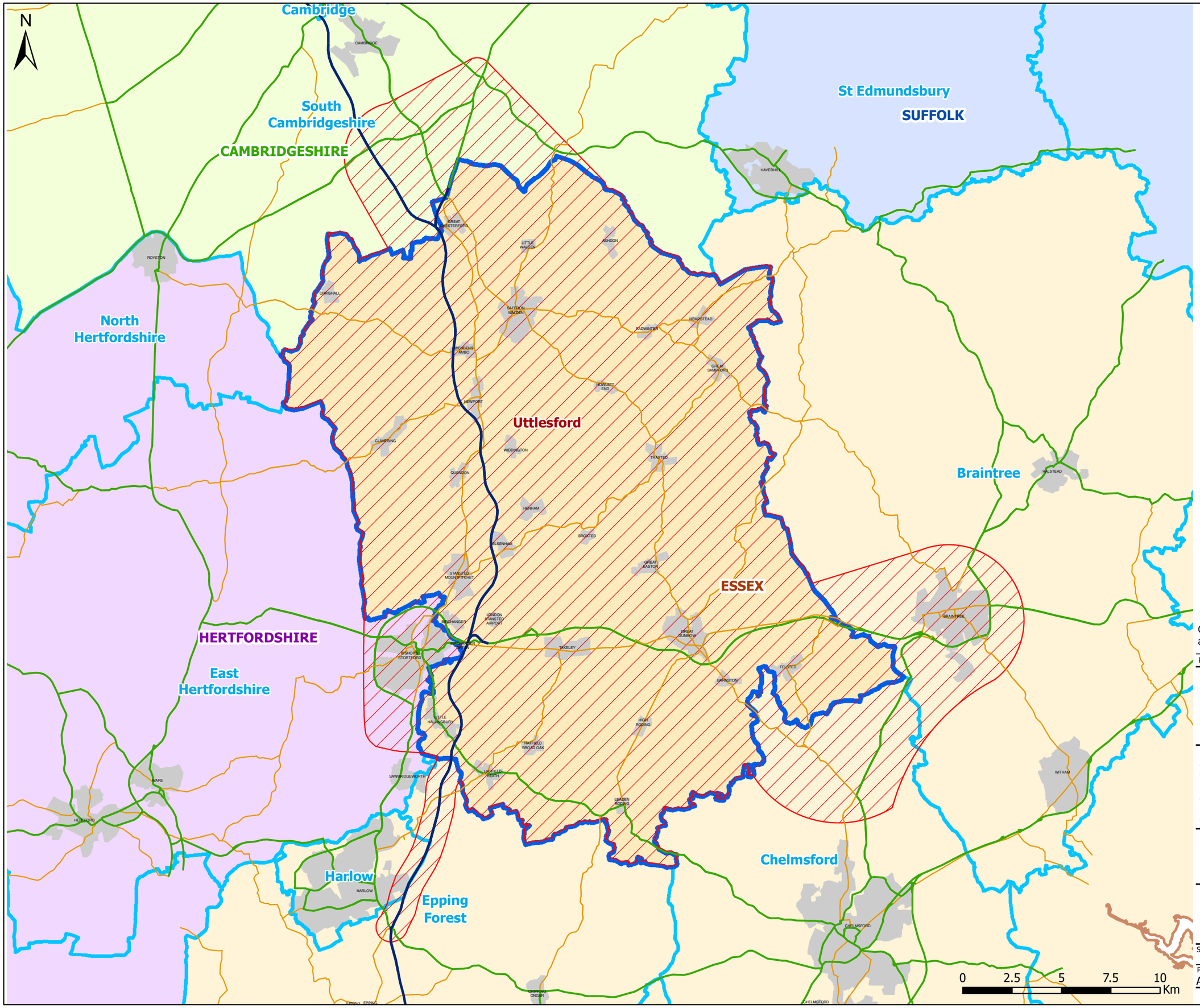
8.2.13 At the time of writing ECC are currently developing improvement proposals for the A131/B1008 Essex Regiment Way Roundabout in Chelmsford as part of a route based strategy for the A131. This scheme is likely to be in place within the next two to three years. There are no known junction improvements proposed at the other mentioned locations and it is recommended that Uttlesford District Council liaise with South Cambridgeshire and Chelmsford planning authorities and Essex and Cambridgeshire County Council Highways to identify appropriate improvement schemes and mechanisms for their funding and delivery (e.g. through proportional S106 financial contributions from developments within each district).

8.2.14 Within Saffron Walden the cumulative traffic impacts of Local Plan development is being assessed as part of a transport study being undertaken by Essex County Council. It is anticipated that the study will identify a coordinated mitigation strategy for junctions within the town. It is anticipated that S106 funding for the resultant improvement works will be secured from developers through the planning approval process.

8.2.15 Some local roads within Uttlesford are forecast to meet or exceed their theoretical link capacity over short sections due to a combination of traffic flows from Committed and Local Plan development, for example the B1256 west of Great Dunmow, on the B1383 south of the B1051 in Stansted Mountfitchet and on the B1383 through Newport village.

8.2.16 To help address these impacts developers will be required to provide sustainable transport infrastructure and promote sustainable transport measures to help reduce reliance on the private car and identify appropriate local mitigation to manage residual traffic impacts, for delivery through S106 funding.

Figures



Legend

- Study Area
- Main Urban Areas
- Uttlesford District
- Surrounding District Boundaries

Counties

- Cambridgeshire
- Essex
- Hertfordshire
- Suffolk

Road Network

- Motorway
- A Road
- B Road

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

Uttlesford District Council

EXECUTIVE PARK
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LE7 7GR
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Project:

District-Wide Transport Study

Drawing Title:

Figure 1
Study Area

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	07/12/15	SB	07/12/15	ASG	07/12/15

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	001	-

N

South Cambridgeshire

CAMBRIDGESHIRE

St Edmundsbury

SUFFOLK

North Hertfordshire

East Hertfordshire

Uttlesford

ESSEX

Braintree

Chelmsford

Harlow

Epping Forest

HERTFORDSHIRE

0 2 4 6 8 Km

Legend

- Study Area
- Uttlesford District

Accident Severity

- Fatal
- Serious
- Slight

Road Class

- Motorway
- A Road
- B Road
- Minor Road

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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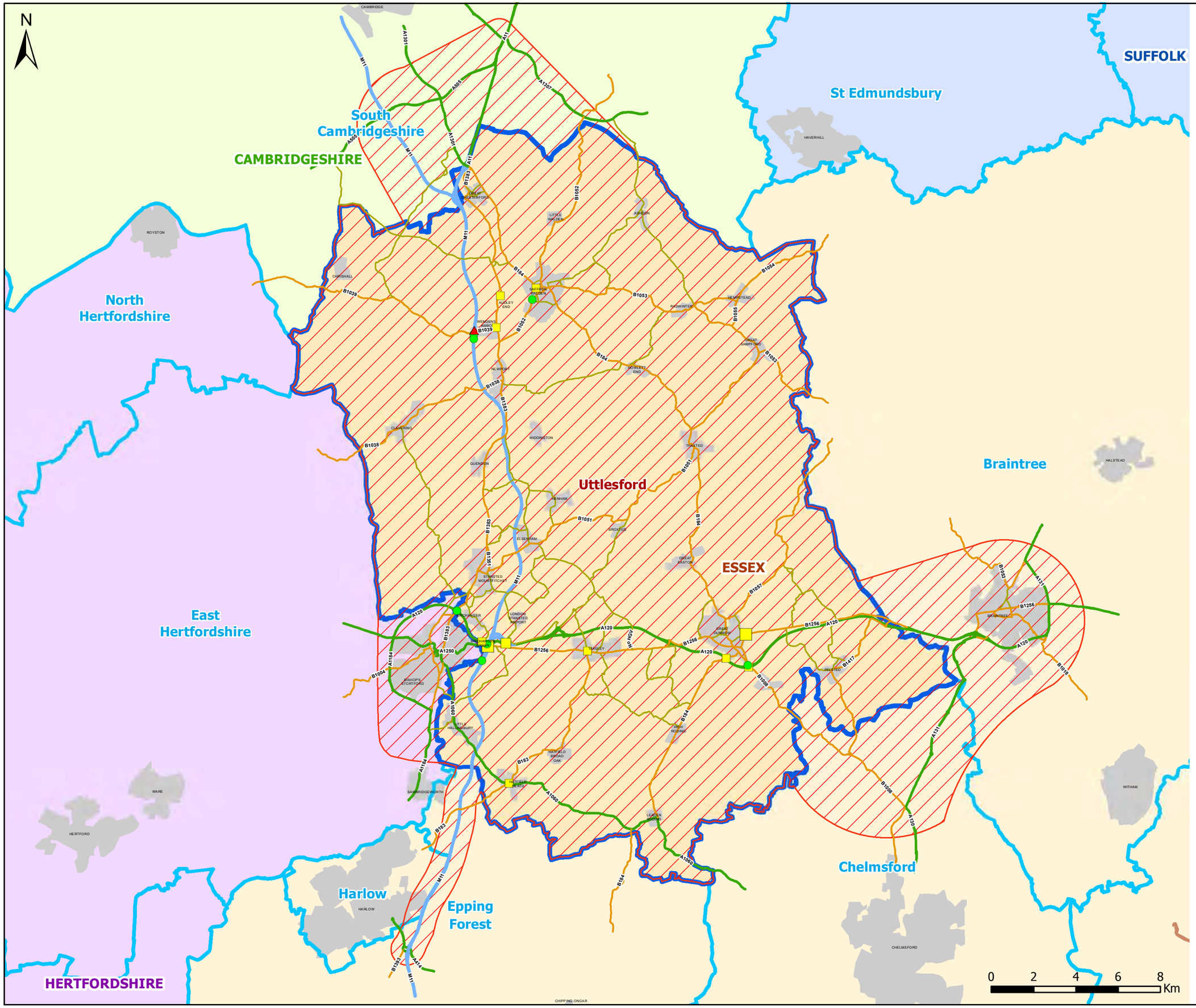
Drawing Title:
Figure 2
Accident Locations
All Accidents

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PJ	12/02/16	SB	12/02/16	ASG	12/02/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	002	-



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A	Added labels	PJ	ASG	ASG	08/02/17
REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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District-Wide Transport Study

Drawing Title:
Figure 3
Accident Locations - Clusters

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PJ	14/12/15	SB	14/12/15	ASG	14/12/15

Project No.	Office	Type	Drawing No.	Revision
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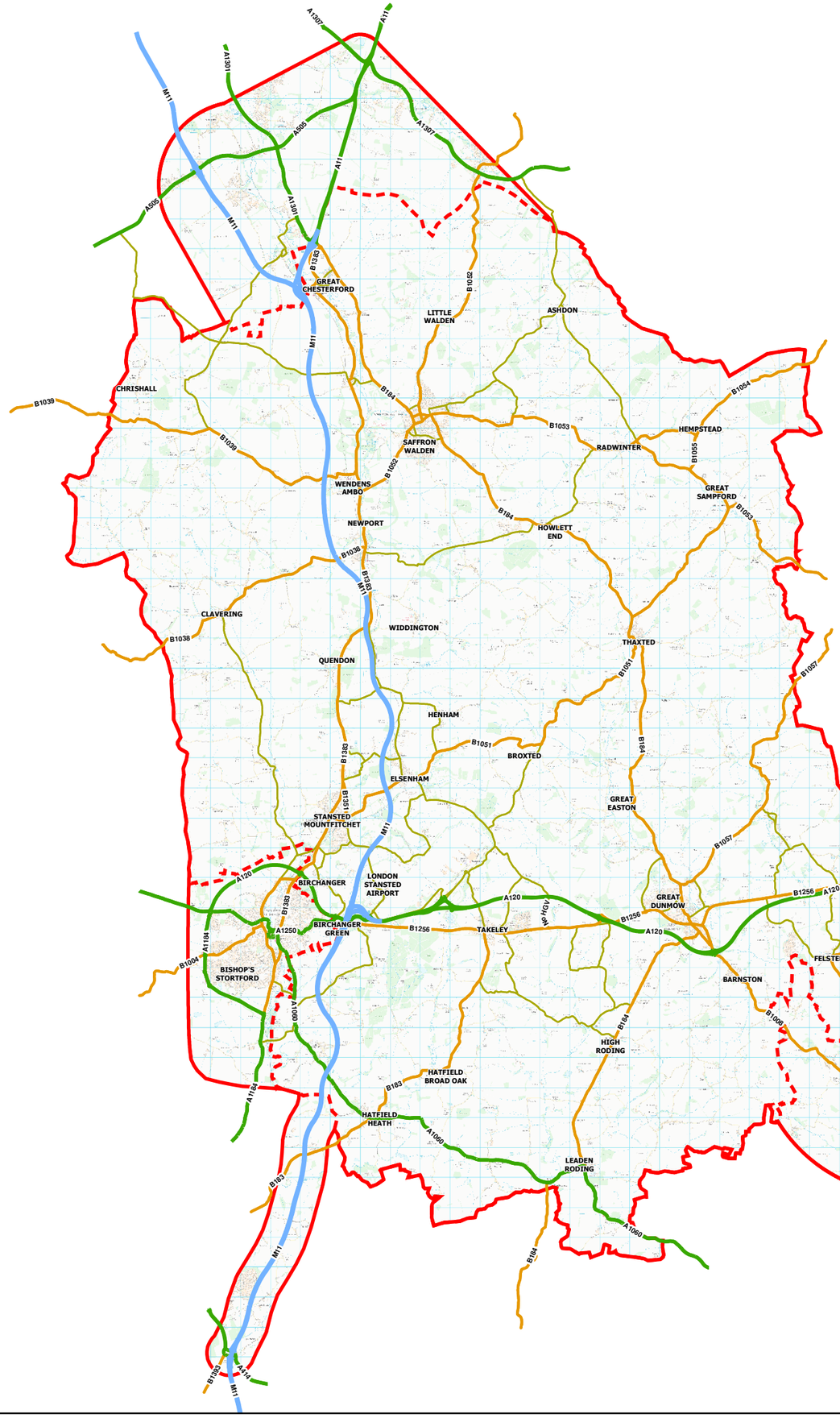

Legend

- Study Area
- Uttlesford District

Road Class

- Motorway
- A Road
- B Road
- Minor Road

0 2 4 6 8 Km

DRAFT

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Drawing Title:
Figure 4
Highway Network

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	02/02/16	SB	02/02/16	ASG	02/02/16

Project No.	Office	Type	Drawing No.	Revision
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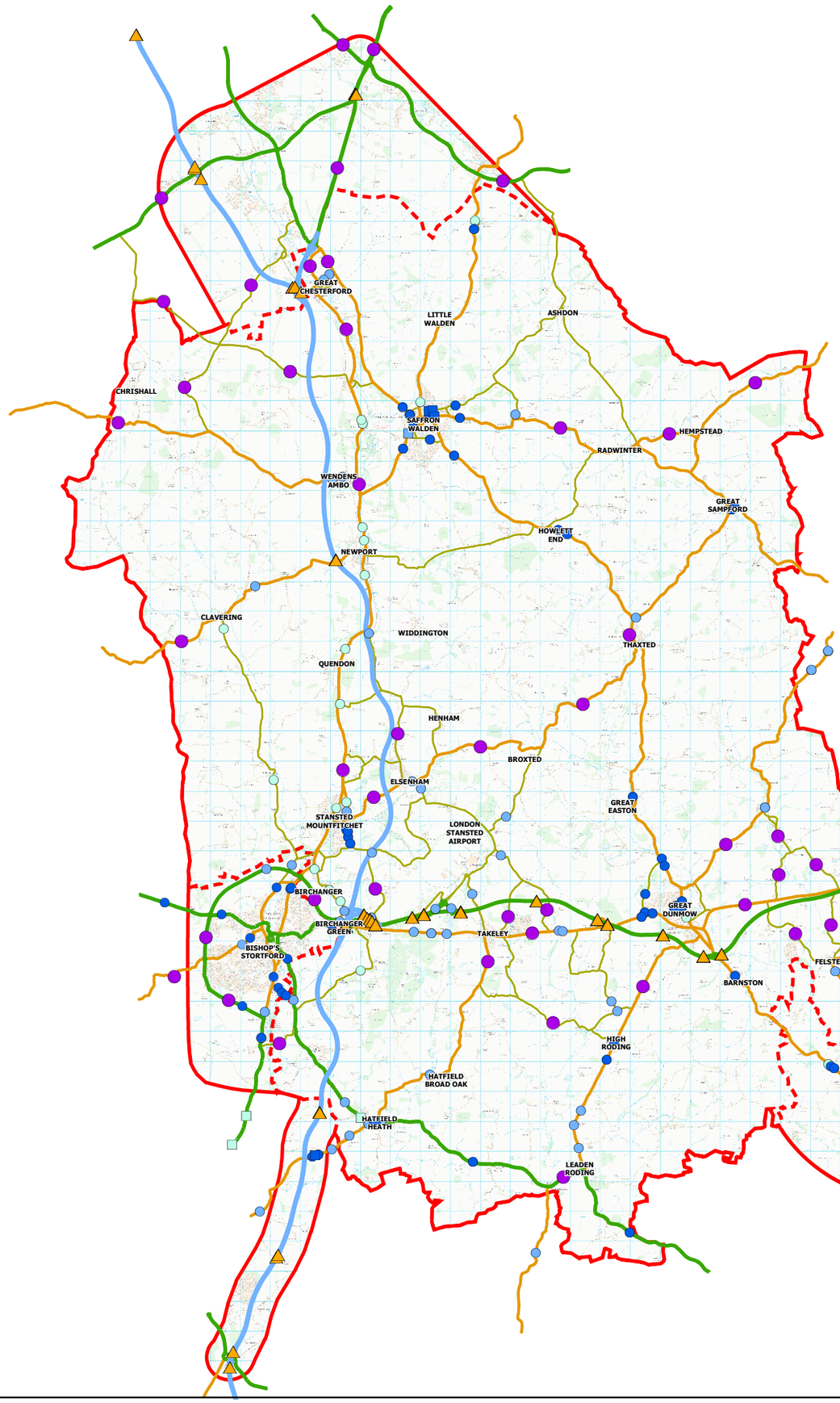

Legend

- Study Area
- Uttlesford District
- New ATC Locations

Survey Type, Year

- Link counts, 2013
- Link counts, 2014
- Link counts, 2015
- Turning counts, 2013
- Turning counts, 2014
- Turning counts, 2015
- TRADS Sites

Road Class

- Motorway
- A Road
- B Road
- Minor Road

REV	DESCRIPTION	BY	CHK	APP	DATE
A	Available traffic surveys displayed	PJ	ASG	ASG	08/02/17

Client:

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Project:
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Drawing Title:
Figure 5
Survey Locations

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	02/02/16	SB	02/02/16	ASG	02/02/16

Project No.	Office	Type	Drawing No.	Revision
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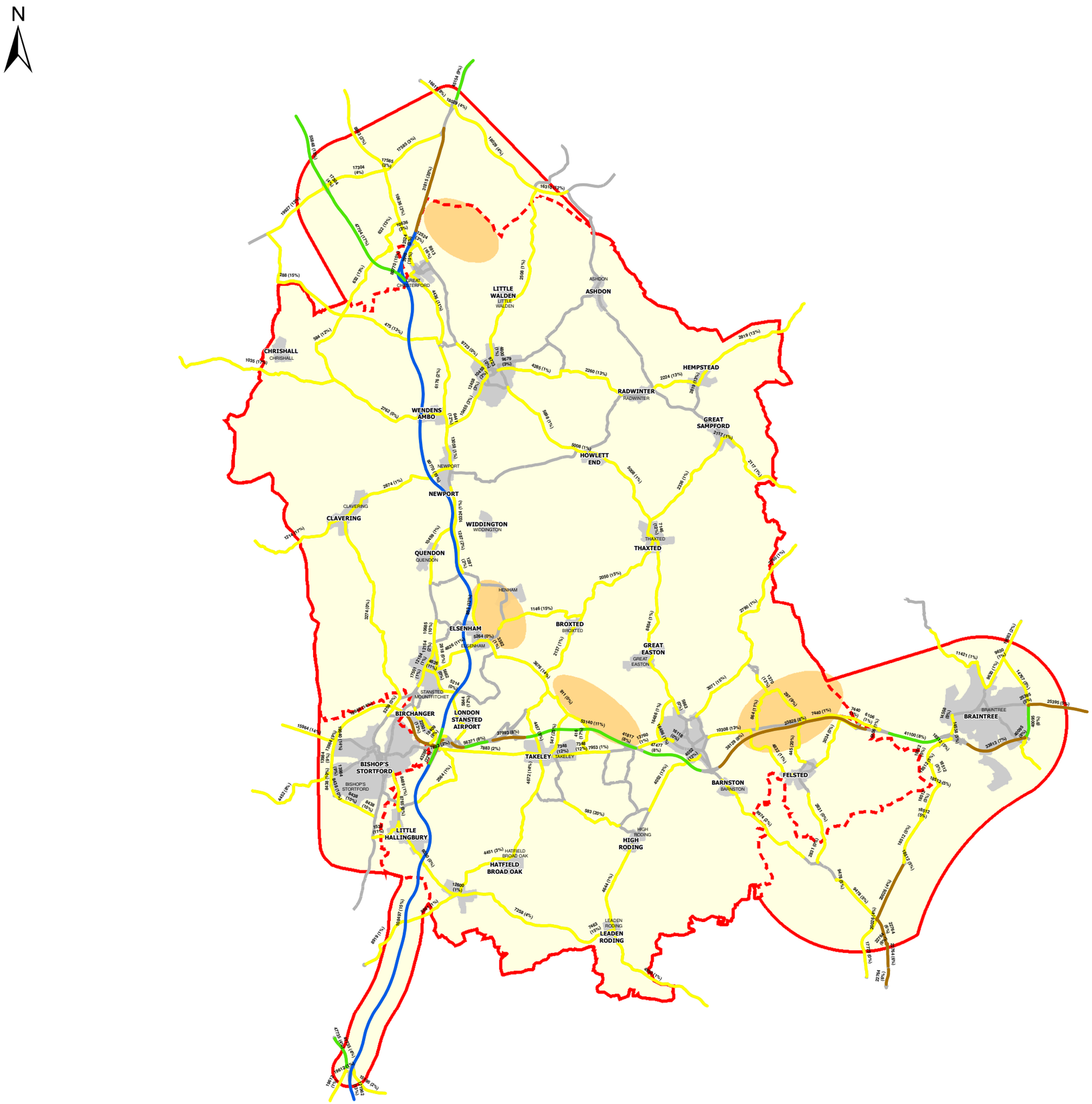

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

2016 AADT Flows (%HGVs)

- No flow data
- 20,000 and under
- 20,001 - 40,000
- 40,001 - 60,000
- 60,001 - 80,000
- Over 80,000

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
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Drawing Title:
Figure 6
2016 AADT Flows

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	006	-

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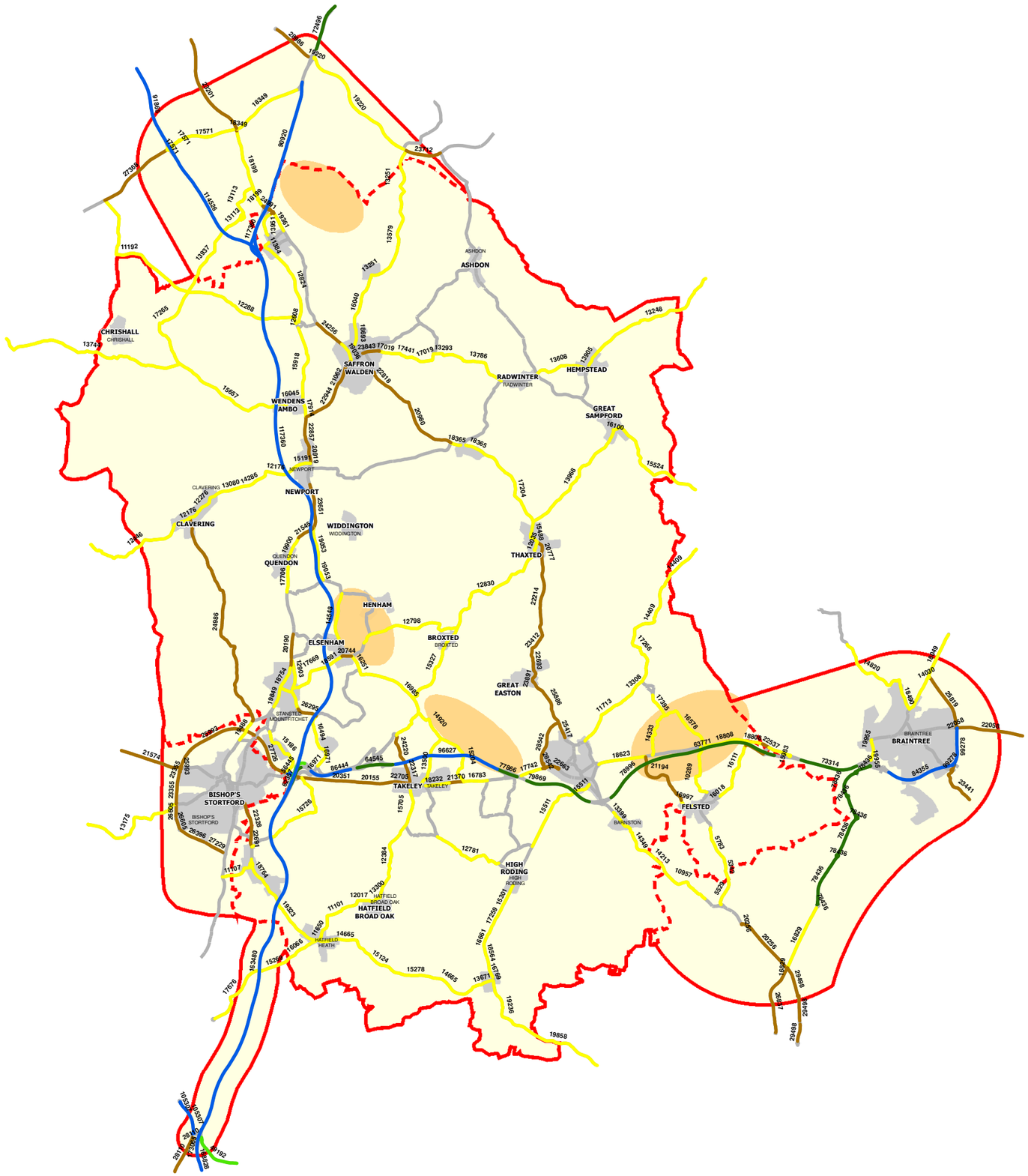

0 2 4 6 8 Km

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

CRF values

- No flow data
- 20,000 and under
- 20,001 - 40,000
- 40,001 - 60,000
- 60,001 - 80,000
- Over 80,000

REV	DESCRIPTION	BY	CHK	APP	DATE

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Project:
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Drawing Title:
Figure 7
CRF Values

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
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Project No.	Office	Type	Drawing No.	Revision
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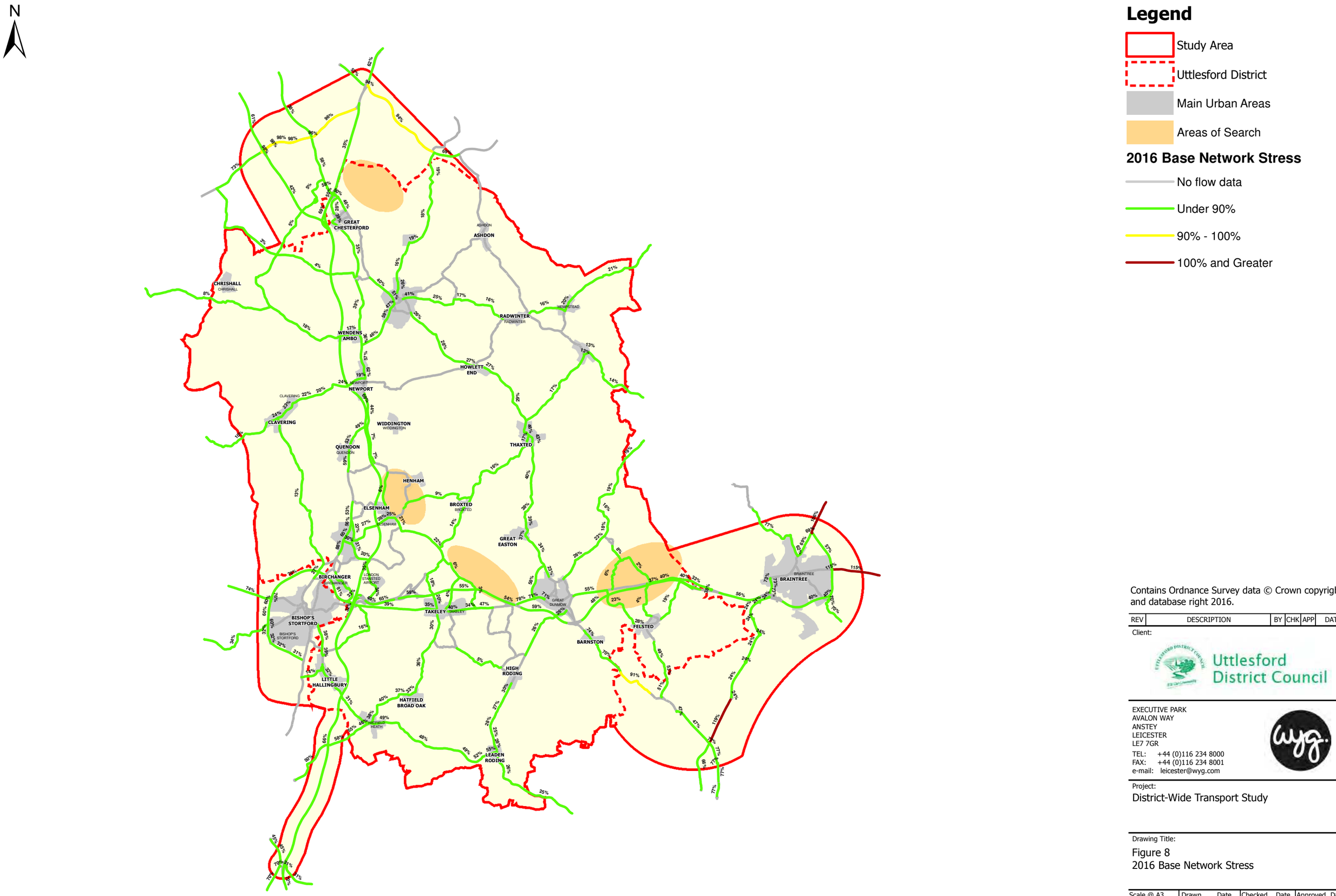

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

2016 Base Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

Drawing Title:
Figure 8
2016 Base Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	008	-

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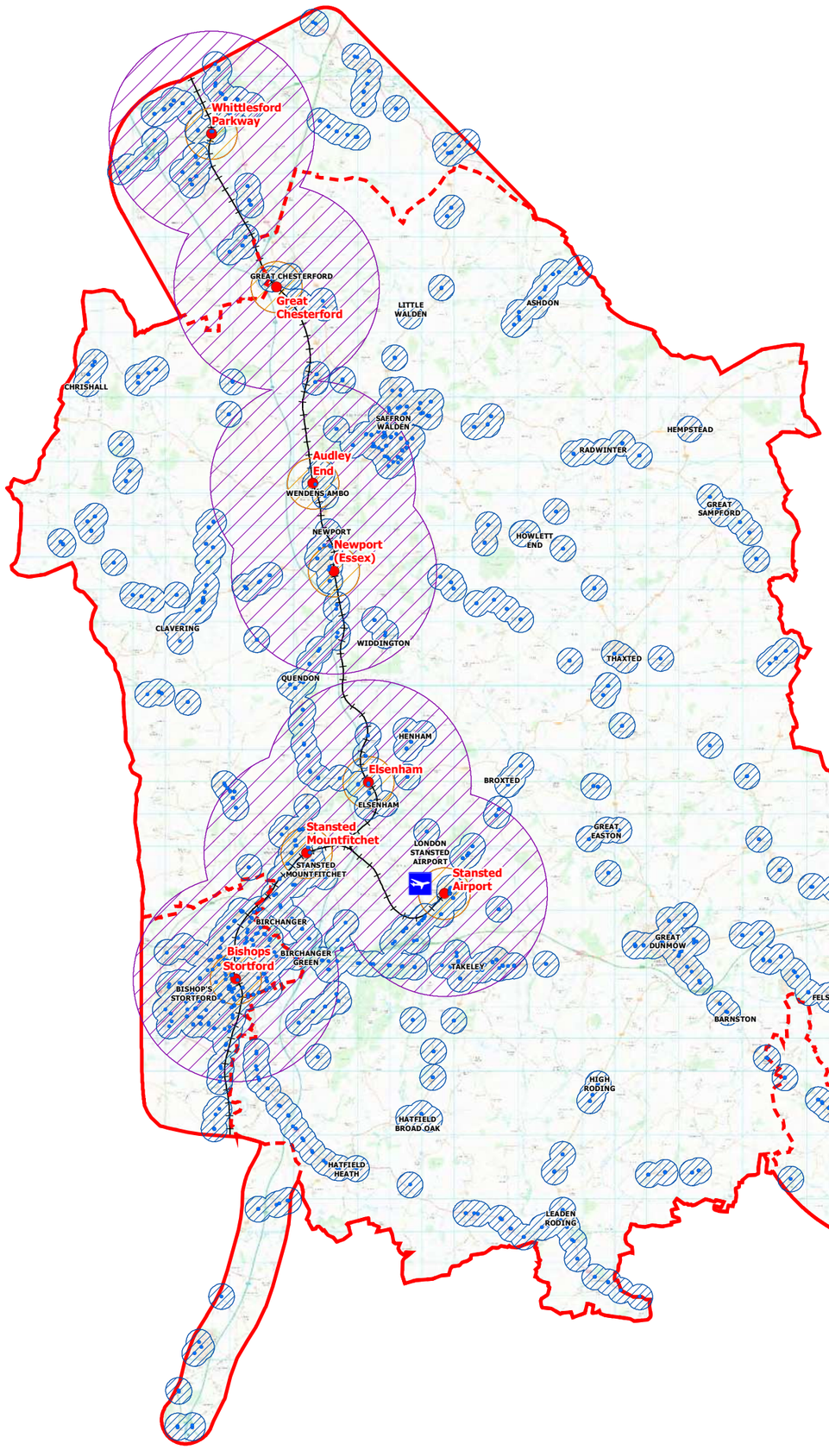

Legend

- Study Area
- Uttlesford District
- Airport
- Bus Stop
- 400m Bus Walking Catchment
- Rail Station
- 800m Rail Walking Catchment
- 3.2km Rail Cycling Catchment
- Rail Line

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:

District-Wide Transport Study

Drawing Title:

Figure 9
Bus and Rail Accessibility

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	02/02/16	XXX	02/02/16	XXX	02/02/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	010	-

N

Legend

- Study Area
- Uttlesford District
- Airport
- Park and Ride
- Rail Station
- Rail Line

Whittlesford Parkway
Ickleton Road Level Crossing
GREAT CHESTERFORD
Great Chesterford
LITTLE WALDEN
ASHDON
CHRISHALL
SAFFRON WALDEN
HEMPSTEAD
RADWINTER
Audley End
WENDENS AMBO
'Trees' Level Crossing
GREAT SAMPFORD
HOWLETT END
Newport (Essex)
NEWPORT
CLAVERING
WIDDINGTON
THAXTED
QUENDON
HENHAM
Elsenham
Elsenham Level Crossing
ELSENHAM
BROXTED
GREAT EASTON
Stansted Mountfitchet
STANSTED MOUNTFITCHET
LONDON STANSTED AIRPORT
Stansted Airport
BIRCHANGER
BIRCHANGER GREEN
Bishops Stortford
TAKELEY
GREAT DUNMOW
BISHOP'S STORTFORD
FELSTED
BARNSTON
BRAINTREE
Braintree
Braintree Freeport
Cressing
LITTLE HALLINGBURY
HIGH RODING
HATFIELD BROAD OAK
Witham
HATFIELD HEATH
LEADEN RODING

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE
A	Added Level Crossings	PJ	ASG	ASG	08/02/17

Client:
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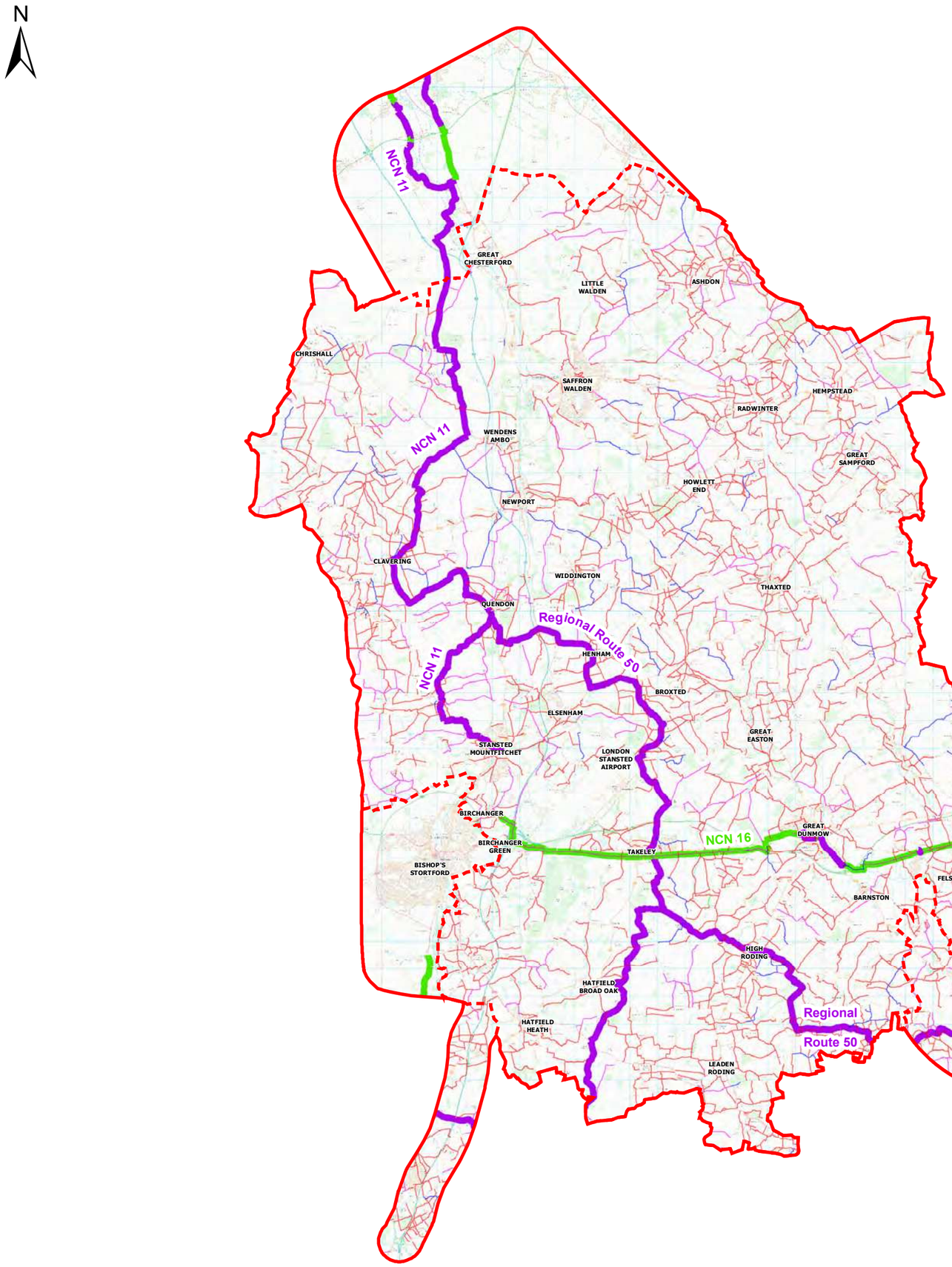
Project:
District-Wide Transport Study

Drawing Title:
Figure 10
Existing Transport Infrastructure

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	02/02/16	ASG	02/02/16	ASG	02/02/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	010	A



Legend

- Study Area
- Uttlesford District

Public Rights of Way

- Footpath
- Bridleway
- Restricted Byway
- BOAT

National Cycle Network

- Traffic free route
- On-road route

A	Added Labels	PJ	ASG	ASG	08/02/17
REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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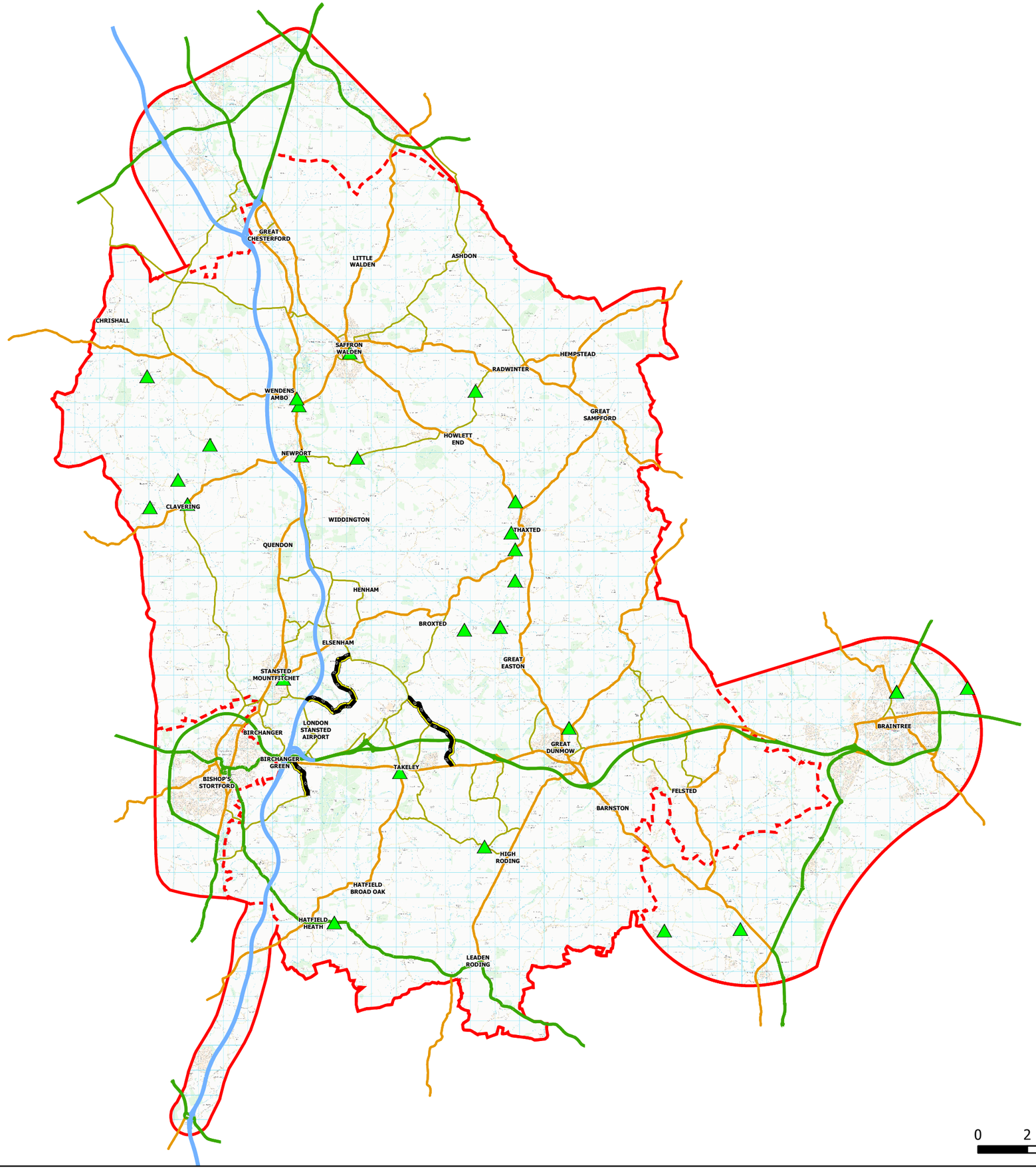
Project:
District-Wide Transport Study

Drawing Title:
Figure 11
PROW and Cycle Routes

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	29/07/16	ASG	29/07/16	ASG	29/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	011	A

N



Legend

- Study Area
- Uttlesford District

Road Class

- Motorway
- A Road
- B Road
- Minor Road
- Links banned for HGVs
- Weak Structures

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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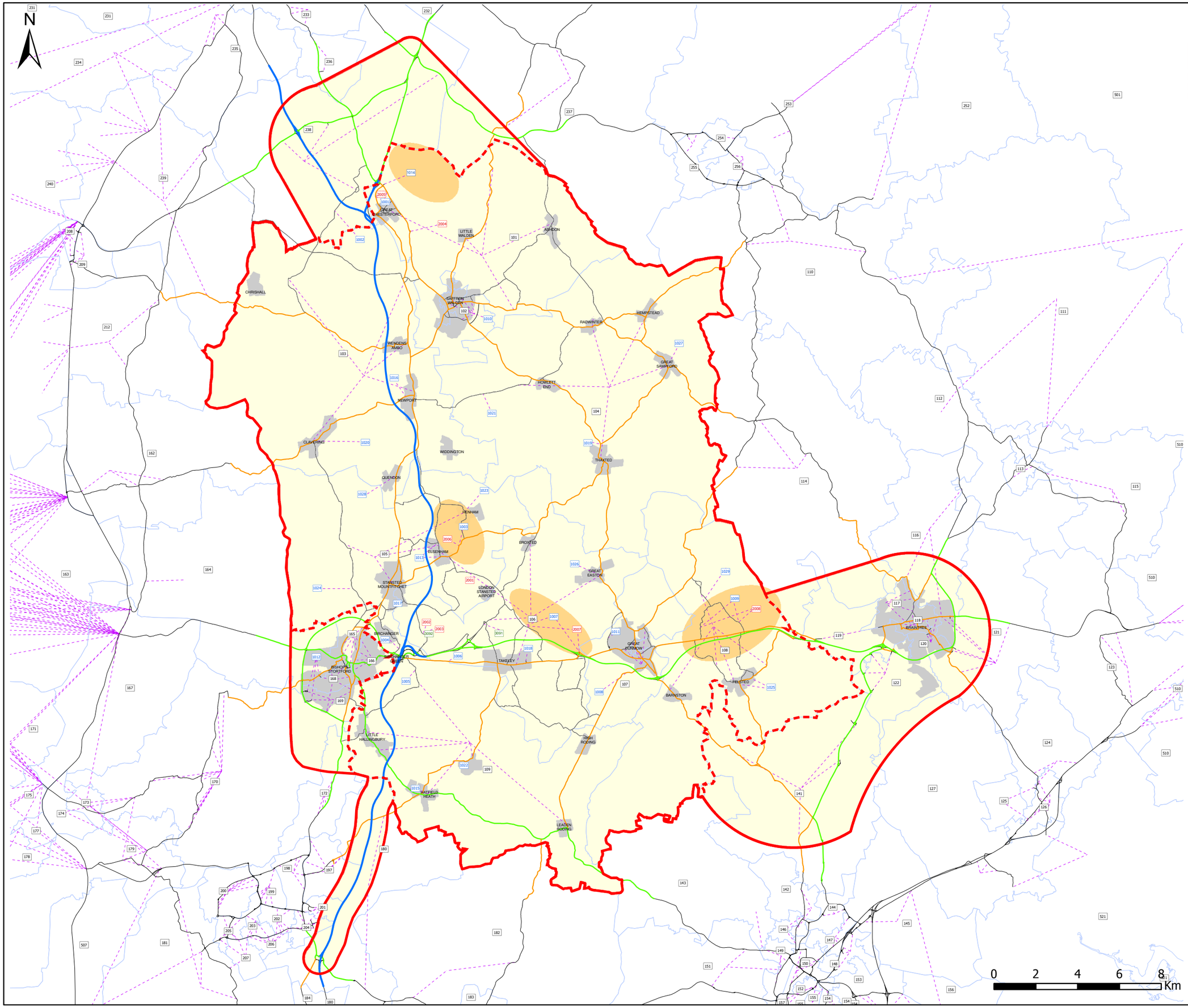
Project:
District-Wide Transport Study

Drawing Title:
Figure 12
HGV Restrictions

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	02/02/16	SB	02/02/16	ASG	02/02/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	012	-



Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Motorway
- A Road
- B Road
- Minor Road
- Road network outside study area
- Zone Connectors
- Areas of Search
- MSOAs (abc)
- Employment Development Zones (abc)
- Residential Development Zones (abc)
- Stansted Airport Model Zones (abc)

New development zones with more than one connector share demand evenly to their connectors

DRAFT

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

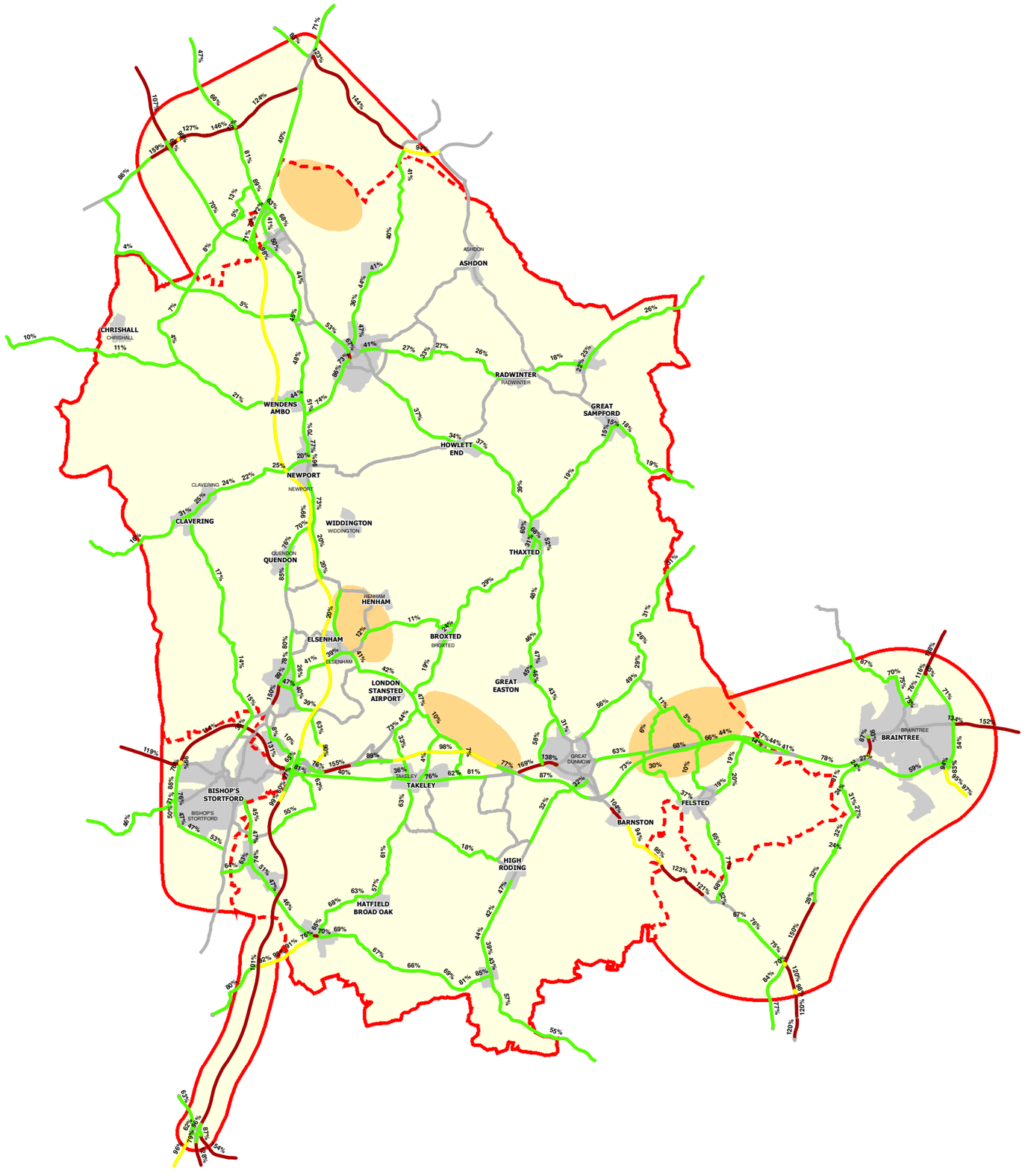
Drawing Title:

Figure 13
VISUM Model Zones & Loading Points

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	JJC	02/02/16	XXX	02/02/16	XXX	02/02/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	013	-

N



Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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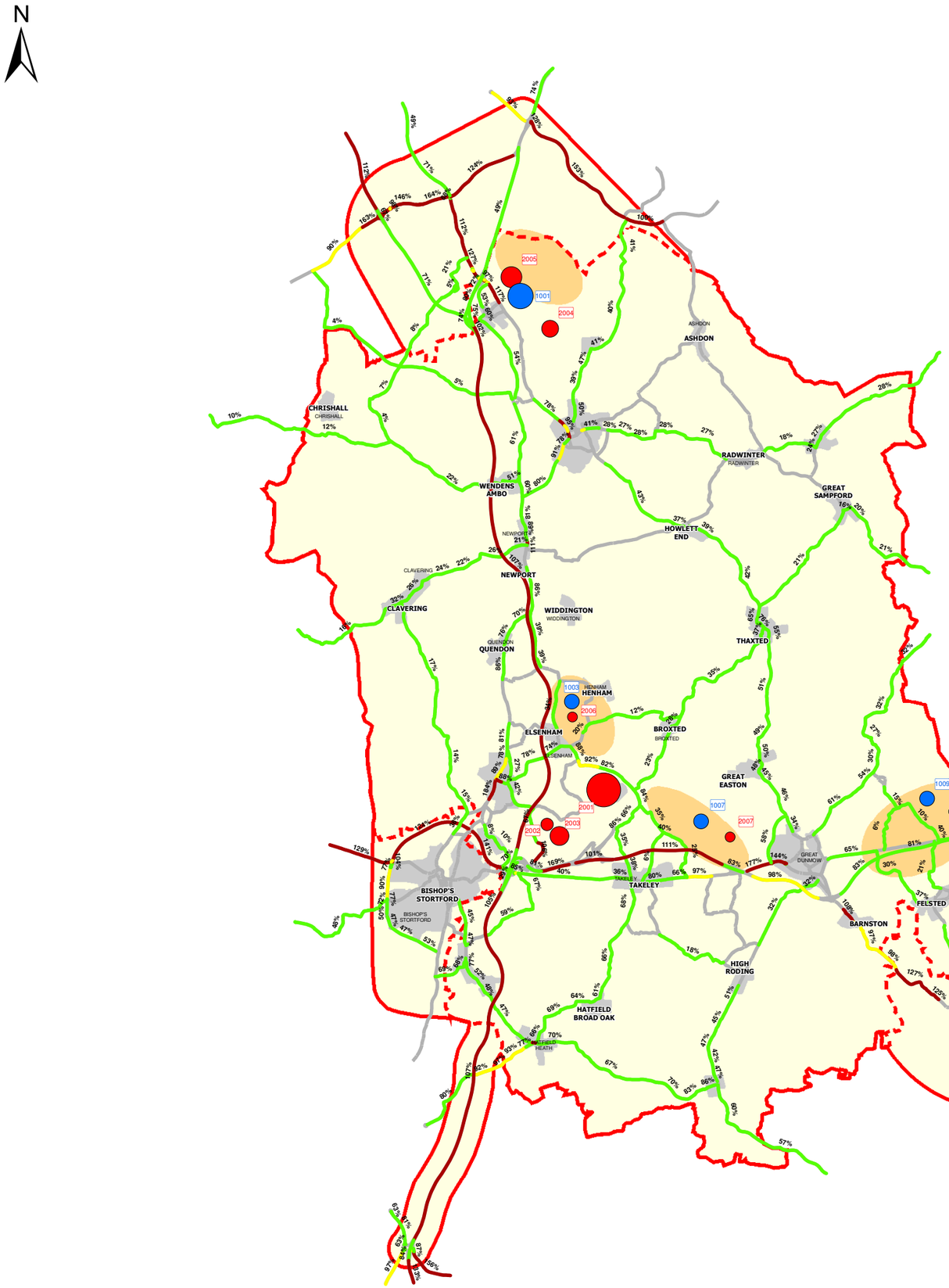
Project:
District-Wide Transport Study

Drawing Title:
Figure 14
2033 Reference Case Network Stress
(No Local Plan Growth)

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	014	-



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	2250
1003	New settlement near Elsenham	750
1007	New settlement west of Gt. Dunmow	750
1009	New settlement west of Braintree	750
1010-1030	Villages	0

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	1536
2006	Elsenham	352
2007	North of A120, West of Gt. Dunmow	352
2008	West of Braintree	352

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

Drawing Title:
Figure 15
Scenario 1 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	015	-

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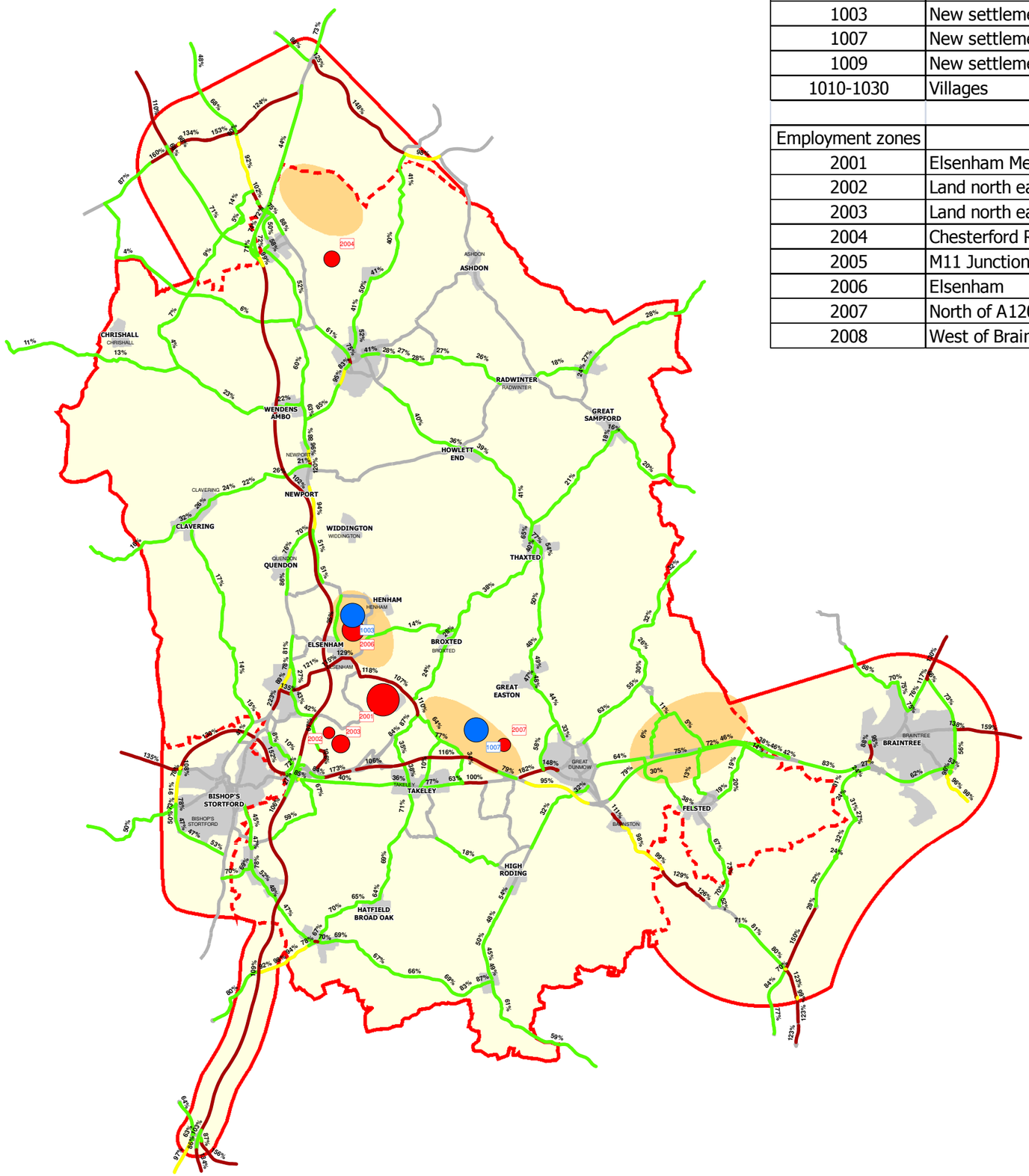

Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	2250
1007	New settlement west of Gt. Dunmow	2250
1009	New settlement west of Braintree	0
1010-1030	Villages	0

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	1910
2007	North of A120, West of Gt. Dunmow	701
2008	West of Braintree	0

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

Drawing Title:
Figure 16
Scenario 2 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	016	-

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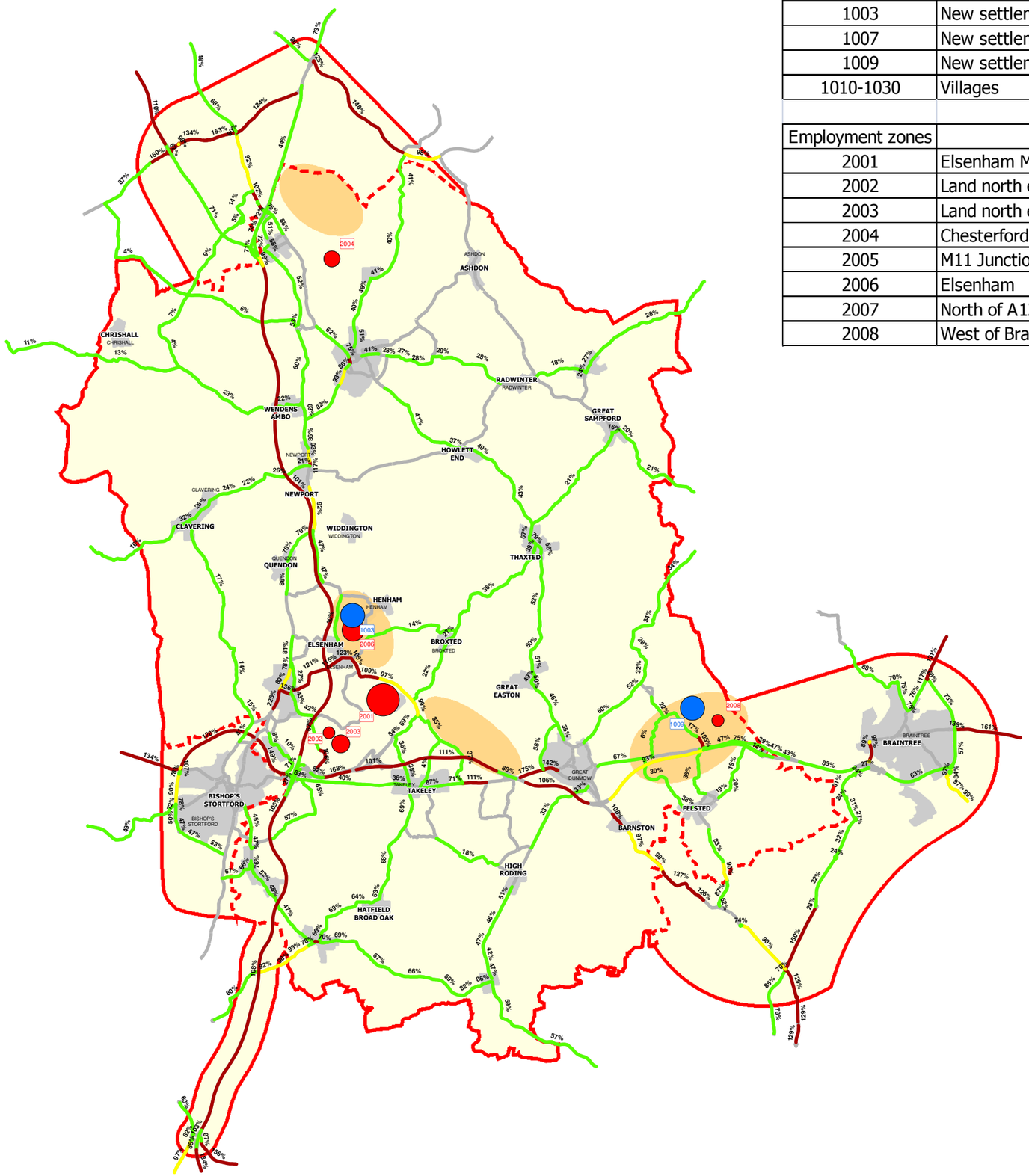

Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	2250
1007	New settlement west of Gt. Dunmow	0
1009	New settlement west of Braintree	2250
1010-1030	Villages	0

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	1910
2007	North of A120, West of Gt. Dunmow	0
2008	West of Braintree	579

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

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Project:
District-Wide Transport Study

Drawing Title:
Figure 17
Scenario 3 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	017	-

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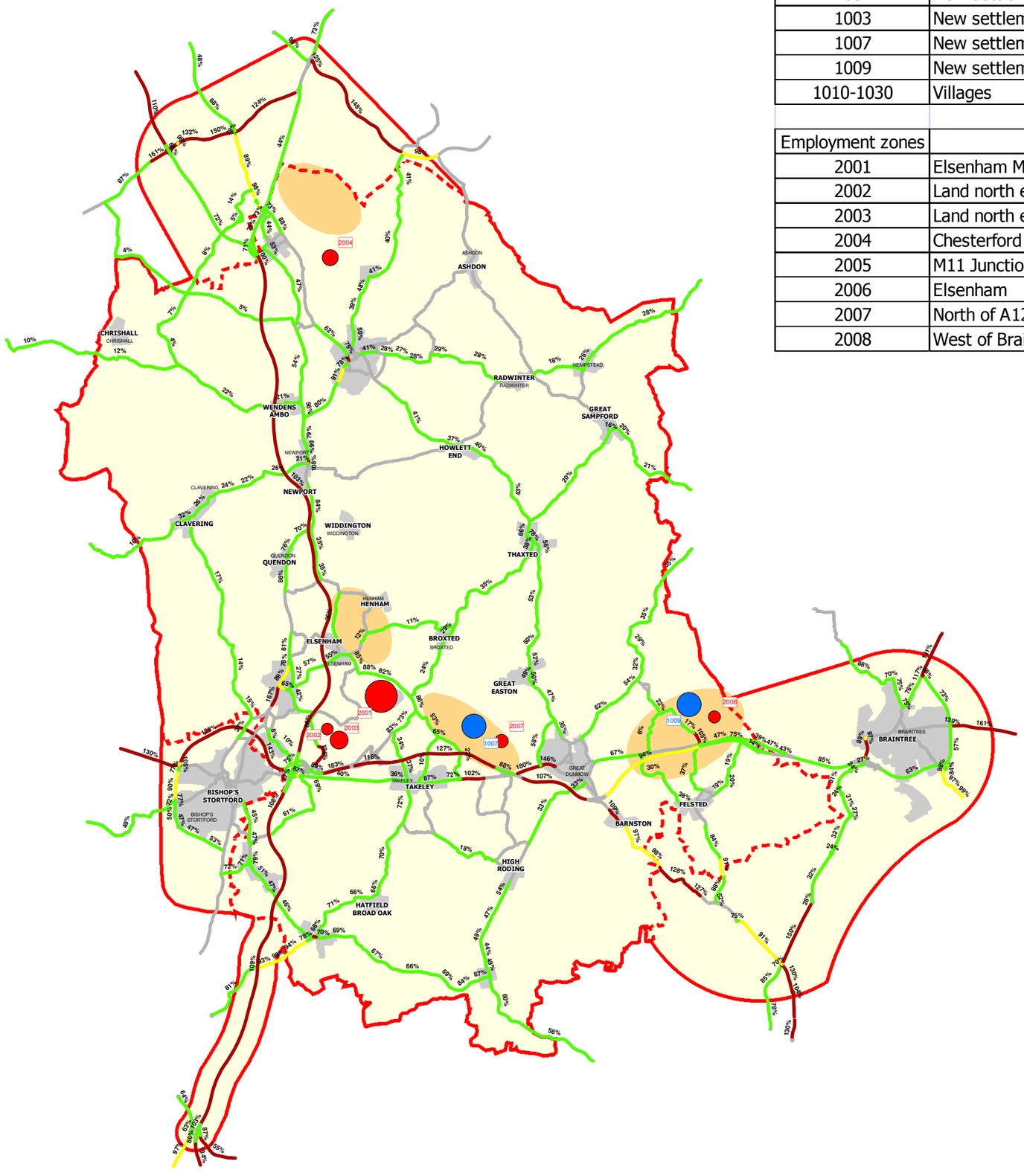

Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	2250
1009	New settlement west of Braintree	2250
1010-1030	Villages	0

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	701
2008	West of Braintree	579

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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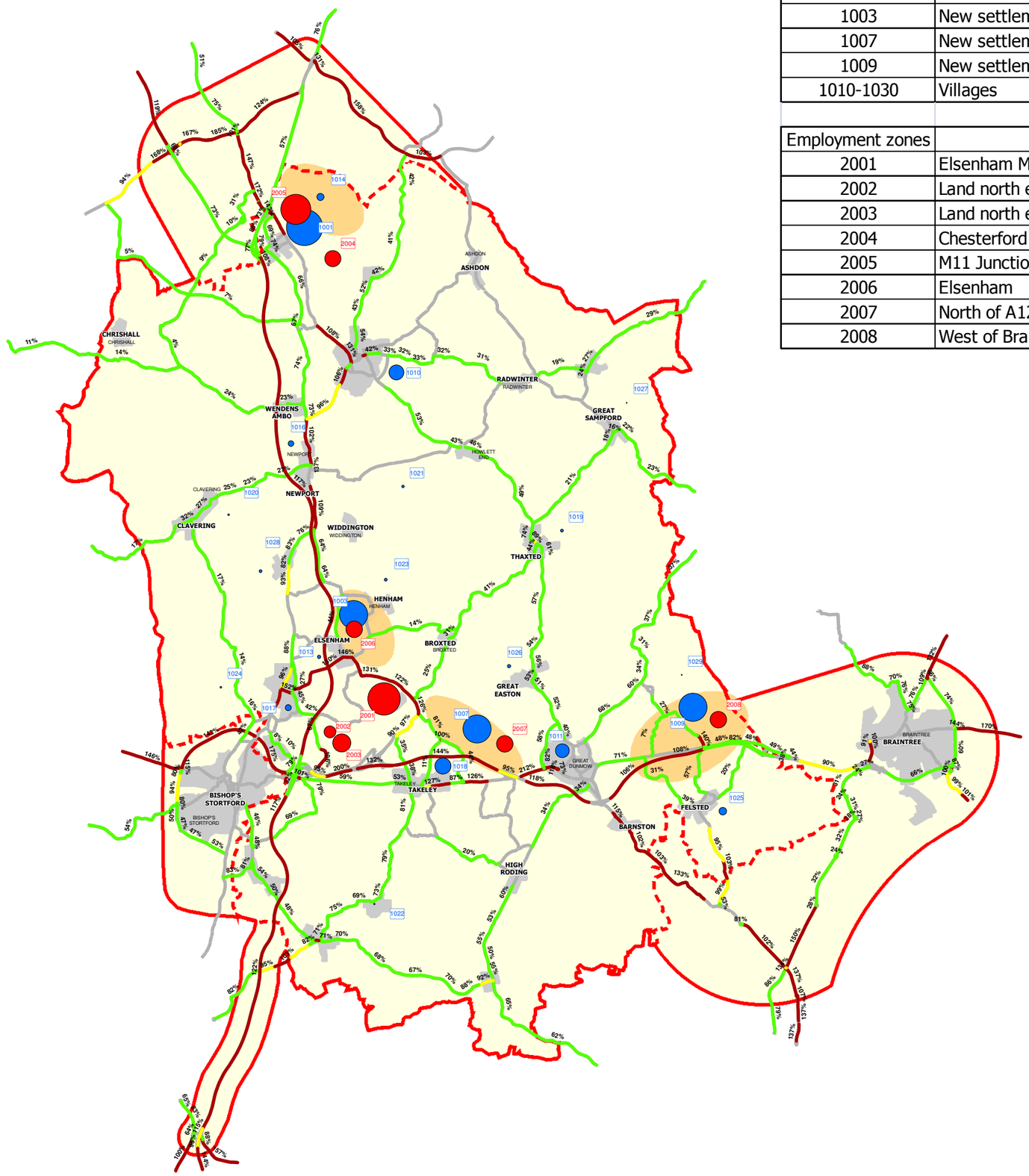
Project:
District-Wide Transport Study

Drawing Title:
Figure 18
Scenario 4 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	018	-



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	5000
1003	New settlement near Elsenham	3000
1007	New settlement west of Gt. Dunmow	3000
1009	New settlement west of Braintree	3000
1010-1030	Villages	3500

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	3414
2006	Elsenham	1057
2007	North of A120, West of Gt. Dunmow	1057
2008	West of Braintree	1057

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

Drawing Title:
Figure 19
Scenario 5 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	019	-

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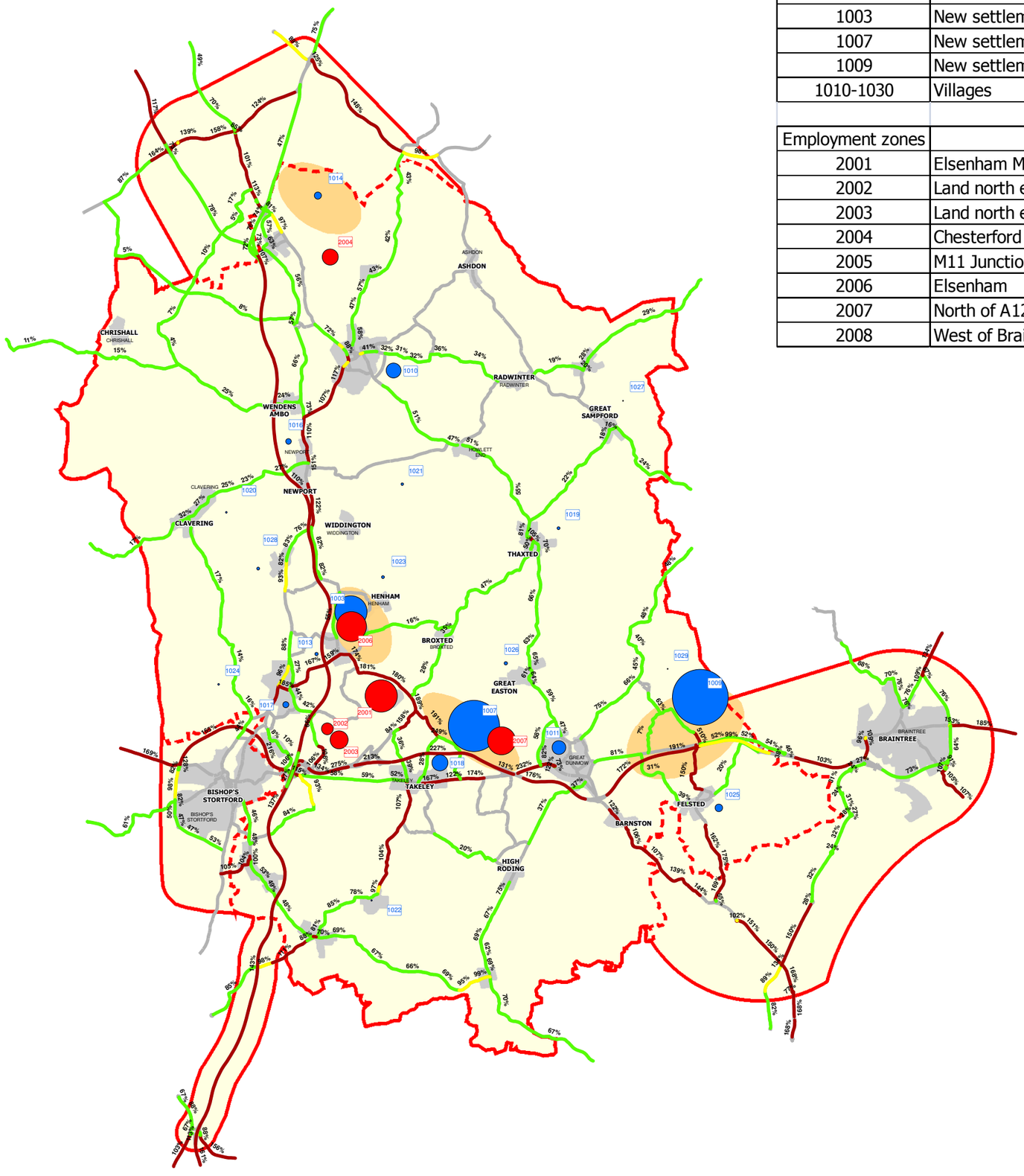

Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	4000
1007	New settlement west of Gt. Dunmow	10000
1009	New settlement west of Braintree	12000
1010-1030	Villages	3500

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	3414
2007	North of A120, West of Gt. Dunmow	3048
2008	West of Braintree	0

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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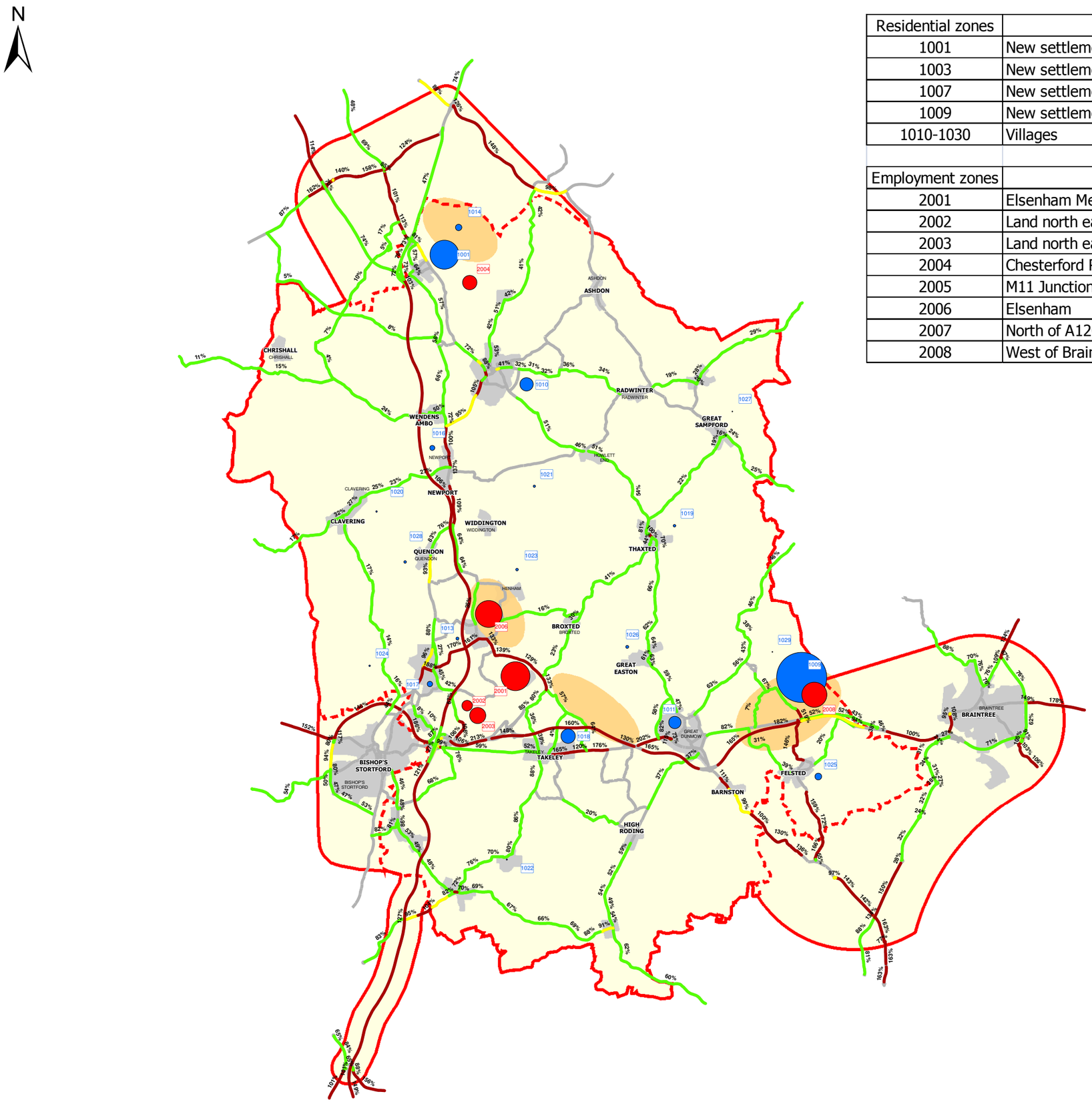
Project:
District-Wide Transport Study

Drawing Title:
Figure 20
Scenario 6 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	020	-



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	4000
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	0
1009	New settlement west of Braintree	12000
1010-1030	Villages	3500

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	3414
2007	North of A120, West of Gt. Dunmow	0
2008	West of Braintree	3048

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

Drawing Title:
Figure 21
Scenario 7 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	021	-

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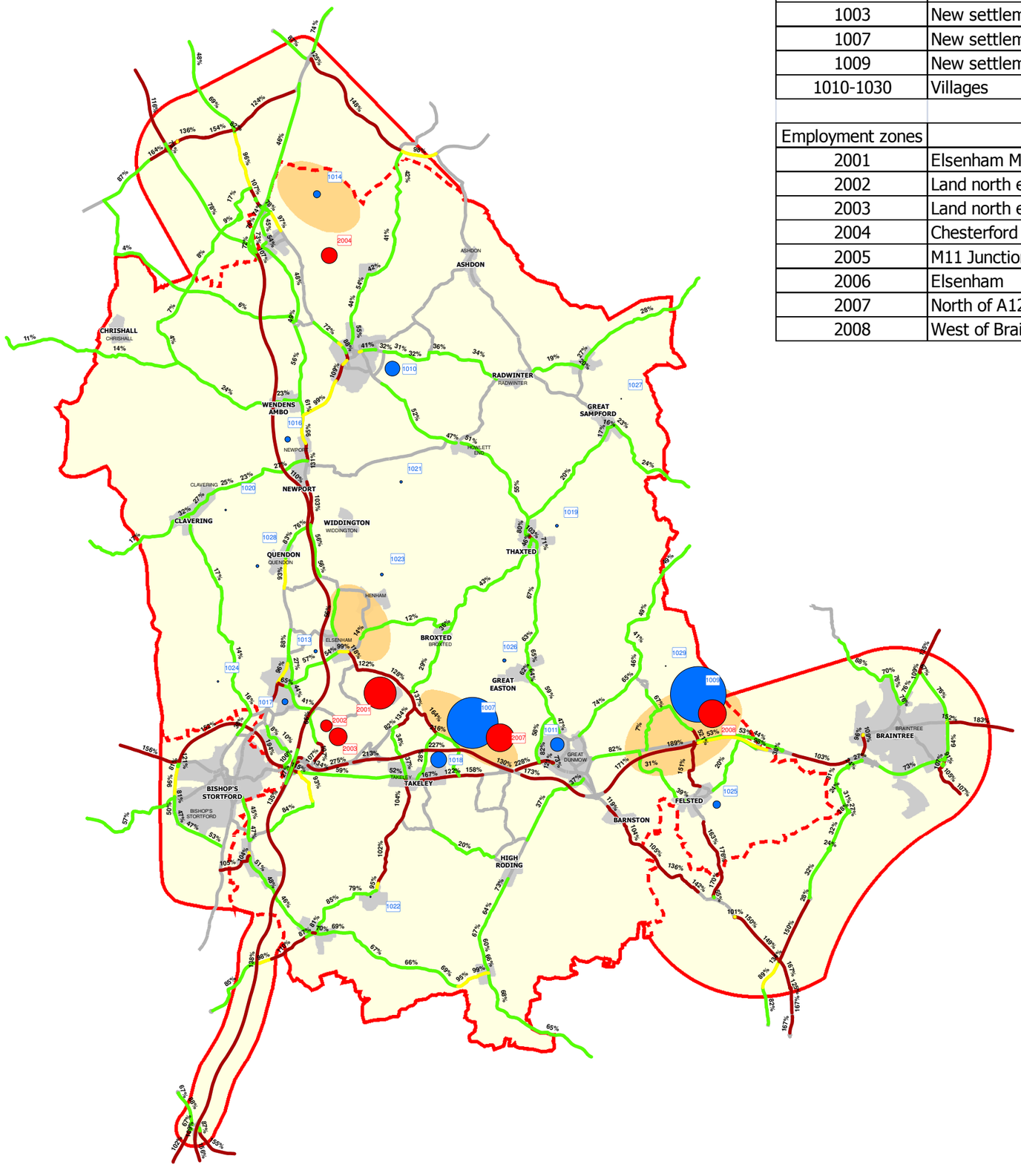

Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	10000
1009	New settlement west of Braintree	12000
1010-1030	Villages	3500

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	3048
2008	West of Braintree	3048

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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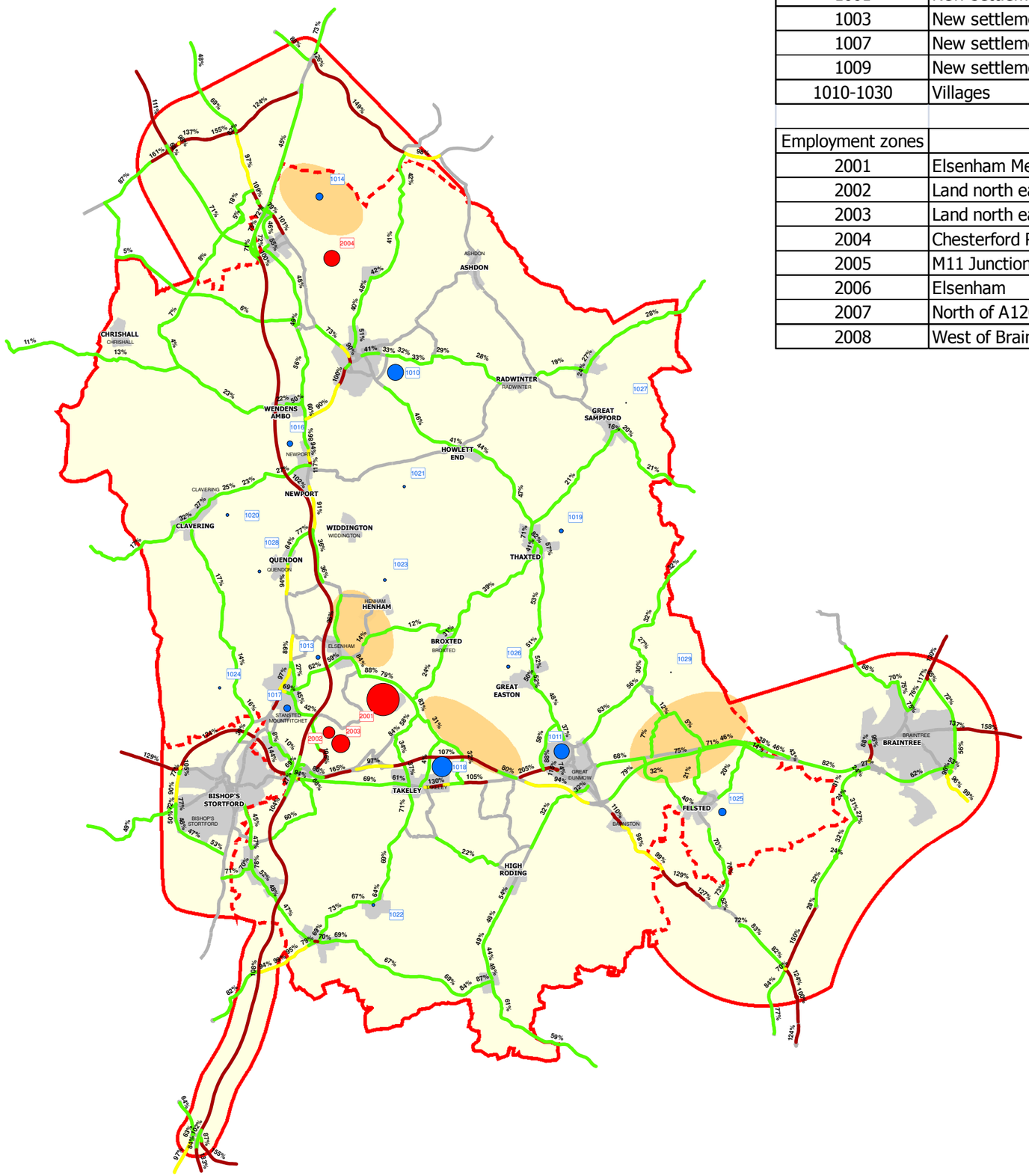
Project:
District-Wide Transport Study

Drawing Title:
Figure 22
Scenario 8 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	022	-

N



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	0
1009	New settlement west of Braintree	0
1010-1030	Villages	4501

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	0
2008	West of Braintree	0

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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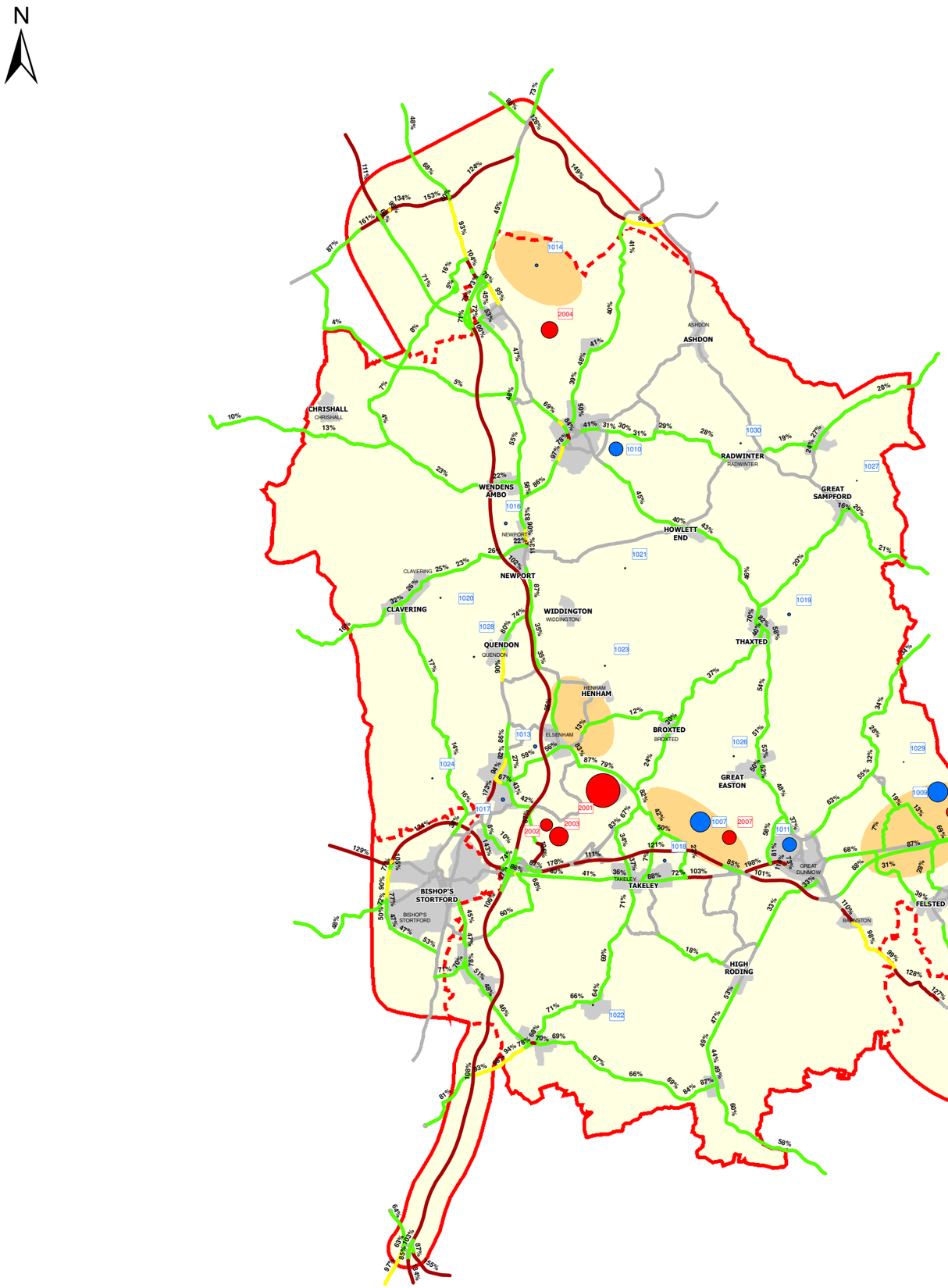
Project:
District-Wide Transport Study

Drawing Title:
Figure 23
Scenario 9 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	023	-



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	1400
1009	New settlement west of Braintree	1400
1010-1030	Villages	1700

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	701
2008	West of Braintree	579

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
District-Wide Transport Study

Drawing Title:

Figure 24
Scenario 10 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	024	-

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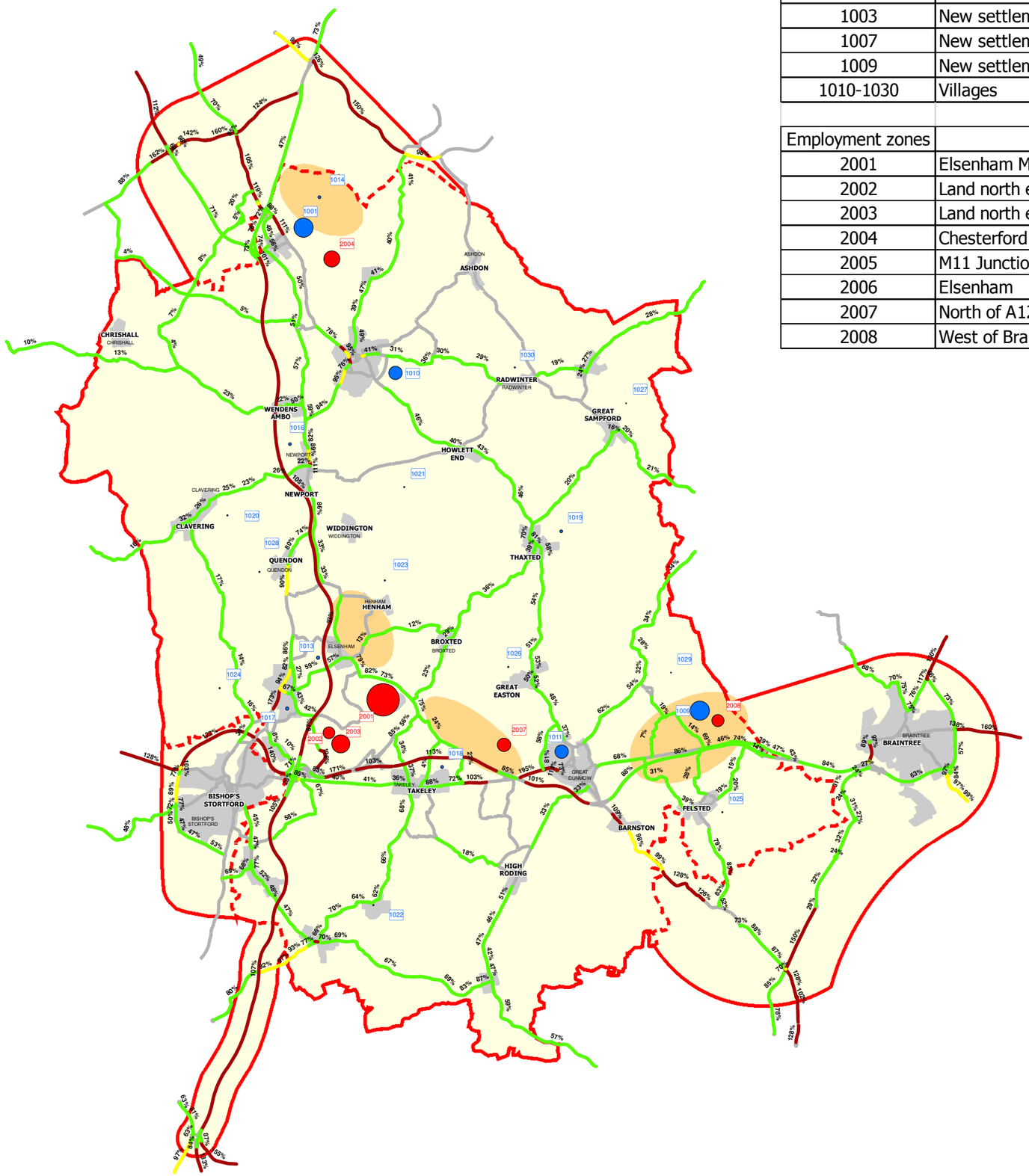

Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	1400
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	0
1009	New settlement west of Braintree	1400
1010-1030	Villages	1700

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	701
2008	West of Braintree	579

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

Uttlesford District Council

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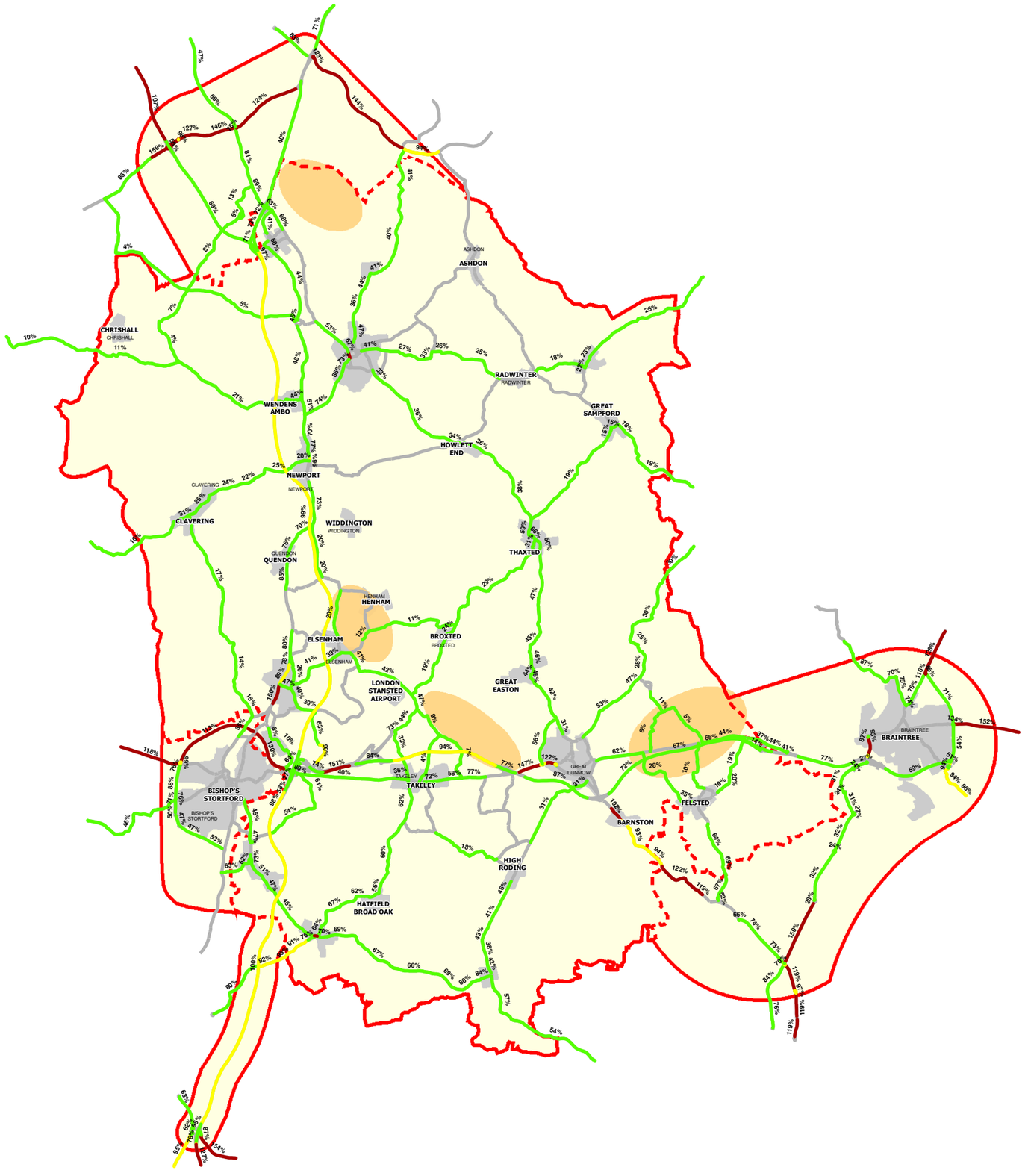
Project:
District-Wide Transport Study

Drawing Title:
Figure 25
Scenario 11 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	25/07/16	JJC	25/07/16	ASG	25/07/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	025	-

N



Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

Reference Case Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:

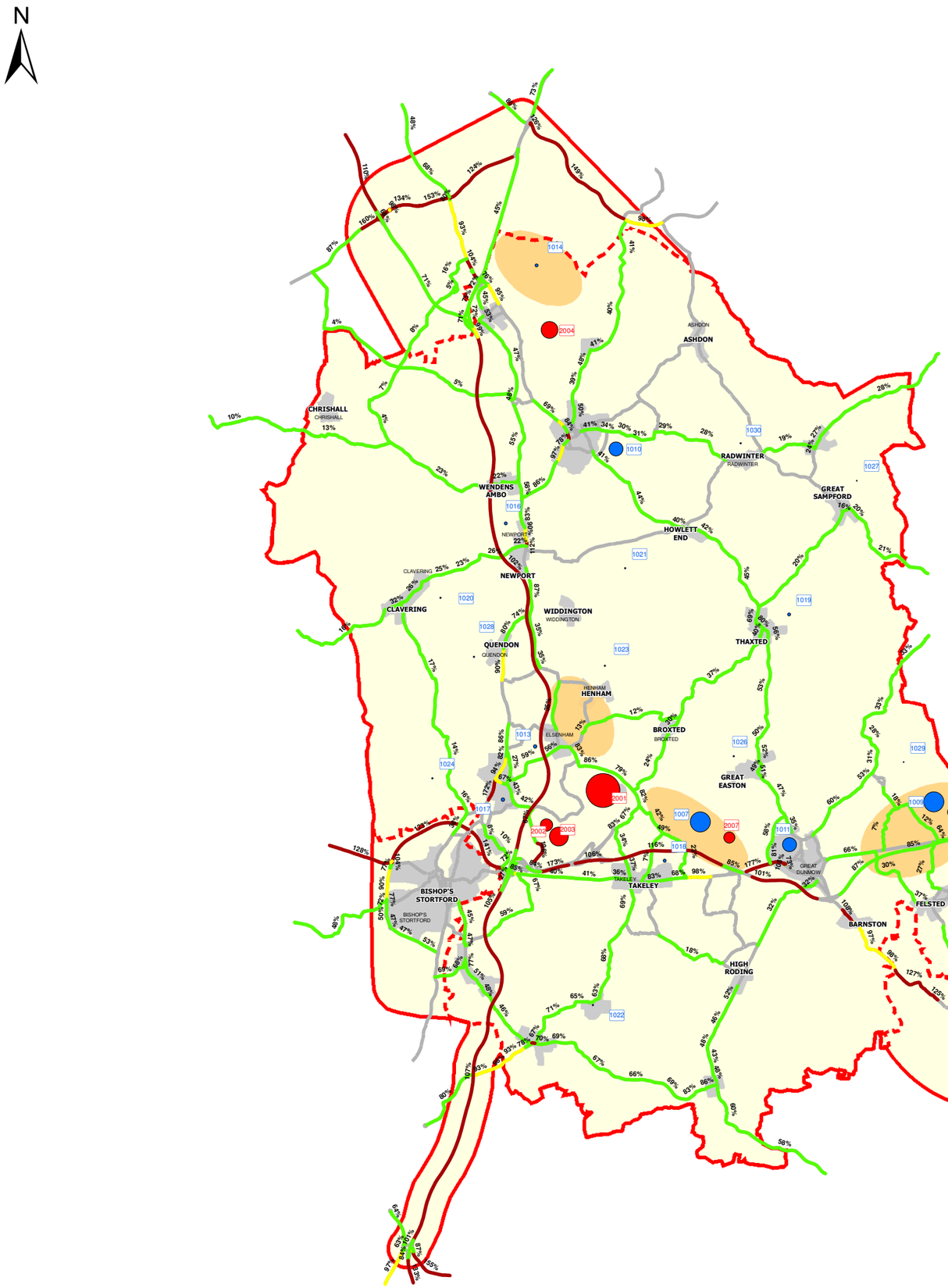
District-Wide Transport Study

Drawing Title:

Figure 26
2033 Reference Case Network Stress (updated)
(No Local Plan Growth)

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	15/09/16	JJC	15/09/16	ASG	15/09/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	026	-



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	0
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	1400
1009	New settlement west of Braintree	1400
1010-1030	Villages	1700

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	0
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	427
2008	West of Braintree	366

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

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Project:
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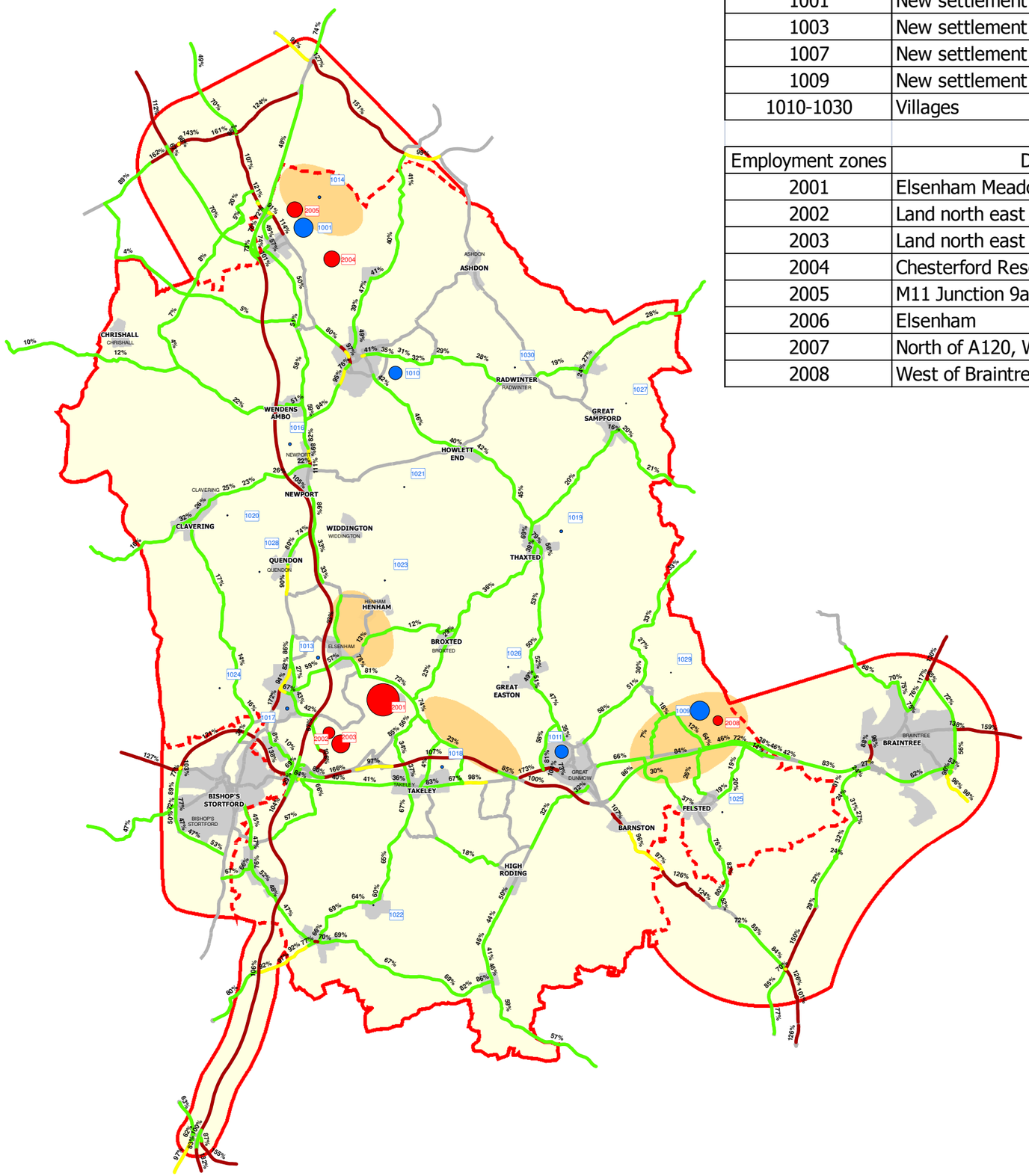
Drawing Title:
Figure 27
Scenario 10 - Network Stress (updated)

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	15/09/16	JJC	15/09/16	ASG	15/09/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	027	-

N



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	1400
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	0
1009	New settlement west of Braintree	1400
1010-1030	Villages	1700

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	956
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	0
2008	West of Braintree	366

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

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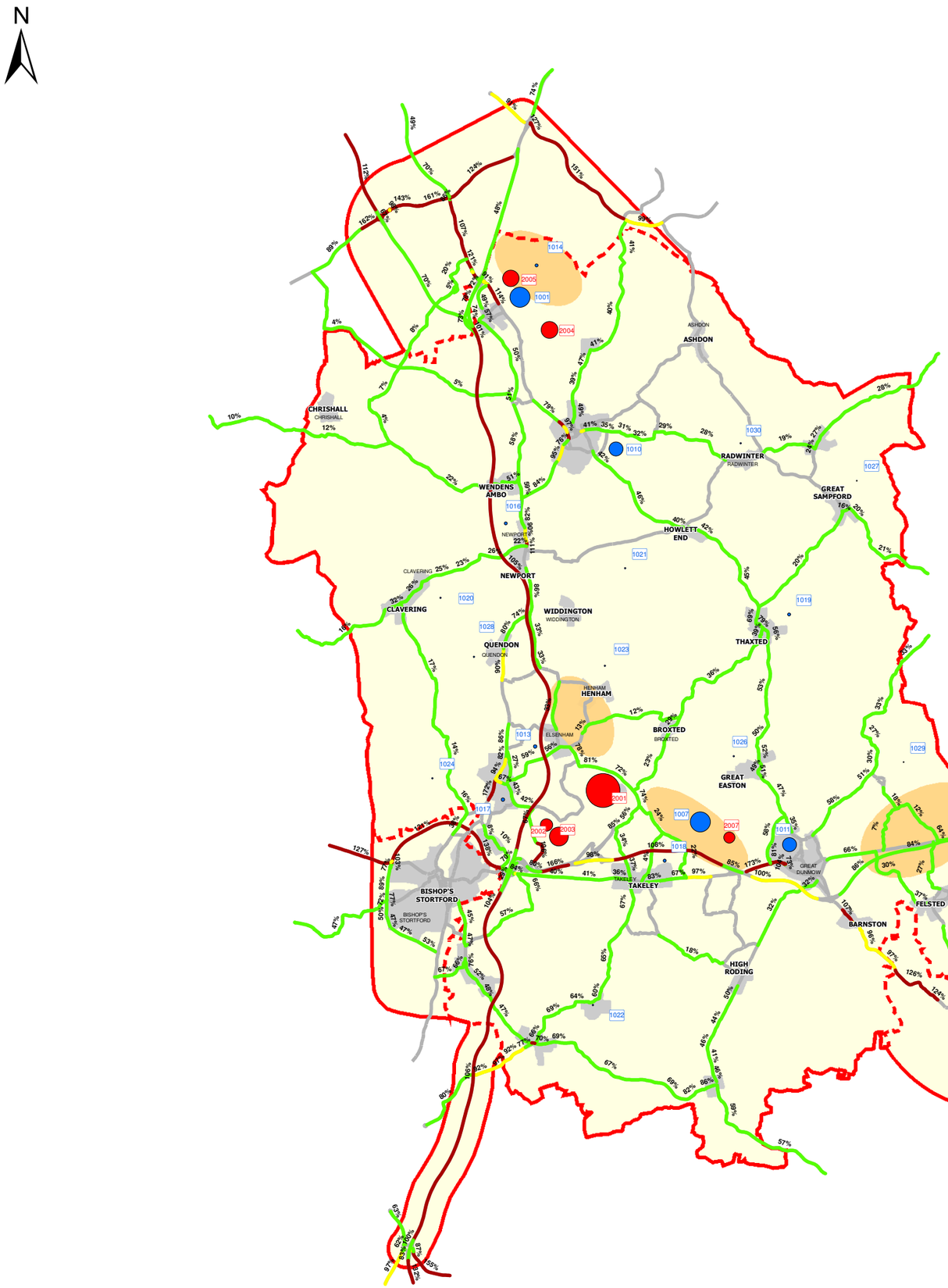
Project:
District-Wide Transport Study

Drawing Title:
Figure 28
Scenario 11 - Network Stress (updated)

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	15/09/16	JJC	15/09/16	ASG	15/09/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	028	-



Residential zones	Description	Dwellings
1001	New settlement east of M11 Junction 9a	1400
1003	New settlement near Elsenham	0
1007	New settlement west of Gt. Dunmow	1400
1009	New settlement west of Braintree	0
1010-1030	Villages	1700

Employment zones	Description	Jobs
2001	Elsenham Meadows (TriSail)	4000
2002	Land north east of Bury Lodge	541
2003	Land north east of Bury Lodge	1267
2004	Chesterford Research Park	1013
2005	M11 Junction 9a East (Stump Cross)	956
2006	Elsenham	0
2007	North of A120, West of Gt. Dunmow	427
2008	West of Braintree	0

Legend

- Study Area
- Uttlesford District
- Main Urban Areas
- Areas of Search

New Development

- Residential
- Employment

Network Stress

- No flow data
- Under 90%
- 90% - 100%
- 100% and Greater

0 2 4 6 8 Km

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

Uttlesford District Council

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Project:
District-Wide Transport Study

Drawing Title:
Figure 29
Scenario 12 - Network Stress

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	15/09/16	JJC	15/09/16	ASG	15/09/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	029	-

Appendix A – TN1 Review of Inspector's Comments

Please see the separate report:

"Uttlesford Transport Study - Technical Notes"

for latest details.

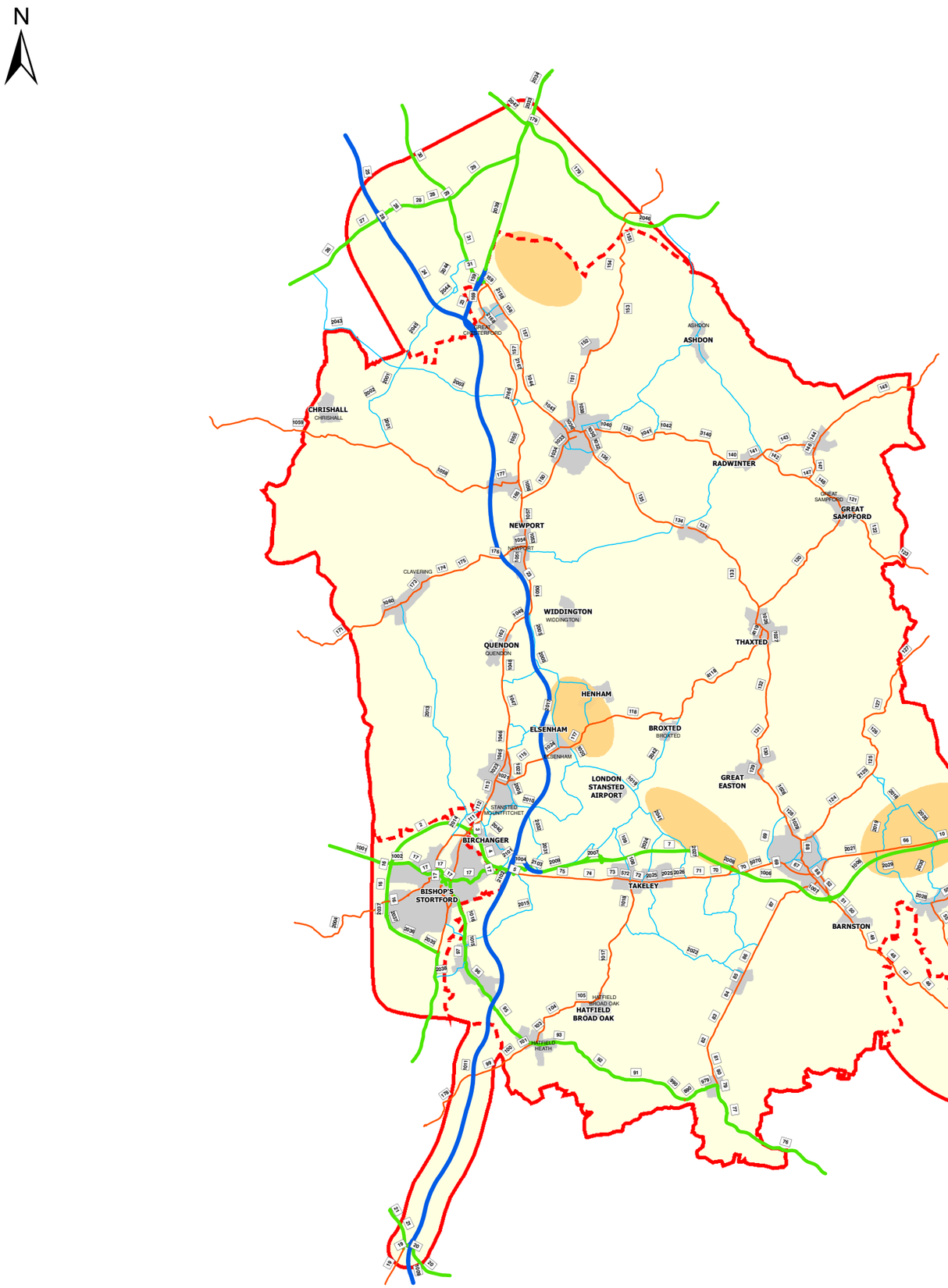
Appendix B – Base Traffic Flow Data& CRF Calculations

Link Information									Data	
Link Ref	Road Number	Road Type	Location notes	Speed limit (mph)	Number of lanes per direction	Width #1 (m)	Width #2 (m)	Width #3 (m)	Source	Date
1001	A120	Single	West of Bishop's Stortford ring road	60	1	6.3			HCC-204	2016
2	A120	Single	NW part of Bishop's Stortford ring road	60	1	6.9			HCC-599	2013
4	A120	Single	NE part of Bishop's Stortford ring road	60	1	7.9			SW-40	2016
1003	A120	Dual	A120 around M11 J8	70	2	16.6		14.3	14430-16	2014
2101	M11	Dual	Sliproad from M11 towards A120 and Priory Wood Rt (E bound)	50	2	7.7			30360691	2015
2102	M11	Dual	Sliproad from A120 and Priory Wood Rt towards M11 (S bound)	50	2	7.7			30360692	2015
2103	A120	Dual	A120 over Priory Wood Rt	70	2	16.7			7098-2 / 7099-2	2015
2007	A119	Dual	A120 south of Stansted airport	70	2	18.9		19.2	7100-2 / 7101-2	2015
7	A120	Dual	A120 south of Stansted airport	70	2	18.9		19.2	30360698 / 7102-1 / 7102-2	2015
2008	A121	Dual	A120 south of Stansted airport	70	2	18.9		19.2	7102-2 / 7103-2	2015
2009	A122	Dual	A120 south of Stansted airport	70	2	18.9		19.2	7099-1 / 7099-2 / 7098-2 / 6359-1	2015
1006	A120	Dual	SW of Great Dunmow	70	2	19.2		18.7	30360700 / 30360699	2015
1007	A120	Dual	South of Great Dunmow	70	2	18.7		19	30360700 / 30360699	2015
1008	A120	Dual	South of Great Dunmow	70	2	18.7		19	7106-1 / 7107-2	2015
10	A120	Dual	East of Great Dunmow	70	2	19		19	7106-1 & 7107-1	2015
2011	A120	Dual	West of Braintree	70	2	19			7107-1 / 7107-2 / 7108-1 / 7108-2	2015
12	A120	Dual	South of Braintree	70	2	15			TSP11563-09	2013
2012	A121	Dual	South of Braintree	70	2	15			7113-1 / 7113-2	2015
13	A120	Single	East of Braintree	60	1	5.8			TSP11563-03	2013
14	A131	Single	NE of Braintree	60	1	7.5			15259-01	2015
15	A131	Single	NE of Braintree	40	1	6.1			15259-01	2015
16	A1184	Single	The bit in study zone west of Bishop's Stortford	60	1	7.5			SW-43	2016
19	B1393	Single	Just SW of M11 J7	60	1	6.8			13042-05	2013
20	A414	Single	Just SE of M11 J7	60	1	7			13042-04	2013
21	A414	Dual	Just NW of M11 J7	40	2	12.6			13042-01	2013
1009	M11	Motorway	M11 between J6 and J8	70	3	22			30028055 / 30028056	2015
1010	M11	Motorway	M11 between J6 and J8	70	3	22			30028070 / 30028074	2015
1011	M11	Motorway	M11 between J6 and J8	70	3	22			30028746 / 30028136	2015
1012	M11	Motorway	M11 between J6 and J8	70	3	22			30021651 / 30021653	2015
23	M11	Motorway	M11 between J8 and J9	70	2	15			30021654/30021655/30021634/30021656	2015
24	M11	Motorway	M11 between J9 and J10	70	2	15			30021654 / 30021634	2015
25	M11	Motorway	M11 between J10 and J11	70	2	15			30360862 / 30360861	2015
26	A505	Single	By Imperial War Museum	50	1	7.5		7.5	SW-01	2016
27	A505	Single	By Imperial War Museum	40	1	7.5			SW-01	2016
28	A505	Single	North of Duxford	50	1	7.3			S/1109/15/FL-07	2015
29	A505	Single	NE of Duxford	60	1	6.7		7.2	S/1109/15/FL-06	2015
30	A1301	Single	North of Duxford	60	1	7.2			S/1109/15/FL-07	2015
31	A1301	Single	East of Duxford	50	1	6			S/1109/15/FL-05A	2015
33	B1053	Single	North of Braintree	60	1	5.5			15264-11	2015
34	B1053	Single	North of Braintree	30	1	6		7	15264-11	2015
35	B1053	Single	North of Braintree	40	1	7		6.5	15332-01	2015
36	B1018	Single	SE of Braintree	40	1	6	5.5	6	TSP11563-08	2013
37	A130	Single	North of Chelmsford & Little Waltham	60	1	10.2		9	15166-02	2015
38	A131	Single	NE of Chelmsford	60	1	6.5			15166-02	2015
40	A131	Dual	Between Chelmsford and Braintree	70	2	14.7			15258-07	2015
41	A131	Dual	SW Braintree	60	2	15			15258-07	2015
42	B1008	Single	North of Chelmsford	50	1	7		7.1	14329-01	2014
43	B1008	Single	North of Chelmsford	60	1	7.5		6.3	15166-02	2015
45	B1417	Single	Between Felsted and Chelmsford	60	1	5.2			14300-01	2014
46	B1008	Single	At Ford End (nr Chelmsford / Great Dunmow)	30	1	5.5		5.4	15406-01	2015
47	B1008	Single	South east of Barnston	60	1	5.4		5.2	15406-01	2015
48	B1008	Single	Between Link 47 and the 40/60 mph Barnston sign	60	1	6.2		7.2	15406-01	2015
49	B1008	Single	Between 40/60 mph and 30/40 mph Barnston signs	40	1	7.2		6.3	15406-01	2015
50	B1008	Single	In Barnston	30	1	6.3		6.5	15406-01	2015
53	B1417	Single	Hartford End	40	1	5.4		6	14300-01	2014
54	B1417	Single	Between Hartford End and Causeway End	60	1	6		6.1	14300-01	2014
56	B1417	Single	North side of Felsted, before Watch House Green	40	1	5.8		5.75	15264-10	2015
57	B1417	Single	Watch House Green	30	1	5.75		5.7	15264-10	2015
5059	B1417	Single	The bit of the B1417 running parallel with A120	60	1	7.5			15264-10	2015
58	B1417	Single	Between Watch House Green & A120	60	1	5.7		5.9	15264-10	2015
60	B1256	Single	Pod's Brook Rd in Braintree	60	1	6.2			15258-04	2015
65	B1256	Single	West of Rayne	60	1	6.7			15264-06	2015
5065	B1256	Single	Between Great Dunmow and Rayne (nr Braintree)	60	1	6.7			15264-09	2015
5066	B1256	Single	Between Great Dunmow and Rayne (nr Braintree)	60	1	5.7	5.9	5.9	15264-09	2015
68	B1256	Single	West-side of Great Dunmow	40	1	6.5	7	6.5	15235-07	2015
69	B184	Single	Woodside Way. West / NW side of Great Dunmow		1	6.5			15235-05	2015
5070	B1256	Single	East edge of Great Dunmow	60	1	5.8		5.5	15235-06	2015
71	B1256	Single	South of A120, west of Great Dunmow	40	1	5.5		7.3	14239-01	2014
572	B1256	Single	Takeley and Canfield	30	1	7.3		7.2	14272-01	2014
73	B1256	Single	West of Takeley	40	1	7.2		7.3	14272-01	2014
74	B1256	Single	West of Takeley	30	1	5.7		7.5	14272-01	2014
75	B1256	Single	Just to the east when you come off the roundabout that is M11 J8	40	1	7.5		5.8	14272-01	2014
76	A1060	Single	At the southern-most area of Uttlesford	60	1	6.3		6.2	15277-01	2015
77	A1060	Single	Margaret Roding	40	1	6.2		6	15277-01	2015
78	A1060	Single	Between Margaret Roding & Leaden Roding	60	1	6		5.9	15277-01	2015
979	A1060	Single	Leaden Roding	40	1	5.9		6.2	SW-33	2016
80	B184	Single	North of Leaden Roding	30	1	5.9		7.3	15106-02	2015
81	B184	Single	North of Leaden Roding	60	1	7.3		7	15106-02	2015
82	B184	Single	Roundbush Green	40	1	7	5.2	7.5	15106-02	2015
83	B184	Single	Between High - and Leaden Roding	60	1	7.5		6	15106-02	2015
84	B184	Single	South of High Roding	40	1	6		6.3	15106-02	2015
87	B184	Single	Between High Roding and Great Dunmow	60	1	6.2		6.3	SW-23	2016
990	A1060	Single	West of Leaden Roding	60	1	6.2		6.3	13029-01	2013
890	A1060	Single	West of Leaden Roding	60	1	6.2		6.3	SW-33	2016
91	A1060	Single	White Roding	40	1	6.3		6.6	13029-01	2013
92	A1060	Single	Between Hatfield Heath and White Roding	60	1	6.6		6.2	13029-01	2013
93	A1060	Single	East of Hatfield Heath	40	1	6.2		6.3	13029-01	2013
1013	A1060	Single	Hatfield Heath	30	1	6.3		6.3	13029-01	2013
1014	A1060	Single	Hatfield Heath	30	1	6.3		6.3	15407-01	2015
94	A1060	Single	Hatfield Heath	30	1	6.3		6.3	14565-03	2014
95	A1060	Single	NW of Hatfield Heath & goes under the M11	40	1	6.3		7	14565-03	2014
96	A1060	Single	Little Hallingbury	30	1	7		6	14565-03	2014
1015	A1060	Single	South of Bishop's Stortford	60	1	7.6	6.3	7.3	14430-17	2014
1016	A1060	Single	South of Bishop's Stortford	60	1	7.6	6.3	7.3	HCC-392	2015
99	B183	Single	In Sheering	30	1	7		5.5	14535-01	2015
100	B183	Single	Between Sheering and Hatfield Heath	60	1	5.5		7.5	14535-01	2015
101	B183	Single	SW approach to Hatfield Heath	40	1	7.5		7.5	14535-01	2015
102	B183	Single	Hatfield Heath	30	1	7.5	7	5.9	13029-01	2013
103	B183	Single	NE of Hatfield Heath	40	1	5.9		5.5	13029-01	2013
104	B183	Single	Between Hatfield Heath and Hatfield Broad Oak	60	1	5.5		5.4	13029-01	2013
105	B183	Single	SW of Hatfield Broad Oak	40	1	5.4	5.5	6.6	13029-01	2013
106	B183	Single	Hatfield Broad Oak	30	1	6.6		6	13029-01	2013
1017	B183	Single	Between Hatfield Broad Oak and Takeley	60	1	6	6.3	5.6	13029-01	2013
1018	B183	Single	Between Hatfield Broad Oak and Takeley	60	1	6	6.3	5.6	SW-25	2016
108	B183	Single	Takeley (travelling south to north)	30	1	5.6	6.75	6.7	14430-13	2014
109	B183	Single	South of Stansted Airport	60	1	6.7	7.2	6.4	14430-13	2014
1019	B183	Single	East of Stansted Airport	60	1	6.4	5.3	4.7	SW-STANSTED	2016
1020	B183	Single	East of Stansted Airport	60	1	6.4	5.3	4.7	14430-10	2014
113	B1383	Single	In southern side of Stansted Mountfitchet	30	1		5	6.4	13105-01	2013
1021	B1051	Single	Southern part of the loop in Stansted Mountfitchet	30	1		5.5	4.7	SW-31	2016
1022	B1051	Single	Southern part of the loop in Stansted Mountfitchet	30	1		5.5	4.7	14596-01	2014
1023	B1051	Single	Southern part of the loop in Stansted Mountfitchet	30	1		5.5	4.7	13105-02	2013
115	B1051	Single	Between Stansted Mountfitchet & Elsenham	60	1	5.3	6	6.5	SW-31	2016
1024	B1051	Single	Elsenham	30	1	6.5	5.5	6.5	SW-31	2016
1025	B1051	Single	Elsenham	30	1	6.5	5.5	6.5	14471-01	2014
118	B1051	Single	The whole national speed limit road between Elsenham and Thaxted	60	1	5.7	5.2	6.4	SW-16	2016
4118	B1051	Single	The whole national speed limit road between Elsenham and Thaxted	60	1	5.7	5.2	6.4	SW-17	2016
4119	B1052	Single	The whole national speed limit road between Elsenham and Thaxted	30	1	5.7	5.2		SW-17	2016
1026	B184	Single	In Thaxted	30	1	5.7	5.2		SW-18	2016
1027	B184	Single	In Thaxted	30	1	5.6	6.2	5.6	15235-01	2015
120	B1051	Single	B1051 between Thaxted & Great Sampford	60	1	5.7	5.2	6	14491-01	2014
121	B1053	Single	Great Sampford (the bit of road going E / SE)	30	1	6		5.3	15180-01	2015
122	B1053	Single	Between Great- & Little Sampford	40	1	5.3		5.1	15180-01	2015
123	B1053	Single	From Little Sampford eastwards	60	1	5.1	5	5.4	15180-01	2015
124	B1057	Single	Leaving Great Dunmow from the NE	60	1	5.3	4.8	5.5	SW-41	2016
2125	B1057	Single	Bran End / Stebbing / Duck End	40	1	5.5		6.6	SW-41	2016
125	B1057	Single	Bran End / Stebbing / Duck End	40	1	5.5		6.6	14476-01	2014
126	B1057	Single	From Duck End to [halfway to Oxen End]	60	1	6.6		6.6	14476-01	2014
127	B1057	Single	From [Duck End / Oxen End midpoint] to Oxen End	60	1	5.7		5.8	14476-01	2014
1028	B184	Single	Leaving Great Dunmow from the north	60	1	6.3	7.6	6.7	15235-01	2015
1029	B184	Single	Leaving Great Dunmow from the north	60	1	6.3	7.6	6.7	15235-02	2015
129	B184	Single	Great Easton	40	1	6.7		6.2	15235-01	2015
130	B184	Single	Just north of Great Easton	30	1	6.2		6.2	15235-01	2015

	Data								Data - AM peak			Data - PM peak			Capacity			
Link Ref	Daily average (Mon-Fri)	Daily average (Mon-Sun)	Daily average %HGVs	AM peak - Growth Factor to 2016	PM - Growth Factor to 2016	Weekday average - Growth Factor to 2016	Daily average Growth Factor to 2016		AM peak average flow (Mon-Fri)	AM peak % direction split	AM peak - % of HGVs	PM peak average flow (Mon-Fri)	PM peak % direction split	PM peak - % of HGVs	A (constant)	B (constant)	% of heavy vehicles (avg of AM & PM)	Capacity
1001	17125	15964	14%	1	1	1	1		1289	0.58029	0.1203	1299	0.543495	0.1360458	1380	15	12.8	1187.744162
2	21078	19154	14%	1.03227746	1.033915759	1.035951222	1.035802285		1679	0.50268	0.1203	1565	0.5035144	0.1360458	1380	15	12.8	1187.744162
4	24218.6	22501.42857	13%	1	1	1	1		2085.7	0.5601	0.1203	1887.6	0.5082115	0.1360458	1380	15	12.8	1187.744162
1003	37571.2	35130	3%	1.025478051	1.026527466	1.027876713	1.027776769		2985.2	0.51166	0.02677	3070.5	0.5164957	0.0195082	2100	20	2.3	2053.726401
2101	17475.24	18049.10131	8%	1.018771313	1.019324556	1.019978388	1.019928093		835.8823529	1	0.09662	1674.058824	1	0.0425524	2100	20	7.0	1960.825459
2102	19061.37037	19687.31788	7%	1.018771313	1.019324556	1.019978388	1.019928093		1384	1	0.08497	1102	1	0.0482759	2100	20	6.7	1966.75304
2103	35520.96552	36687.42204	7%	1.018771313	1.019324556	1.019978388	1.019928093		2245	0.68204	0.08463	2691.705882	0.5694836	0.0430953	2100	20	6.4	1972.272136
2007	35717	37251	8%	1.018771313	1.019324556	1.019978388	1.019928093		3135.5625	0.64762	0.10364	3627.823529	0.6869943	0.0429686	2100	20	7.3	1953.389983
7	51331	52102	10%	1.018771313	1.019324556	1.019978388	1.019928093		2031.991597	0.6347	0.14567	4071.830882	0.7168043	0.0434304	2100	20	9.5	1910.903807
2008	38908	41000	8%	1.018771313	1.019324556	1.019978388	1.019928093		2917.411765	0.63987	0.09956	3378.764706	0.6700151	0.0442208	2100	20	7.2	1956.214693
2009	52999	55270	8%	1.018771313	1.019324556	1.019978388	1.019928093		3747.518382	0.73318	0.09554	4097.882353	0.5376522	0.0569161	2100	20	7.6	1947.540326
1006	45069	46549	8%	1.018771313	1.019324556	1.019978388	1.019928093		3237.6875	0.63718	0.10582	3723.25	0.670466	0.0435775	2100	20	7.5	1950.598493
1007	45069	46549	8%	1.018771313	1.019324556	1.019978388	1.019928093		3237.6875	0.63718	0.10582	3723.25	0.670466	0.0435775	2100	20	7.5	1950.598493
1008	36195.21763	37383.8156	8%	1.018771313	1.019324556	1.019978388	1.019928093		2561.126263	0.64508	0.10809	3029.249554	0.6756672	0.0432932	2100	20	7.6	1948.617443
10	22619.66986	23362.46671	7%	1.018771313	1.019324556	1.019978388	1.019928093		1208.807071	0.75198	0.10474	2284.816221	0.8958115	0.0325644	2100	20	6.9	1962.700016
2011	45186.08402	40297.21546	7%	1.018771313	1.019324556	1.019978388	1.019928093		3202.8	0.60945	0.09512	3598.30303	0.6608022	0.0418727	2100	20	6.8	1963.009483
12	36604.75791	32644.33837	6%	1.03227746	1.033915759	1.035951222	1.035802285		3050.3	0.60699	0.05993	2459.2	0.5095153	0.0584743	2100	20	5.9	1981.597168
2012	36093	39312	8%	1.018771313	1.019324556	1.019978388	1.019928093		2517.772549	0.54614	0.10525	2966.095343	0.5872843	0.0342962	2100	20	7.0	1960.448943
13	26226	24517.57143	5%	1.03227746	1.033915759	1.035951222	1.035802285		2064.6	0.5262	0.05202	1986.028571	0.546115	0.0365554	1380	15	4.4	1313.568655
14	15586	14478.14666	5%	1.018771313	1.019324556	1.019978388	1.019928093		1347	0.53601	0.04677	1355	0.6110701	0.0103321	1380	15	2.9	1337.172972
15	20142	18710.30604	2%	1.018771313	1.019324556	1.019978388	1.019928093		1802	0.55771	0.03496	1942	0.6266735	0.0087539	1380	15	2.2	1347.213738
16	15113.8	13983.92857	9%	1	1	1	1		1559.8	0.54289	0.0902	1269.2	0.5396313	0.098566	1380	15	9.4	1238.422576
19	20190.2	18934.14286	1%	1.03227746	1.033915759	1.035951222	1.035802285		1434.8	0.59144	0.01185	1490.6	0.5592379	0.0079163	1380	15	1.0	1365.176538
20	8801.8	14669.66667	2%	1.03227746	1.033915759	1.035951222	1.035802285		801	0.57703	0.01998	544.4	0.5657605	0.0102866	1380	15	1.5	1357.303811
21	49263.8	46085.28571	4%	1.03227746	1.033915759	1.035951222	1.035802285		3286	0.50304	0.0409	3625	0.5246897	0.0355862	2100	20	3.8	2023.513002
1009	113690	119579	13%	1.018771313	1.019324556	1.019978388	1.019928093		7065.496324	0.52362	0.14944	8746.176471	0.5531896	0.0893432	2300	25	11.9	2001.52292
1010	84512	90009	17%	1.018771313	1.019324556	1.019978388	1.019928093		4888.261029	0.52448	0.18797	6209.764706	0.5508687	0.1235341	2300	25	15.6	1910.620099
1011	100686	106377	15%	1.018771313	1.019324556	1.019978388	1.019928093		6424.849265	0.52064	0.17001	7842.764706	0.5483135	0.1087402	2300	25	13.9	1951.562655
1012	42890	42440	21%	1.018771313	1.019324556	1.019978388	1.019928093					2351.995098	0.7039393	0.195625	2300	25	19.6	1810.937471
23	77742	79192	14%	1.018771313	1.019324556	1.019978388	1.019928093		4759.363971	0.55924	0.17182	5059.495098	0.5256511	0.0908823	2300	25	13.1	1971.621204
24	46901	46772	17%	1.018771313	1.019324556	1.019978388	1.019928093		2762.4375	0.58623	0.20745	2775.20098	0.5405438	0.1060213	2300	25	15.7	1908.164884
25	55271	54757	15%	1.018771313	1.019324556	1.019978388	1.019928093		4144.647059	0.54714	0.16104	4578.117647	0.5254664	0.1106286	2300	25	13.6	1960.409279
26	21698.4	19927.14286	13%	1	1	1	1		1827.4	0.50345	0.12039	1756.4	0.5075154	0.1131861	1380	15	11.7	1204.818235
27	21698.4	19927.14286	13%	1	1	1	1		1827.4	0.50345	0.12039	1756.4	0.5075154	0.1131861	1380	15	11.7	1204.818235
28	24262.76543	16965.56887	4%	1.018771313	1.019324556	1.019978388	1.019928093		2111	0.61251	0.04216	2129	0.5941757	0.0300611	1380	15	3.6	1325.834119
29	23352.91172	17241.56377	3%	1.018771313	1.019324556	1.019978388	1.019928093		2162	0.61702	0.03238	1919	0.5398645	0.0244919	1380	15	2.8	1337.347987
30	7616.448298	8729.01518	2%	1.018771313	1.019324556	1.019978388	1.019928093		589	0.67742	0.02207	742	0.8274933	0.0107817	1380	15	1.6	1355.360266
31	10300.23061	10428.2779	3%	1.018771313	1.019324556	1.019978388	1.019928093		903	0.70653	0.03433	897	0.6220736	0.0144928	1380	15	2.4	1343.382926
33	12137	11197.92729	1%	1.018771313	1.019324556	1.019978388	1.019928093		1256	0.55494	0.01752	1240	0.5879032	0.0016129	1380	15	1.0	1365.65338
34	12137	11197.92729	1%	1.018771313	1.019324556	1.019978388	1.019928093		1256	0.55494	0.01752	1240	0.5879032	0.0016129	1380	15	1.0	1365.65338
35	10164.8	9442.285714	1%	1.018771313	1.019324556	1.019978388	1.019928093		1191	0.64971	0.00856	1370.4	0.6551372	0.0023351	1380	15	0.5	1371.825513
36	16942.6	15879		1.03227746	1.033915759	1.035951222	1.035802285		1343.6	0.53721	0.03617	1227	0.5167074	0.0251019	1380	15	3.1	1334.044984
37	24715	22318.86974	6%	1.018771313	1.019324556	1.019978388	1.019928093		2595	0.53179	0.0501	2518	0.5651311	0.0158856	1380	15	3.3	1330.513528
38	21743	19635.00647	4%	1.018771313	1.019324556	1.019978388	1.019928093		2068	0.61315	0.04207	2256	0.633422	0.0119681	1380	15	2.7	1339.471712
40	19526	18150.65321	5%	1.018771313	1.019324556	1.019978388	1.019928093		1793	0.50195	0.04908	1813	0.5410921	0.0209597	2100	20	3.5	2029.96051
41	19526	18150.65321	5%	1.018771313	1.019324556	1.019978388	1.019928093		1793	0.50195	0.04908	1813	0.5410921	0.0209597	2100	20	3.5	2029.96051
42	19149.4	17292.85714	0%	1.025478051	1.026527466	1.027876713	1.027776769		1424.8	0.57664	0.00646	1467	0.5948194	0.0027267	1380	15	0.5	1373.112225
43	10291	9293.282967	5%	1.018771313	1.019324556	1.019978388	1.019928093		1182	0.54569	0.02369	933	0.5466238	0.0128617	1380	15	1.8	1352.5872
45	2999.8	2754.857143	0%	1.025478051	1.026527466	1.027876713	1.027776769		818.8	0.60699	0.00611	774.2	0.5809868	0.0036166	1380	15	0.5	1372.70765
46	11156.2	9778.714286	2%	1.018771313	1.019324556	1.019978388	1.019928093		1424.8	0.57664	0.00646	1467	0.5948194	0.0027267	1380	15	0.5	1373.112225
47	11156.2	9778.714286	2%	1.018771313	1.019324556	1.019978388	1.019928093		1424.8	0.57664	0.00646	1467	0.5948194	0.0027267	1380	15	0.5	1373.112225
48	11156.2	9778.714286	2%	1.018771313	1.019324556	1.019978388	1.019928093		1424.8	0.57664	0.00646	1467	0.5948194	0.0027267	1380	15	0.5	1373.112225
49	11156.2	9778.714286	2%	1.018771313	1.019324556	1.019978388	1.019928093		1424.8	0.57664	0.00646	1467	0.5948194	0.0027267	1380	15	0.5	1373.112225
50	11156.2	9778.714286	2%	1.018771313	1.019324556	1.019978388	1.019928093		1424.8	0.57664	0.00646	1467	0.5948194	0.0027267	1380	15	0.5	1373.112225
53	2999.8	2754.857143	0%	1.025478051	1.026527466	1.027876713	1.027776769		818.8	0.60699	0.00611	774.2	0.6834862	0.0036166	1380	15	0.5	1372.70765
54	2999.8	2754.857143	0%	1.025478051	1.026527466	1.027876713	1.027776769		818.8	0.60699	0.00611	774.2	0.6834862	0.0036166	1380	15	0.5	1372.70765
56	3244.4	2975.142857	0%	1.018771313	1.019324556	1.019978388	1.019928093		386	0.56321	0.00104	281.4	0.5692964	0.0014215	1380	15	0.1	1378.1567
57	3244.4	2975.142857	0%	1.018771313	1.019324556	1.019978388	1.019928093		386	0.56321	0.00104	281.4	0.5692964	0.0014215	1380	15	0.1	1378.1567
5059	3244.4	2975.142857	0%	1.018771313	1.019324556	1.019978388	1.019928093		386	0.56321	0.00104	281.4	0.5692964	0.0014215	1380	15	0.1	1378.1567
58	3244.4	2975.142857	0%	1.018771313	1.019324556	1.019978388	1.019928093		386	0.56321	0.00104	281.4	0.5692964	0.0014215	1380	15	0.1	1378.1567
60	15465	14273.93823	5%	1.018771313	1.019324556	1.019978388	1.019928093		1490	0.55705	0.04362	1356	0.5331858	0.0132743	1380	15	2.8	1337.326127
65	6485.8	5986.285714	1%	1.018771313	1.019324556	1.019978388	1.019928093		590.8	0.72647	0.00677	604.8	0.8158069	0.0026455	1380	15	0.5	1372.938012
5065	7885.8	7294.142857	1%	1.018771313	1.019324556	1.019978388	1.019928093		730.2	0.51109	0.0115	698.8	0.5981683	0.0074413	1380	15	0.9	1365.791231
5066	7885.8	7294.142857	1%	1.018771313	1.019324556	1.019978388	1.019928093		730.2	0.51109	0.0115	698.8	0.5981683	0.0074413	1380	15	0.9	1365.791231
68	17072	15803.42857	0%	1.018771313	1.019324556	1.019978388	1.019928093		1382.8	0.56364	0.00593	1557	0.5976879	0.0019268	1380	15	0.4	1374.107415
69	17361.8	16164.28571	1%	1.018771313	1.019324556	1.019978388	1.019928093		1113.285714	0.55229	0.00654	1345.571429	0.5386984	0.0022295	1380	15	0.4	1373.419597
5070	14697.4	13491.28571	1%	1.018771313	1.019324556	1.019978388	1.019928093		1191	0.64971	0.00856	1156.2	0.6229026	0.0046705	1380	15	0.7	1370.073972
71	8726	7737.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769		836.2	0.60655	0.01244	891.2	0.6283662	0.0042639	1380	15	0.8	1367.474153
572	8117.8	7670.142857	2%	1.025478051	1.026527466	1.027876713	1.027776769		743.2	0.66254	0.01507	677.8	0.624373	0.0050162	1380	15	1.0	1364.935352
73	8117.8	7670.142857	2%	1.025478051	1.026527466	1.027876713	1.027776769		743.2	0.66254	0.01507	677.8	0.624373	0.0050162	1380	15	1.0	1364.935352
74	8117.8	7670.142857	2%	1.025478051	1.026527466	1.027876713	1.027776769		743.2	0.66254	0.01507	677.8	0.624373	0.0050162	1380	15	1.0	1364.935352
75	8117.8	7670.142857	2%	1.025478051	1.026527466	1.027876713	1.027776769		743.2	0.66254	0.01507	677.8	0.624373	0.0050162	1380	15	1.0	1364.935352
76	5420	4892.857143	1%	1.018771313	1.019324556	1.019978388	1.019928093		499.8	0.503	0.0116	551.6	0.5493111	0.0018129	1380	15	0.7	1369.936838
77	5420	4892.857143	1%	1.018771313	1.019324556	1.019978388	1.019928093		499.8	0.503	0.0116	551.6	0.5493111	0.0018129	1380	15	0.7	1369.936838
78	5420	4892.857143	1%	1.018771313	1.019324556	1.019978388	1.019928093		499.8	0.503	0.0116	551.6	0.5493111	0.0018129	1380	15	0.7	1369.936838
979	8378.4	7463.357143	15%	1	1	1	1		873.6	0.62019	0.14709	742.9	0.5910621	0.1690672	1380	15	15.8	1142.880255
80	5130.4	4553.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		576.8	0.6543	0.01768	441	0.6250974	0.0045351	1380	15	1.1	1363.33581
81	5130.4	4553.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		576.8	0.6543	0.01768	441	0.6250974	0.0045351	1380	15	1.1	1363.33581
82	5130.4	4553.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		576.8	0.6543	0.01768	441	0.6250974	0.0045351	1380	15	1.1	1363.33581
83	5130.4	4553.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		576.8	0.6543	0.01768	441	0.6250974	0.0045351	1380	15	1.1	1363.33581
84	5130.4	4553.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		576.8	0.6543	0.01768	441	0.6250974	0.0045351	1380	15	1.1	1363.33581
87	4299.8	4051.642857	13%	1	1	1	1		438.8	0.66386	0.13833	371.7	0.5682002	0.1452785	1380	15	14.2	1167.292302
990	7543	7006.843336	3%	1.03227746	1.033915759	1.035951222	1.035802285		988	0.60628	0.01721	914	0.5153173	0.0098468	1380	15	1.4	1359.710021
890	8378.4	7463.357143	15%	1	1	1	1		873.6	0.62019	0.14709	742.9	0.5910621	0.1690672	1380	15	15.8	1142.880255
91	7543	7006.843336	3%	1.03227746	1.033915759	1.035951222	1.035802285		988	0.60628	0.01721	914	0.5153173	0.0098468	1380	15	1.4	1359.710021
92	7543	7006.843336	3%	1.03227746	1.033915759	1.035951222	1.035802285		988	0.60628	0.01721	914	0.5153173	0.0098468	1380	15	1.4	1359.710021
93	7543	7006.843336	3%	1.03227746	1.033915759	1.035951222	1.035802285		988	0.60628	0.01721	914	0.5153173	0.0098468	1380	15	1.4	1359.710021
1013	7543	7006.843336	3%	1.03227746	1.033915759	1.035951222	1.035802285		988	0.60628	0.01721	914	0.5153173	0.0098468	1380	15	1.4	1359.710021
1014	13987	12353.85714	1%	1.018771313	1.019324556	1.019978388	1.019928093		1525.2	0.59166	0.00669	1349.6	0.5610551	0.0041494	1380	15	0.5	1371.872231
94	6530.8	5867	0%	1.025478051	1.026527466	1.027876713	1.027776769		744	0.53898	0.00349	657	0.5214612	0.0012177	1380	15	0.2	1376.46579
95	6530.8	5867	0%	1.025478051	1.026527466	1.027876713	1.027776769		744	0.53898	0.00349	657	0.5214612	0.0012177	1380	15	0.2	1376.46579
96	6530.8	5867	0%	1.025478051	1.026527466	1.027876713	1.027776769		744	0.53898	0.00349	657	0.5214612	0.0012177	1380	15	0.2	1376.46579
1015	9428.3	8528	0%	1.025478051	1.026527466	1.027876713	1.027776769		1018	0.51631	0.00629	918.2	0.5068613	0.003594	1380	15	0.5	1372.589381
1016	9187	8323	1%	1.018771313	1.019324556	1.019978388	1.019928093		1080	0.56759	0.00629	737	0.5128901	0.003594	1380	15	0.5	1372.589381
99	9748.4	8677.714286	1%	1.018771313	1.019324556	1.019978388	1.019928093		1063.6	0.62204	0.00639	1005.2	0.6144051	0.0027855	1380	15	0.5	1373.115828
100	9748.4	8677.714286	1%	1.018771313	1.019324556	1.019978388	1.019928093		1063.6	0.62204	0.00639	1005.2	0.6144051	0.0027855	1380	15	0.5	1373.115828
101	9748.4	8677.714286	1%	1.018771313	1.019324556	1.019978388	1.019928093		1063.6	0.62204	0.00639	1005.2	0.6144051	0.0027855	1380	15	0.5	1373.115828
102	4626	4297.183783	3%	1.03227746	1.033915759	1.035951222	1.035802285		552	0.64312	0.01449	590	0.6372881	0.0067797	1380	15	1.1	1364.045689
103	4626	4297.183783	3%	1.03227746	1.033915759	1.035951222	1.035802285		552	0.64312	0.01449	590	0.6372881	0.0067797	1380	15	1.1	1364.045689
104	4626	4297.183783	3%	1.03227746	1.033915759	1.035951222	1.035802285		552	0.64312	0.01449	590	0.6372881	0.0067797	1380	15	1.1	1364.045689
105	4626	4297.183783	3%	1.03227746	1.033915759	1.035951222	1.035802285		552	0.64312	0.01449	590	0.6372881	0.0067797	1380	15	1.1	1364.045689
106	4626	4297.183783	3%	1.03227746	1.033915759	1.035951222	1.035802285		552	0.64312	0.01449	590	0.6372881	0.0067797	1380	15	1.1	1364.045689
1017	4626	4297.183783	3%	1.03227746	1.033915759	1.035951222	1.035802285		552	0.64312	0.01449	590	0.6372881	0.0067797	1380	15	1.1	1364.045689
1018	5174.7	4671.5	14%	1	1	1	1		518.6	0.53876	0.14906	442.5	0.5550282	0.1615819	1380	15	15.5	1147.022198
108	4854.4	4336.571429	5%	1.025478051	1.026527466	1.027876713	1.027776769		391.6	0.56844	0.05158	418.6	0.5054945	0.0057334	1380	15	2.9	1337.012516
109	4854.4	4336.571429	5%	1.025478051	1.026527466	1.027876713	1.027776769		391.6	0.56844	0.05158	418.6	0.5054945	0.0057334	1380	15	2.9	1337.012516
1019	4008.2	3675.571429	14%	1	1	1	1		343.6	0.51397	0.18161	307.8	0.5159194	0.1617934	1380	15	17.2	1122.450081
1020	3619.5	3290.5	1%	1.025478051	1.026527466	1.027876713	1.027776769		312.1	0.60269	0.00865	323.2	0.6070545	0.0021658	1380	15	0.5	1371.887314
113	17835.4	16944.71429	1%	1.03227746	1.033915759	1.035951222	1.035802285		1538.2	0.57171	0.00819	1399.2	0.5836192	0.0081475	1380	15	0.8	1367.745821
1021	5171	4826.428571	11%	1	1	1	1		448.6	0.61012	0.10745	410.5	0.5461632	0.1471376	1380	15	12.7	1189.062733
1022	3088	2741.428571	0%	1.025478051	1.026527466	1.027876713	1.027776769		364.4	0.60263	0.00384	292.4	0.628591	0.002052	1380	15	0.3	1375.579563
1023	12407.2	11733.57143	1%	1.03227746	1.033915759	1.035951222	1.035802285		1110.2	0.50207	0.02108	1058	0.5809074	0.0119093	1380	15	1.6	1355.26009
115	5171	4826.428571	11%	1	1	1	1		448.6	0.61012	0.10745	410.5	0.5461632	0.1471376	1380	15	12.7	1189.062733
1024	5171	4826.428571	11%	1	1	1	1		448.6	0.61012	0.10745	410.5	0.5461632	0.1471376	1380	15	12.7	1189.062733
1025	5656.8	5121.714286	0%	1.025478051	1.026527466	1.027876713	1.027776769		536	0.53321	0.00597	515.4	0.5071789	0.0015522	1380	15	0.4	1374.358244
118	1259.4	1145.857143	15%	1	1	1	1		129.6	0.68673	0.15818	103.7	0.5776278	0.1899711	1380	15	17.4	1118.887438
4118	2282.2	2049.857143	15%	1	1	1	1		208.5	0.72038	0.14436	186.3	0.6280193	0.1867955	1380	15	16.6	1131.63
4119	2282.2	2049.857143	15%	1	1	1	1		208.5	0.72038	0.14436	186.3	0.6280193	0.1867955	1380	15	16.6	1131.63
1026	7861.5	7145.5	12%	1	1	1	1		755	0.52715	0.12623	665.6	0.5310998	0.1407752	1380	15	13.4	1179.749696
1027	9278	8681.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		803.4	0.5422	0.00846	795.2	0.5211268	0.0050302	1380	15	0.7	1369.879343
120	2564.2	2273	1%	1.025478051	1.026527466	1.027876713	1.027776769		256	0.6125	0.01719	240	0.6683333	0.0016667	1380	15	0.9	1365.859375
121	2033.4	2075.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		187.2	0.66774	0.00321	190	0.6789474	0.0042105	1380	15	0.4	1374.438259
122	2033.4	2075.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		187.2	0.66774	0.00321	190	0.6789474	0.0042105	1380	15	0.4	1374.438259
123	2033.4	2075.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		187.2	0.66774	0.00321	190	0.6789474	0.0042105	1380	15	0.4	1374.438259
124	3381.9	3070.928571	15%	1	1	1	1		311.2	0.72044	0.16003	286.8	0.6495816	0.1715481	1380	15	16.6	1131.319632
2125	3381.9	3070.928571	15%	1	1	1	1		311.2	0.72044	0.16003	286.8	0.6495816	0.1715481	1380	15	16.6	1131.319632
125	2915.8	2714.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769		247.8	0.70541	0.00484	300	0.6833333	0.0026667	1380	15	0.4	1374.368039
126	2915.8	2714.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769		247.8	0.70541	0.00484	300	0.6833333	0.0026667	1380	15	0.4	1374.368039
127	2915.8	2714.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769		247.8	0.70541	0.00484	300	0.6833333	0.0026667	1380	15	0.4	1374.368039
1028	9278	8681.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		803.4	0.5422	0.00846	795.2	0.5211268	0.0050302	1380	15	0.7	1369.879343
1029	6198	5748.285714	0%	1.018771313	1.019324556	1.019978388	1.019928093		584.2	0.50531	0.00377	532.4	0.5259204	0.0015026	1380	15	0.3	1376.048653
129	9278	8681.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		803.4	0.5422	0.00846	795.2	0.5211268	0.0050302	1380	15	0.7	1369.879343
130	9278	8681.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093		803.4	0.5422	0.00846	795.2	0.5211268	0.0050302	1380	15	0.7	1369.879343

	# of lanes	Width factor				ily flow occuring in the pe		% directional split of the peak hour flow	AADT	AAWT	Results		
Link Ref	# of lanes	Average width (m)	Width Check (adjust for narrow single)	Raw width factor (before validity criteria)	Final width factor	2016 Avg of AM & PM peak flows	% of daily flow occuring in peak hour	Average of AM & PM peak hour % directional split	AADT_2016	AAWT_2016	**CRF**	**AADTper CRF**	**AAWTper CRF**
1001	1	6.3	6.3	0.83	0.8273	1294	7.6	56.2	15964	17125	21574	74.0%	79.4%
2	1	6.9	6.9	0.93	0.9299	1675.636009	7.7	50.3	19840	21836	25993	76.3%	84.0%
4	1	7.9	7.9	1.10	1.1009	1986.65	8.2	53.4	22501	24219	27726	81.2%	87.3%
1003	2	15.45	15.5	2.12	1	3106.604831	8.0	51.4	36106	38619	92861	38.9%	41.6%
2101	2	7.7	7.7	1.05	1	1278.991114	7.2	100.0	18409	17824	56445	32.6%	31.6%
2102	2	7.7	7.7	1.05	1	1266.637579	6.5	100.0	20080	19442	62357	32.2%	31.2%
2103	2	16.7	16.7	2.29	1	2515.43175	6.9	62.6	37419	36231	93770	39.9%	38.6%
2007	2	19.05	19.1	2.61	1	3446.175366	9.5	66.7	37993	36431	64545	58.9%	56.4%
7	2	19.05	19.1	2.61	1	3110.325976	5.9	67.6	53140	52357	96627	55.0%	54.2%
2008	2	19.05	19.1	2.61	1	3208.116623	8.1	65.5	41817	39685	77866	53.7%	51.0%
2009	2	19.05	19.1	2.61	1	3997.468166	7.4	63.5	56371	54058	86444	65.2%	62.5%
1006	2	18.95	19.0	2.60	1	3546.831648	7.7	65.4	47477	45969	79869	59.4%	57.6%
1007	2	18.85	18.9	2.58	1	3546.831648	7.7	65.4	47477	45969	79869	59.4%	57.6%
1008	2	18.85	18.9	2.58	1	2848.495211	7.7	66.0	38129	36918	78996	48.3%	46.7%
10	2	19	19.0	2.60	1	1780.233623	7.7	82.4	23828	23072	63771	37.4%	36.2%
2011	2	19	19.0	2.60	1	3465.379699	7.5	63.5	41100	46089	73314	56.1%	62.9%
12	2	15	15.0	2.05	1	2845.680785	7.5	55.8	33813	37921	84355	40.1%	45.0%
2012	2	15	15.0	2.05	1	2794.224132	7.6	56.7	40095	36814	99278	40.4%	37.1%
13	1	5.8	5.8	0.74	0.7418	2092.313141	7.7	53.6	25395	27169	22058	115.1%	123.2%
14	1	7.5	7.5	1.03	1.0325	1376.734866	8.7	57.4	14767	15897	25819	57.2%	61.6%
15	1	6.1	6.1	0.79	0.7931	1907.677096	9.3	59.2	19083	20544	18049	105.7%	113.8%
16	1	7.5	7.5	1.03	1.0325	1414.5	9.4	54.1	13984	15114	23355	59.9%	64.7%
19	1	6.8	6.8	0.91	0.9128	1511.133265	7.2	57.5	19612	20916	28110	69.8%	74.4%
20	1	7	7.0	0.95	0.947	694.8589922	7.6	57.1	15195	9118	49192	30.9%	18.5%
21	2	12.6	12.6	1.73	1	3570.00418	7.0	51.4	47735	51035	105307	45.3%	48.5%
1009	3	22	22.0	1.00	1	8056.658705	6.9	53.8	121962	115961	168828	72.2%	68.7%
1010	3	22	22.0	1.00	1	5654.892878	6.6	53.8	91803	86200	173065	53.0%	49.8%
1011	3	22	22.0	1.00	1	7269.887385	7.1	53.4	108497	102698	163480	66.4%	62.8%
1012	3	22	22.0	1.00	1	1198.723179	2.7	70.4	43286	43747	278686	15.5%	15.7%
23	2	15	15.0	1.00	1	5002.985537	6.3	54.2	80770	79295	117360	68.8%	67.6%
24	2	15	15.0	1.00	1	2821.561292	5.9	56.3	47704	47838	114526	41.7%	41.8%
25	2	15	15.0	1.00	1	4444.517631	7.9	53.6	55848	56375	91865	60.8%	61.4%
26	1	7.5	7.5	1.03	1.0325	1791.9	8.3	50.5	19927	21698	27368	72.8%	79.3%
27	1	7.5	7.5	1.03	1.0325	1791.9	8.3	50.5	19927	21698	27368	72.8%	79.3%
28	1	7.3	7.3	1.00	0.9983	2160.38411	8.7	60.3	17304	24747	17571	98.5%	140.8%
29	1	6.95	7.0	0.94	0.93845	2079.3337	8.7	57.8	17585	23819	18349	95.8%	129.8%
30	1	7.2	7.2	0.98	0.9812	678.1975618	8.7	75.2	8903	7769	23201	38.4%	33.5%
31	1	6	6.0	0.78	0.776	917.142311	8.7	66.4	10636	10506	18199	58.4%	57.7%
33	1	5.5	5.5	0.69	0.6905	1271.769609	10.3	57.1	11421	12379	14820	77.1%	83.5%
34	1	6.5	6.5	0.86	0.8615	1271.769609	10.3	57.1	11421	12379	18490	61.8%	67.0%
35	1	6.75	6.8	0.90	0.90425	1305.119502	12.6	65.2	9630	10368	14030	68.6%	73.9%
36	1	5.833333333	5.8	0.75	0.7475	1327.791316	7.6	52.7	16448	17552	23441	70.2%	74.9%
37	1	9.6	9.6	1.39	1.3916	2605.185394	10.3	54.8	22764	25209	29498	77.2%	85.5%
38	1	6.5	6.5	0.86	0.8615	2203.207636	9.9	62.3	20026	22177	16829	119.0%	131.8%
40	2	14.7	14.7	2.01	1	1837.346192	9.2	52.2	18512	19916	78436	23.6%	25.4%
41	2	15	15.0	2.05	1	1837.346192	9.2	52.2	18512	19916	78436	23.6%	25.4%
42	1	7.05	7.1	0.96	0.95555	1483.50846	7.5	58.6	17773	19683	26837	66.2%	73.3%
43	1	6.9	6.9	0.93	0.9299	1077.608751	10.3	54.6	9478	10497	20256	46.8%	51.8%
45	1	5.2	5.5	0.69	0.6905	817.1994963	26.5	59.4	2831	3083	5529	51.2%	55.8%
46	1	5.45	5.5	0.69	0.6905	1473.447245	12.9	58.6	9974	11379	10957	91.0%	103.9%
47	1	5.3	5.5	0.69	0.6905	1473.447245	12.9	58.6	9974	11379	10957	91.0%	103.9%
48	1	6.7	6.7	0.90	0.8957	1473.447245	12.9	58.6	9974	11379	14213	70.2%	80.1%
49	1	6.75	6.8	0.90	0.90425	1473.447245	12.9	58.6	9974	11379	14349	69.5%	79.3%
50	1	6.4	6.4	0.84	0.8444	1473.447245	12.9	58.6	9974	11379	13399	74.4%	84.9%
53	1	5.7	5.7	0.72	0.7247	817.1994963	26.5	64.5	2831	3083	5342	53.0%	57.7%
54	1	6.05	6.1	0.78	0.78455	817.1994963	26.5	64.5	2831	3083	5783	49.0%	53.3%
56	1	5.775	5.8	0.74	0.737525	340.0418284	10.3	56.6	3034	3309	16018	18.9%	20.7%
57	1	5.725	5.7	0.73	0.728975	340.0418284	10.3	56.6	3034	3309	15832	19.2%	20.9%
5059	1	7.5	7.5	1.03	1.0325	340.0418284	10.3	56.6	3034	3309	22424	13.5%	14.8%
58	1	5.8	5.8	0.74	0.7418	340.0418284	10.3	56.6	3034	3309	16111	18.8%	20.5%
60	1	6.2	6.2	0.81	0.8102	1450.086677	9.2	54.5	14558	15774	19955	73.0%	79.0%
65	1	6.7	6.7	0.90	0.8957	609.1887915	9.2	77.1	6106	6615	15983	38.2%	41.4%
5065	1	6.7	6.7	0.90	0.8957	728.1054061	9.1	55.5	7440	8043	22537	33.0%	35.7%
5066	1	5.833333333	5.8	0.75	0.7475	728.1054061	9.1	55.5	7440	8043	18808	39.6%	42.8%
68	1	6.666666667	6.7	0.89	0.89	1497.922652	8.6	58.1	16118	17413	22663	71.1%	76.8%
69	1	6.5	6.5	0.86	0.8615	1252.878774	7.1	54.5	16486	17709	28542	57.8%	62.0%
5070	1	5.65	5.7	0.72	0.71615	1195.949842	8.0	63.6	13760	14991	17742	77.6%	84.5%
71	1	6.4	6.4	0.84	0.8444	886.1730121	9.9	61.7	7953	8969	16783	47.4%	53.4%
572	1	7.25	7.3	0.99	0.98975	728.9578021	8.7	64.3	7883	8344	22705	34.7%	36.8%
73	1	7.25	7.3	0.99	0.98975	728.9578021	8.7	64.3	7883	8344	22705	34.7%	36.8%
74	1	6.6	6.6	0.88	0.8786	728.9578021	8.7	64.3	7883	8344	20155	39.1%	41.4%
75	1	6.65	6.7	0.89	0.88715	728.9578021	8.7	64.3	7883	8344	20351	38.7%	41.0%
76	1	6.25	6.3	0.82	0.81875	535.7206635	9.7	52.6	4990	5528	19858	25.1%	27.8%
77	1	6.1	6.1	0.79	0.7931	535.7206635	9.7	52.6	4990	5528	19236	25.9%	28.7%
78	1	5.95	6.0	0.77	0.76745	535.7206635	9.7	52.6	4990	5528	18614	26.8%	29.7%
979	1	6.05	6.1	0.78	0.78455	808.25	9.6	60.6	7463	8378	13671	54.6%	61.3%
80	1	6.6	6.6	0.88	0.8786	518.5747112	9.9	64.0	4644	5233	16769	27.7%	31.2%
81	1	7.15	7.2	0.97	0.97265	518.5747112	9.9	64.0	4644	5233	18564	25.0%	28.2%
82	1	6.566666667	6.6	0.87	0.8729	518.5747112	9.9	64.0	4644	5233	16661	27.9%	31.4%
83	1	6.75	6.8	0.90	0.90425	518.5747112	9.9	64.0	4644	5233	17259	26.9%	30.3%
84	1	6.15	6.2	0.80	0.80165	518.5747112	9.9	64.0	4644	5233	15301	30.4%	34.2%
87	1	6.25	6.3	0.82	0.81875	405.25	9.4	61.6	4052	4300	15511	26.1%	27.7%
990	1	6.25	6.3	0.82	0.81875	982.444567	12.6	56.1	7258	7814	14665	49.5%	53.3%
890	1	6.25	6.3	0.82	0.81875	808.25	9.6	60.6	7463	8378	14267	52.3%	58.7%
91	1	6.45	6.5	0.85	0.85295	982.444567	12.6	56.1	7258	7814	15278	47.5%	51.1%
92	1	6.4	6.4	0.84	0.8444	982.444567	12.6	56.1	7258	7814	15124	48.0%	51.7%
93	1	6.25	6.3	0.82	0.81875	982.444567	12.6	56.1	7258	7814	14665	49.5%	53.3%
1013	1	6.3	6.3	0.83	0.8273	982.444567	12.6	56.1	7258	7814	14818	49.0%	52.7%
1014	1	6.3	6.3	0.83	0.8273	1464.755213	10.3	57.6	12600	14266	16939	74.4%	84.2%
94	1	6.3	6.3	0.83	0.8273	718.6921076	10.7	53.0	6030	6713	18020	33.5%	37.3%
95	1	6.65	6.7	0.89	0.88715	718.6921076	10.7	53.0	6030	6713	19323	31.2%	34.7%
96	1	6.5	6.5	0.86	0.8615	718.6921076	10.7	53.0	6030	6713	18764	32.1%	35.8%
1015	1	7.066666667	7.1	0.96	0.9584	993.2470877	10.2	51.2	8765	9691	22691	38.6%	42.7%
1016	1	7.066666667	7.1	0.96	0.9584	925.7576077	9.9	54.0	8489	9371	22328	38.0%	42.0%
99	1	6.25	6.3	0.82	0.81875	1054.095106	10.6	61.8	8851	9943	15269	58.0%	65.1%
100	1	6.5	6.5	0.86	0.8615	1054.095106	10.6	61.8	8851	9943	16066	55.1%	61.9%
101	1	7.5	7.5	1.03	1.0325	1054.095106	10.6	61.8	8851	9943	19255	46.0%	51.6%
102	1	6.8	6.8	0.91	0.9128	589.9137278	12.3	64.0	4451	4792	14674	30.3%	32.7%
103	1	5.7	5.7	0.72	0.7247	589.9137278	12.3	64.0	4451	4792	11650	38.2%	41.1%
104	1	5.45	5.5	0.69	0.6905	589.9137278	12.3	64.0	4451	4792	11101	40.1%	43.2%
105	1	5.833333333	5.8	0.75	0.7475	589.9137278	12.3	64.0	4451	4792	12017	37.0%	39.9%
106	1	6.3	6.3	0.83	0.8273	589.9137278	12.3	64.0	4451	4792	13300	33.5%	36.0%
1017	1	5.966666667	6.0	0.77	0.7703	589.9137278	12.3	64.0	4451	4792	12384	35.9%	38.7%
1018	1	5.966666667	6.0	0.77	0.7703	480.55	9.3	54.7	4672	5175	15705	29.7%	32.9%
108	1	6.35	6.4	0.84	0.83585	415.6408011	8.3	53.7	4457	4990	22317	20.0%	22.4%
109	1	6.766666667	6.8	0.91	0.9071	415.6408011	8.3	53.7	4457	4990	24220	18.4%	20.6%
1019	1	5.466666667	5.5	0.69	0.6905	325.7	8.1	51.5	3676	4008	16985	21.6%	23.6%
1020	1	5.466666667	5.5	0.69	0.6905	325.9126884	8.8	60.5	3382	3720	16251	20.8%	22.9%
113	1	5.7	5.7	0.72	0.7247	1517.252059	8.2	57.8	17551	18477	19849	88.4%	93.1%
1021	1	5.1	5.5	0.69	0.6905	429.55	8.3	57.8	4826	5171	15957	30.2%	32.4%
1022	1	5.1	5.5	0.69	0.6905	336.9204165	10.6	61.6	2818	3174	12903	21.8%	24.6%
1023	1	5.1	5.5	0.69	0.6905	1119.958654	8.7	54.1	12154	12853	18754	64.8%	68.5%
115	1	5.933333333	5.9	0.76	0.7646	429.55	8.3	57.8	4826	5171	17669	27.3%	29.3%
1024	1	6.166666667	6.2	0.80	0.8045	429.55	8.3	57.8	4826	5171	18591	26.0%	27.8%
1025	1	6.166666667	6.2	0.80	0.8045	539.3642457	9.3	52.0	5264	5814	20744	25.4%	28.0%
118	1	5.766666667	5.8	0.74	0.7361	116.65	9.3	63.2	1146	1259	12798	9.0%	9.8%
4118	1	5.766666667	5.8	0.74	0.7361	197.4	8.6	67.4	2050	2282	12830	16.0%	17.8%
4119	1	5.45	5.5	0.69	0.6905	197.4	8.6	67.4	2050	2282	12035	17.0%	19.0%
1026	1	5.45	5.5	0.69	0.6905	710.3	9.0	52.9	7146	7862	15488	46.1%	50.8%
1027	1	5.8	5.8	0.74	0.7418	814.5238797	8.6	53.2	8854	9463	20777	42.6%	45.5%
120	1	5.633333333	5.6	0.71	0.7133	254.4444865	9.7	64.0	2336	2636	13968	16.7%	18.9%
121	1	5.65	5.7	0.72	0.71615	192.1928277	9.3	67.3	2117	2074	16100	13.1%	12.9%
122	1	5.2	5.5	0.69	0.6905	192.1928277	9.3	67.3	2117	2074	15524	13.6%	13.4%
123	1	5.166666667	5.5	0.69	0.6905	192.1928277	9.3	67.3	2117	2074	15524	13.6%	13.4%
124	1	5.2	5.5	0.69	0.6905	299	8.8	68.5	3071	3382	11713	26.2%	28.9%
2125	1	6.05	6.1	0.78	0.78455	299	8.8	68.5	3071	3382	13308	23.1%	25.4%
125	1	6.05	6.1	0.78	0.78455	281.0358504	9.4	69.4	2790	2997	15418	18.1%	19.4%
126	1	6.6	6.6	0.88	0.8786	281.0358504	9.4	69.4	2790	2997	17266	16.2%	17.4%
127	1	5.75	5.8	0.73	0.73325	281.0358504	9.4	69.4	2790	2997	14409	19.4%	20.8%
1028	1	6.866666667	6.9	0.92	0.9242	814.5238797	8.6	53.2	8854	9463	25886	34.2%	36.6%
1029	1	6.866666667	6.9	0.92	0.9242	568.9272972	9.0	51.6	5863	6322	25417	23.1%	24.9%
129	1	6.45	6.5	0.85	0.85295	814.5238797	8.6	53.2	8854	9463	23891	37.1%	39.6%
130	1	6.2	6.2	0.81	0.8102	814.5238797	8.6	53.2	8854	9463	22693	39.0%	41.7%

131	B184	Single	Duton Hill	40	1	6.2		6.5	15235-01	2015	9278	8681.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093	803.4	0.5422	0.00846	795.2	0.5211268	0.0050302	1380	15	0.7	1369.879343	1	6.35	6.4	0.84	0.83585	814.5238797	8.6	53.2	8854	9463	23412	37.8%	40.4%
132	B184	Single	Between Duton Hill and Thaxted	60	1	6.5	6.1	5.7	15235-01	2015	9278	8681.428571	1%	1.018771313	1.019324556	1.019978388	1.019928093	803.4	0.5422	0.00846	795.2	0.5211268	0.0050302	1380	15	0.7	1369.879343	1	6.1	6.1	0.79	0.7931	814.5238797	8.6	53.2	8854	9463	22214	39.9%	42.6%
133	B184	Single	B184 between Thaxted & Debden / Saffron Walden	60	1	5.7	6.5	7	15200-02	2015	5306.2	4910.285714	1%	1.018771313	1.019324556	1.019978388	1.019928093	531	0.62938	0.01469	501.2	0.6480447	0.0031923	1380	15	0.9	1366.588797	1	6.4	6.4	0.84	0.8444	525.9265172	9.7	63.9	5008	5412	17204	29.1%	31.5%
134	B184	Single	SE of Debden	40	1	7	5.9	7.3	15200-02	2015	5306.2	4910.285714	1%	1.018771313	1.019324556	1.019978388	1.019928093	531	0.62938	0.01469	501.2	0.6480447	0.0031923	1380	15	0.9	1366.588797	1	6.733333333	6.7	0.90	0.9014	525.9265172	9.7	63.9	5008	5412	18365	27.3%	29.5%
135	B184	Single	Between Debden & Saffron Walden	60	1	6		7.2	15305-04	2015	6342.2	5783.142857	1%	1.018771313	1.019324556	1.019978388	1.019928093	488.4	0.638	0.00573	577.2	0.6115731	0.0031185	1380	15	0.4	1373.361368	1	6.6	6.6	0.88	0.8786	542.9610214	8.4	62.5	5898	6469	20980	28.1%	30.8%
136	B184	Single	Approach to Saffron Walden from the SE	40	1	7.2		6.9	15305-04	2015	6342.2	5783.142857	1%	1.018771313	1.019324556	1.019978388	1.019928093	488.4	0.638	0.00573	577.2	0.6115731	0.0031185	1380	15	0.4	1373.361368	1	7.05	7.1	0.96	0.95555	542.9610214	8.4	62.5	5898	6469	22818	25.9%	28.4%
1031	B185	Single	In Saffron Walden	30	1	6.7	6.8		15169-05	2013	10123.8	9561	1%	1.03227746	1.033915759	1.035951222	1.035802285	745.8	0.53205	0.00778	773.4	0.6511508	0.0046548	1380	15	0.6	1370.676259	1	6.75	6.8	0.90	0.90425	784.7514888	7.5	59.2	9903	10488	26439	37.5%	39.7%
1033	B187	Single	In Saffron Walden	30	1	6.2			14338-01	2014	10812	10172.17753	3%	1.025478051	1.026527466	1.027876713	1.027776769	970	0.53505	0.02165	694	0.6685879	0.0014409	1380	15	1.2	1362.682195	1	6.2	6.2	0.81	0.8102	853.5618855	7.7	60.2	10455	11113	22470	46.5%	49.5%
1034	B188	Single	In Saffron Walden	30	1	6.6	6.7	6.4	14338-01	2014	13187	12120.87067	3%	1.025478051	1.026527466	1.027876713	1.027776769	1324	0.58233	0.01813	994	0.6036217	0.001006	1380	15	1.0	1365.650307	1	6.566666667	6.6	0.87	0.8729	1189.050621	8.8	59.3	12458	13555	21062	59.1%	64.4%
1035	B189	Single	In Saffron Walden	30	1	7.3	7	4	15169-07	2015	13037.6	12331	1%	1.018771313	1.019324556	1.019978388	1.019928093	1088	0.77904	0.00772	1053.4	0.7243212	0.0047465	1380	15	0.6	1370.649658	1	6.1	6.1	0.79	0.7931	1091.089838	8.2	75.2	12577	13298	16670	75.4%	79.8%
1036	B190	Single	In Saffron Walden	30	1	6	6.3		15169-06	2015	10199	9532.857143	0%	1.018771313	1.019324556	1.019978388	1.019928093	948.6	0.72233	0.00401	756	0.5716931	0.0060847	1380	15	0.5	1372.43208	1	6.15	6.2	0.80	0.80165	868.5079157	8.3	64.7	9723	10403	19036	51.1%	54.6%
1037	B191	Single	In Saffron Walden	30	1	5.1			15305-01	2015	10042.4	9258.714286	0%	1.018771313	1.019324556	1.019978388	1.019928093	763	0.61153	0.0055	847.8	0.6062751	0.0018872	1380	15	0.4	1374.456131	1	5.1	5.5	0.69	0.6905	820.752935	8.0	60.9	9443	10243	17933	52.7%	57.1%
1038	B192	Single	In Saffron Walden	30	1	5.9			13015-01	2013	5026	4633.782562	1%	1.03227746	1.033915759	1.035951222	1.035802285	380	0.58684	0.01316	478	0.6150628	0.0041841	1380	15	0.9	1366.993504	1	5.9	5.9	0.76	0.7589	443.2385838	8.5	60.1	4800	5207	18693	25.7%	27.9%
1039	B1053	Single	In Saffron Walden	30	1	6.5	6.6	6.75	15305-09	2015	10093	9489.448206	3%	1.018771313	1.019324556	1.019978388	1.019928093	845	0.56686	0.03077	885	0.5333333	0.0022599	1380	15	1.7	1355.228162	1	6.616666667	6.6	0.88	0.88145	881.4819956	8.6	55.0	9679	10295	23843	40.6%	43.2%
1040	B194	Single	In Saffron Walden	30	1	5.5		5.3	15305-03	2015	4449	4201.714286	1%	1.018771313	1.019324556	1.019978388	1.019928093	329.8	0.69982	0.00728	380.4	0.617245	0.0052576	1380	15	0.6	1370.598929	1	5.4	5.5	0.69	0.6905	361.87092	8.0	65.9	4285	4538	17019	25.2%	26.7%
138	B1053	Single	Leaving Saffron Walden in the east	60	1	5.5	6	5.3	15305-03	2015	4449	4201.714286	1%	1.018771313	1.019324556	1.019978388	1.019928093	329.8	0.69982	0.00728	380.4	0.617245	0.0052576	1380	15	0.6	1370.598929	1	5.6	5.6	0.71	0.7076	361.87092	8.0	65.9	4285	4538	17441	24.6%	26.0%
1041	B1053	Single	Sewards End	30	1	5.3		5.25	15305-03	2015	4449	4201.714286	1%	1.018771313	1.019324556	1.019978388	1.019928093	329.8	0.69982	0.00728	380.4	0.617245	0.0052576	1380	15	0.6	1370.598929	1	5.275	5.5	0.69	0.6905	361.87092	8.0	65.9	4285	4538	17019	25.2%	26.7%
1042	B1053	Single	Sewards End	30	1	5.3		5.25	SW-35	2016	2118	2259.533333	13%	1	1	1	1	198.0714286	0.62171	0.1255	215.5714286	0.7153744	0.1438038	1380	15	13.5	1178.025228	1	5.275	5.5	0.69	0.6905	206.8214286	9.8	66.9	2260	2118	13293	17.0%	15.9%
3140	B1053	Single	Between Sewards End & Radwinter	60	1	5.25	5.8	5.9	SW-35	2016	2118	2259.533333	13%	1	1	1	1	198.0714286	0.62171	0.1255	215.5714286	0.7153744	0.1438038	1380	15	13.5	1178.025228	1	5.65	5.7	0.72	0.71615	206.8214286	9.8	66.9	2260	2118	13786	16.4%	15.4%
143	B1054	Single	Between Radwinter and Hempstead	60	1	5.6		6	SW-36	2016	2025.642857	2223.9	13%	1	1	1	1	238.6666667	0.61634	0.13408	220.4444444	0.6160282	0.1502016	1380	15	14.2	1166.790131	1	5.8	5.8	0.74	0.7418	229.5555556	11.3	61.6	2224	2026	13608	16.3%	14.9%
144	B1054 / B1055	Single	Hempstead	30	1	6	5.7	5.4	SW-37	2016	2534.428571	2818.7	13%	1	1	1	1	265.8	0.65839	0.12829	250.6	0.6584198	0.1687949	1380	15	14.9	1157.184869	1	5.7	5.7	0.72	0.7247	258.2	10.2	65.8	2819	2534	13905	20.3%	18.2%
145	B1054	Single	Road NE of Hempstead	60	1	5.4	5.3	5.5	SW-37	2016	2534.428571	2818.7	13%	1	1	1	1	265.8	0.65839	0.12829	250.6	0.6584198	0.1687949	1380	15	14.9	1157.184869	1	5.4	5.5	0.69	0.6905	258.2	10.2	65.8	2819	2534	13248	21.3%	19.1%
150	B1052	Single	Road between Wendens Ambo and Saffron Walden	60	1	6	6.3	6.6	14338-01	2014	10812	10172.17753	3%	1.025478051	1.026527466	1.027876713	1.027776769	970	0.53505	0.02165	694	0.6685879	0.0014409	1380	15	1.2	1362.682195	1	6.3	6.3	0.83	0.8273	853.5618855	7.7	60.2	10455	11113	22944	45.6%	48.4%
151	B1052	Single	Northern exit from Saffron Walden	60	1	7.5		5.2	15326-01	2015	2617.2	2458.571429	1%	1.018771313	1.019324556	1.019978388	1.019928093	260.4	0.60138	0.01459	284.2	0.6805067	0.0105559	1380	15	1.3	1361.13834	1	6.35	6.4	0.84	0.83585	277.4900443	10.4	64.1	2508	2669	16040	15.6%	16.6%
152	B1052	Single	Little Walden	40	1	5.2		5.3	15326-01	2015	2617.2	2458.571429	1%	1.018771313	1.019324556	1.019978388	1.019928093	260.4	0.60138	0.01459	284.2	0.6805067	0.0105559	1380	15	1.3	1361.13834	1	5.25	5.5	0.69	0.6905	277.4900443	10.4	64.1	2508	2669	13251	18.9%	20.1%
153	B1052	Single	Between Little Walden & Hadstock	60	1	5.3	6.2	5.3	15326-01	2015	2617.2	2458.571429	1%	1.018771313	1.019324556	1.019978388	1.019928093	260.4	0.60138	0.01459	284.2	0.6805067	0.0105559	1380	15	1.3	1361.13834	1	5.6	5.6	0.71	0.7076	277.4900443	10.4	64.1	2508	2669	13579	18.5%	19.7%
154	B1052	Single	Hadstock	30	1	5.3	5.4	5.1	15326-01	2015	2617.2	2458.571429	1%	1.018771313	1.019324556	1.019978388	1.019928093	260.4	0.60138	0.01459	284.2	0.6805067	0.0105559	1380	15	1.3	1361.13834	1	5.266666667	5.5	0.69	0.6905	277.4900443	10.4	64.1	2508	2669	13251	18.9%	20.1%
155	B1052	Single	North of Hadstock	60	1	5.1			15326-01	2015	2617.2	2458.571429	1%	1.018771313	1.019324556	1.019978388	1.019928093	260.4	0.60138	0.01459	284.2	0.6805067	0.0105559	1380	15	1.3	1361.13834	1	5.1	5.5	0.69	0.6905	277.4900443	10.4	64.1	2508	2669	13251	18.9%	20.1%
1043	B184	Single	NW exit of Saffron Walden	50	1	8.4	6.1	5.8	15305-01	2015	10199	9532.857143	0%	1.018771313	1.019324556	1.019978388	1.019928093	763	0.61153	0.0055	847.8	0.6062751	0.0018872	1380	15	0.4	1374.456131	1	6.766666667	6.8	0.91	0.9071	820.752935	7.9	60.9	9723	10403	24256	40.1%	42.9%
2158	B184	Single	North of Little Chesterford (nr M11 J9)	50	1	6.1	6.3	6.6	SW-07	2016	9763.8	8912.857143	16%	1	1	1	1	914.3	0.51876	0.14022	794.3	0.5163037	0.162547	1380	15	15.1	1152.927303	1	6.333333333	6.3	0.83	0.833	854.3	8.7	51.8	8913	9764	19361	46.0%	50.4%
159	A1301	Single	Northeast of M11 J9	60	1	7.8	8.2		S/1109/15/FL-05B	2015	12984.01291	12279.06723	3%	1.018771313	1.019324556	1.019978388	1.019928093	1245	0.73815	0.03454	1024	0.5615234	0.0175781	1380	15	2.6	1340.912792	1	8	8.0	1.12	1.118	1156.079315	8.7	65.0	12524	13243	24991	50.1%	53.0%
160	A1301	Single	Northeast of M11 J10	60	1	7.8	8.2		S/1109/15/FL-05B	2015	15862.35513	13052.93529	3%	1.018771313	1.019324556	1.019978388	1.019928093	1388	0.57205	0.03746	1384	0.5635838	0.0122832	1380	15	2.5	1342.68959	1	8	8.0	1.12	1.118	1412.399884	8.7	56.8	13313	16179	24919	53.4%	64.9%
1045	B1383	Single	North road out of Stansted Mountfitchet	50	1	6.5	5.7		13105-02	2013	12407.2	11733.57143	2%	1.03227746	1.033915759	1.035951222	1.035802285	1110.2	0.50207	0.02108	1058	0.5809074	0.0119093	1380	15	1.6	1355.26009	1	6.1	6.1	0.79	0.7931	1119.958654	8.7	54.1	12154	12853	21541	56.4%	59.7%
1046	B1384	Single	North road out of Stansted Mountfitchet	50	1	6.5	5.7		SW-14	2016	11474.6	10685.07143	10%	1	1	1	1	1020.9	0.57283	0.10226	874.5	0.5077187	0.1112636	1380	15	10.7	1219.855284	1	6.1	6.1	0.79	0.7931	947.7	8.3	54.0	10685	11475	20190	52.9%	56.8%
1048	B1383	Single	Road between Stansted Mountfitchet & Quendon	50	1	5.4	5.7	6.2	13014-01	2013	11050	10097.57143	1%	1.03227746	1.033915759	1.035951222	1.035802285	1139	0.52976	0.00632	993.4	0.5546608	0.0024159	1380	15	0.4	1373.44704	1	5.766666667	5.8	0.74	0.7361	1101.427971	9.6	54.2	10459	11447	17706	59.1%	64.7%
162	B1383	Single	Quendon	30	1	6.2		6.4	13014-01	2013	11050	10097.57143	1%	1.03227746	1.033915759	1.035951222	1.035802285	1139	0.52976	0.00632	993.4	0.5546608	0.0024159	1380	15	0.4	1373.44704	1	6.3	6.3	0.83	0.8273	1101.427971	9.6	54.2	10459	11447	19900	52.6%	57.5%
1049	B1383	Single	Road between Quendon & Newport	50	1	6.4	7	6.7	13014-01	2013	11050	10097.57143	1%	1.03227746	1.033915759	1.035951222	1.035802285	1139	0.52976	0.00632	993.4	0.5546608	0.0024159	1380	15	0.4	1373.44704	1	6.7	6.7	0.90	0.8957	1101.427971	9.6	54.2	10459	11447	21545	48.5%	53.1%
1050	B1383	Single	Road between Quendon & Newport	50	1	6.4	7	6.7	13041-02	2013	10817.8	9966.857143	1%	1.03227746	1.033915759	1.035951222	1.035802285	1086.4	0.50994	0.01491	948.2	0.5064332	0.0037967	1380	15	0.9	1365.968773	1	6.7	6.7	0.90	0.8957	1050.912577	9.4	50.8	10324	11207	23651	43.7%	47.4%
1053	B1384	Single	Newport	30	1	6.7	6.1	6.7	13041-01	2013	13732.8	12607.57143	1%	1.03227746	1.033915759	1.035951222	1.035802285	1387.8	0.52889	0.01052	1252.6	0.5518122	0.002395	1380	15	0.6	1370.31355	1	6.5	6.5	0.86	0.8615	1363.838769	9.6	54.0	13059	14227	20919	62.4%	68.0%
1054	B1385	Single	Newport	30	1	6.7	6.1	6.7	14470-01	2014	3115.6	2795.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769	320	0.50438	0.01125	268.2	0.5391499	0.5406413	1380	15	27.6	966.0815157	1	6.5	6.5	0.86	0.8615	301.7338214	9.4	52.2	2874	3202	15191	18.9%	21.1%
1055	B1383	Single	B1383 running past Wendens Ambo	50	1	6.7	7.2	7	13081-02	2013	6648	5962.285714	2%	1.03227746	1.033915759	1.035951222	1.035802285	783.4	0.63339	0.01123	780.6	0.6031258	0.0051243	1380	15	0.8	1367.731988	1	6.966666667	7.0	0.94	0.9413	807.8804017	11.7	61.8	6176	6887	15918	38.8%	43.3%
1056	B1383	Single	B1383 running past Wendens Ambo	50	1	6.7	7.2	7	SW-08	2016	7161.3	6441.142857	12%	1	1	1	1	745.4	0.65401	0.13241	581.8	0.5579237	0.1234101	1380	15	12.8	1188.133324	1	6.966666667	7.0	0.94	0.9413	663.6	9.3	60.6	6441	7161	17914	36.0%	40.0%
1057	B1383	Single	B1383 running past Wendens Ambo	50	1	6.7	7.2	7	13041-01	2013	13732.8	12607.57143	1%	1.03227746	1.033915759	1.035951222	1.035802285	1387.8	0.52889	0.01052	1252.6	0.5518122	0.002395	1380	15	0.6	1370.31355	1	6.966666667	7.0	0.94	0.9413	1363.838769	9.6	54.0	13059	14227	22857	57.1%	62.2%
2166	B1383	Single	Littlebury	30	1	7		7.6	SW-05	2016	5153.6	4436.238095	11%	1	1	1	1	783.6363636	0.66032	0.10371	630.2727273	0.5619501	0.0963508	1380	15	10.0	1229.952688	1	7.3	7.3	1.00	0.9983	706.9545455	13.7	61.1	4436	5154	12608	35.2%	40.9%
2167	B1383	Single	Between Littlebury and Great Chesterford	50	1	7.6		7.2	SW-05	2016	5153.6	4436.238095	11%	1	1	1	1	783.6363636	0.66032	0.10371	630.2727273	0.5619501	0.0963508	1380	15	10.0	1229.952688	1	7.4	7.4	1.02	1.0154	706.9545455	13.7	61.1	4436	5154	12824	34.6%	40.2%
2168	B1383	Single	Just west of Great Chesterford	30	1	7.2	7.3	5.7	SW-05	2016	5153.6	4436.238095	11%	1	1	1	1	783.6363636	0.66032	0.10371	630.2727273	0.5619501	0.0963508	1380	15	10.0	1229.952688	1	6.733333333	6.7	0.90	0.9014	706.9545455	13.7	61.1	4436	5154	11384	39.0%	45.3%
169	B1383	Single	Just north of Great Chesterford	50	1	5.7		6.2	SW-06	2016	4398.3	3909.857143	15%	1	1	1	1	486.1	0.61243	0.13968	382.9	0.5427004	0.1446853	1380	15	14.2	1166.723633	1	5.95	6.0	0.77	0.76745	434.5	9.9	57.8	3910	4398	13951	28.0%	31.5%
1058	B1039	Single	From Chrishall east towards B1383	60	1	5.1	4.1	5.4	14474-01	2014	2949.8	2687.142857	0%	1.025478051	1.026527466	1.027876713	1.027776769	317.6	0.56423	0.00504	249.2	0.5882825	0.0008026	1380	15	0.3	1375.619736	1	4.866666667	5.5	0.69	0.6905	290.7512368	9.6	57.6	2762	3032	15657	17.6%	19.4%
1059	B1039	Single	From Chrishall east towards B1383	60	1	5.1	4.1	5.4	SW-11	2016	1132.2	1034.785714	17%	1	1	1	1	136.6	0.5549	0.14714	84.6	0.5153664	0.1749409	1380	15	16.1	1138.435615	1	4.866666667	5.5	0.69	0.6905	110.6	9.8	53.5	1035	1132	13744	7.5%	8.2%
171	B1038	Single	Near Starling's Green	60	1	5.5	5.5	5.5	SW-12	2016	1366.1	1213.571429	17%	1	1	1	1	153.9	0.53281	0.17804	120.3	0.5236908	0.2277639	1380	15	20.3	1075.648792	1	5.5	5.5	0.69	0.6905	137.1	10.0	52.8	1214	1366	12446	9.8%	11.0%
1060	B1038	Single	Clavering	30	1	5.5		5.5	SW-12	2016	1366.1	1213.571429	17%	1	1	1	1	153.9	0.53281	0.17804	120.3	0.5236908	0.2277639	1380	15	20.3	1075.648792	1	5.5	5.5	0.69	0.6905	137.1	10.0	52.8	1214	1366	12446	9.8%	11.0%
1061	B1038	Single	Clavering	30	1	5.5		5.5	14470-01	2014	3115.6	2795.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769	320	0.50438	0.01125	268.2	0.5391499	0.5406413	1380	15	27.6	966.0815157	1	5.5	5.5	0.69	0.6905	301.7338214	9.4	52.2	2874	3202	12176	23.6%	26.3%
173	B1038	Single	Hill Green	40	1	5.5	5.5	5.6	14470-01	2014	3115.6	2795.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769	320	0.50438	0.01125	268.2	0.5391499	0.5406413	1380	15	27.6	966.0815157	1	5.533333333	5.5	0.70	0.6962	301.7338214	9.4	52.2	2874	3202	12276	23.4%	26.1%
174	B1038	Single	Between Hill Green & Wicken Bonhunt	60	1	5.6		6	14470-01	2014	3115.6	2795.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769	320	0.50438	0.01125	268.2	0.5391499	0.5406413	1380	15	27.6	966.0815157	1	5.8	5.8	0.74	0.7418	301.7338214	9.4	52.2	2874	3202	13080	22.0%	24.5%
175	B1038	Single	Wicken Bonhunt	40	1	6		6.4	14470-01	2014	3115.6	2795.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769	320	0.50438	0.01125	268.2	0.5391499	0.5406413	1380	15	27.6	966.0815157	1	6.2	6.2	0.81	0.8102	301.7338214	9.4	52.2	2874	3202	14286	20.1%	22.4%
176	B1038	Single	Between Wicken Bonhunt & Newport	60	1	6.4	5	5.1	14470-01	2014	3115.6	2795.857143	1%	1.025478051	1.026527466	1.027876713	1.027776769	320	0.50438	0.01125	268.2	0.5391499	0.5406413	1380	15	27.6	966.0815157	1	5.5	5.5	0.69	0.6905	301.7338214	9.4	52.2	2874	3202	12176	23.6%	26.3%
177	B1039	Single	Wendens Ambo	30	1	5.8		5.4	14474-01	2014	2949.8	2687.142857	0%	1.025478051	1.026527466	1.027876713	1.027776769	317.6	0.56423	0.00504	249.2	0.5882825	0.0008026	1380	15	0.3	1375.619736	1	5.6	5.6	0.71	0.7076	290.7512368	9.6	57.6	2762	3032	16045	17.2%	18.9%
178	B183	Single	West of Sheering	60	1	7			14535-01	2014	9748.4	8677.714286	1%	1.025478051	1.026527466	1.027876713	1.027776769	1063.6	0.62204	0.00639	1005.2	0.6144051	0.0027855	1380	15	0.5	1373.115828	1	7	7.0	0.95	0.947	1061.281932	10.6	61.8	8919	10020	17676	50.5%	56.7%
179	A1307	Single	East of Abington	50	1	6.7	7.8	6.7	S/1109/15/FL-04	2015	21481.70316	17677.02708	4%	1.018771313	1.019324556	1.019978388	1.019928093	1933	0.64356	0.04346	1821	0.6040637	0.0269083	1380	15	3.5	1327.226955	1	7.066666667	7.1	0.96	0.9584	1912.737482	8.7	62.4	18029	21911	19220	93.8%	114.0%
2001	Quickset Rd	Single	East of Elmdom	40	1	5			SW-03	2016	634.5	584.2857143	12%	1	1	1	1	52.1	0.52207	0.13436	51.2	0.5214844	0.1679688	1380	15	15.1	1153.255683	1	5	5.5	0.69	0.6905	51.65	8.1	52.2	584	635	17265	3.4%	3.7%
2002	Ickleton Rd	Single	East of Elmdom	30	1	5			SW-03	2016	634.5	584.2857143	12%	1	1	1	1	52.1	0.52207	0.13436	51.2	0.5214844	0.1679688	1380	15	15.1	1153.255683	1	5	5.5	0.69	0.6905	51.65	8.1	52.2	584	635	17265	3.4%	3.7%
2003	Strethall Rd	Single	West of M11	40	1	4.25	5.1	4.8	SW-04	2016	525.1	474.5714286	13%	1	1	1	1	62.6	0.54473	0.13578	49.7	0.5331992	0.1911469	1380	15	16.3	1134.802778	1	4.716666667	5.5	0.69	0.6905	56.15	10.7	53.9	475	525	12288	3.9%	4.3%
2004	B1004	Single	West of Bishop's Stortford	40	1	6.6	6.4	6.2	SW-13	2016	5058.8	4452	8%	1	1	1	1	661.2	0.69404	0.06473	466.2	0.5709996	0.1091806	1380	15	8.7	1249.566449	1	6.4	6.4	0.84	0.8444	563.7	11.1	63.3	4452	5059	13175	33.8%	38.4%
2005	N Hall Rd	Single	East of M11	40	1	5.6		5	14430-24	2014	1369	1252	2%	1.025478051	1.026527466	1.027876713	1.027776769	116.3	0.60877	0.02236	103	0.5135922	0.0126214	1380	15	1.7	1353.766999	1	5.3	5.5	0.69	0.6905	112.4977132	8.0	56.1	1287	1407	19053	6.8%	7.4%
2006	Church Rd	Single	Stansted Mountfitchet	40	1	4.8		6	15163-02	2015	6159.2	5551	0%	1.018771313	1.019324556	1.019978388	1.019928093	597.2	0.56095	0.00804	434.4	0.5612339	0.0041436	1380	15	0.6	1370.864134	1	5.4	5.5	0.69	0.6905	525.6024075	8.4	56.1	5662	6282	18172	31.2%	34.6%
2010	Church Rd	Single	Stansted Mountfitchet	40	1	7		7.25	14430-09	2014	5613.3	5072.857143	0%	1.025478051	1.026527466	1.027876713	1.027776769	548.4	0.54686	0.00474	395.3	0.541614	0.0058184	1380	15	0.5	1372.080427	1	7.125	7.1	0.97	0.968375	484.0792353	8.4	54.4	5214	5770	26295	19.8%	21.9%
2013	Carters Hill	Single	Manuden	40	1	6	7.4	6	13097-01	2013	3286.4	3160.571429	0%	1.03227746	1.033915759	1.035951222	1.035802285	283	0.59788	0.00495	254.4	0.5125786	0.0023585	1380	15	0.4	1374.520885	1	6.466666667	6.5	0.86	0.8558	277.5813451	8.2	55.5	3274	3405	24986	13.1%	13.6%
2014	Hazelend Rd	Single	Bishop's Stortford	40	1	5.6			14430-21	2014	5468.6	5116.714286	0%	1.025478051	1.026527466	1.027876713	1.027776769	436.2	0.58689	0.00688	421.2	0.6049383	0.002849	1380	15	0.5	1372.705064	1	5.6	5.6	0.71	0.7076	439.8434473	7.8	59.6	5259	5621	19488	27.0%	28.8%
2015	Church Rd	Single	Gt Hallingbury	30	1	5.5			13031-03	2013	2777.4	2475.857143	1%	1.03227746	1.033915759	1.035951222	1.035802285	360.6	0.50416	0.00666	226.8	0.5141093	0.0044092	1380	15	0.6	1371.701441	1	5.5	5.5	0.69	0.6905	303.3656731	10.5	50.9	2564	2877	15726	16.3%	18.3%
2016	B184	Single	Abbess Roding	60	1	6.7			14407-01	2014	3833.2	3646	1%	1.025478051	1.026527466	1.027876713	1.027776769	365.8	0.66812	0.00383	339.4	0.6004714	0.0053035	1380	15	0.5	1373.151971	1	6.7	6.7	0.90	0.8957	361.7616465	9.2	63.4	3747	3940	20085	18.7%	19.6%
2017	Old Mead Rd	Single	East of M11	40	1	4.6	5.1		SW-15	2016	944.7	853.3571429	12%	1	1	1	1	94.16666667	0.50442	0.12566	94.54545455	0.5201923	0.1230769	1380	15	12.4	1193.44452	1	4.85	5.5	0.69	0.6905	94.35606061	10.0	51.2	853	945	14548	5.9%	6.5%
2018	High St	Single	North of A120	30	1	6.1			SW-19	2016	1477.2	1369.714286	13%	1	1	1	1	151.1	0.56122	0.1178	121.6	0.5304276	0.1332237	1380	15	12.6	1191.730152	1	6.1	6.1	0.79	0.7931	136.35	9.2	54.6	1370	1477	17395	7.9%	8.5%
2019	Brookend	Single	North of A120	40	1	5.2			SW-20	2016	950.5	864.2142857	11%	1	1	1	1	95.4	0.58281	0.09539	77.4	0.5904393	0.121447	1380	15	10.8	1217.373848	1	5.2	5.5	0.69	0.6905	86.4	9.1	58.7	864	951	14333	6.0%	6.6%
2020	Collops Rd	Single	North of A120	40	1	5.2		5	SW-21	2016	306.8	296.7142857	9%	1	1	1	1	31.7	0.5836	0.07571	23.6	0.5338983	0.0974576	1380	15	8.7	1250.124445	1	5.1	5.5	0.69	0.6905	27.65	9.0	55.9	297	307	16578	1.8%	1.9%
2021	B1256	Single	North of A120	50	1	6.7		7.85	SW-22	2016	11317.2	10307.5	13%	1	1	1	1	1054.2	0.63745	0.14921	965	0.6367876	0.1319171	1380	15	14.1	1169.152671	1	7.275	7.3	0.99	0.994025	1009.6	8.9	63.7	10308	11317	18623	55.3%	60.8%
2022	Green St	Single	South of A121	40	1	4.2	4.3		SW-24	2016	599.5	582.8571429	20%	1	1	1	1	65.8	0.55927	0.18997	50.5	0.5960396	0.2277228	1380	15	20.9	1066.730717	1	4.25	5.5	0.69	0.6905	58.15	9.7	57.8	583	600	12781	4.6%	4.7%
2023	Smiths Green	Single	South of A120	30	1	4.8	5		SW-26	2016	624.3	547	25%	1	1	1	1	66.7	0.50975	0.22189	35.6	0.5758427	0.2949438	1380	15	25.8	992.3753432	1	4.9	5.5	0.69	0.6905	51.15	8.2	54.3	547	624	13500	4.1%	4.6%
2024	Smiths Green	Single	South of A120	40	1	4.3	5.8	4.2	SW-26	2016	624.3	547	25%	1	1	1	1	66.7	0.50975	0.22189	35.6	0.5758427	0.2949438	1380	15	25.8	992.3753432	1	4.766666667	5.5	0.69	0.6905	51.15	8.2	54.3	547	624	13500	4.1%	4.6%
2025	B1256	Single	Little Canfield	30	1	5.5		7.3	SW-27	2016	8043.5	7347.928571	12%	1	1	1	1	790.5	0.55509	0.12777	632.3	0.5810533	0.1288945	1380	15	12.8	1187.503689	1	6.4	6.4	0.84	0.8444	711.4	8.8	56.8	7348	8044	18232	40.3%	44.1%
2026	B1256	Single	Little Canfield	40	1	7.3		7.2	SW-27	2016	8043.5	7347.928571	12%	1	1	1	1	790.5	0.55509	0.12777	632.3	0.5810533	0.1288945	1380	15	12.8	1187.503689	1	7.25	7.3	0.99	0.98975	711.4	8.8	56.8	7348	8044	21370	34.4%	37.6%
2027	Unnamed rd	Single	Bambers Green	40	1	4.2	4.5	5	SW-28	2016	420.6	415.5714286	17%	1	1	1	1	28.8	0.57639	0.22222	41.4	0.5531401	0.2173913	1380	15	22.0	1050.289855	1	4.566666667	5.5	0.69	0.6905	35.1	8.3	56.5	416	421	15204	2.7%	2.8%
2028	Station Rd	Single	Felsted	30	1	6	5.7		SW-29	2016	4992	4831.571429	11%	1	1	1	1	432.8	0.65573	0.11299	411.7	0.559145	0.1236337	1380	15	11.8	1202.535805	1	5.85	5.9	0.75	0.75035	422.25	8.5	60.7	4832	4992	16997	28.4%	29.4%
2029	Station Rd	Single	North of Felsted	40	1	7.4	7.4	6	SW-29	2016	4992	4831.571429	11%	1	1	1	1	432.8	0.65573	0.11299	411.7	0.559145	0.1236337	1380	15	11.8	1202.535805	1	6.933333333	6.9	0.94	0.9356	422.25	8.5	60.7	4832	4992	21194	22.8%	23.6%
2030	Stebbing Rd	Single	South of A120	40	1	4.4	4.4	5.9	SW-30	2016	525.5	444.8571429	20%	1	1	1	1	62.9	0.62639	0.25755	40.7	0.5823096	0.1842752	1380	15	22.1	1048.62986	1	4.9	5.5	0.69	0.6905	51.8	9.9	60.4	445	526	10289	4.3%	5.1%
2031	Buy Lodge Ln	Single	West of Stansted Airport	30	1	6.6	6	6	SW-32	2016	6531.4	5843.857143	12%	1	1	1	1	716.3	0.52548	0.10205	495.1	0.5742274	0.1462331	1380	15	12.4	1193.786027	1	6.2	6.2	0.81	0.8102	605.7	9.3	55.0	5844	6531	16971	34.4%	38.5%
2032	Buy Lodge Ln	Single	North of Stansted Airport	40	1	6	5.2	7	SW-32	2016	6531.4	5843.857143	12%	1	1	1	1	716.3	0.52548	0.10205	495.1	0.5742274	0.1462331	1380	15	12.4	1193.786027	1	6.066666667	6.1	0.79	0.7874	605.7	9.3	55.0	5844	6531	16494	35.4%	39.6%
2033	A11	Dual	North of Great Chesterford	60	2	18.8		20	SW-34	2016	48715.2	45154.42857	9%	1	1	1	1	4113.2	0.63544	0.08247	3827.4	0.5861943	0.070753	2100	20	7.7	1946.780802	2	19.4	19.4	2.66	1	3970.3	8.2	61.1	45154	48715	72496	62.3%	67.2%
2034	A11	Dual	North of Great Chesterford	60	2	18.8		20	SW-34	2016	48715.2	45154.42857	9%	1	1	1	1	4113.2	0.63544	0.08247	3827.4	0.5861943	0.070753	2100	20	7.7	1946.780802	2	19.4	19.4	2.66	1	3970.3	8.2	61.1	45154	48715	72496	62.3%	67.2%
2035	A1184	Single	Bishop's Stortford ring-road	50	1	8.5		7.5	SW-39	2016	9139.8	8437.714286	10%	1	1	1	1	923	0.52416	0.09328	740.1	0.5103364	0.091339	1380	15	9.2	1241.533664	1	8	8.0	1.12	1.118	831.55	9.1	51.7	8438	9140	27229	31.0%	33.6%
2036	A1184	Single	Bishop's Stortford ring-road	50	1	7.7	8	7.7	SW-39	2016	9139.8	8437.714286	10%	1	1	1	1	923	0.52416	0.09328	740.1	0.5103364	0.091339	1380	15	9.2	1241.533664	1	7.8	7.8	1.08	1.0838	831.55	9.1	51.7	8438	9140	26396	32.0%	34.6%
2037	A1184	Single	Bishop's Stortford ring-road	50	1	8		7.7	SW-39	2016	9139.8	8437.714286	10%	1	1	1	1	923	0.52416	0.09328	740.1	0.5103364	0.091339	1380	15	9.2	1241.533664	1	7.85	7.9	1.09	1.09235	831.55	9.1	51.7	8438	9140	26605	31.7%	34.4%
2038	Dell Ln	Single	South of Bishop's Stortford	30	1	6	4.85	4.9	SW-42	2016	1683.2	1532.357143	11%	1	1	1	1	220.2	0.65032	0.08901	152	0.5855263	0.1414474	1380	15	11.5	1207.15698	1	5.25	5.5	0.69	0.6905	186.1	11.1	61.8	1532	1683	11107	13.8%	15.2%
2039	A11	Dual	North of Great Chesterford	60	2	17.5	18.5		SW-44	2016	33375.8	31814.64286	20%	1	1	1	1	2458.1	0.52687	0.0967	2591.4	0.5446863	0.0704253	2100	20	8.4	1932.874043	2	18	18.0	2.47	1	2524.75	7.6	53.6	31815	33376	90920	35.0%	36.7%
2040	Birchanger Ln	Single	Birchanger	30	1	4.9	5.1	5.8	13105-05	2013	1206.2	1144.285714	0%	1.03227746	1.033915759	1.035951222	1.035802285	141.6	0.66243	0.00282	82.4	0.6213592	0	1380	15	0.1	1377.881356	1	5.266666667	5.5	0.69	0.6905	115.6825734	9.3	64.2	1185	1250	15186	7.8%	8.2%
2041	Unnamed rd	Single	Bambers Green	40	1	4.6			14430-12	2014	975.7	886.3571429	0%	1.025478051	1.026527466	1.027876713	1.027776769	77.6	0.57861	0.00129	105.7	0.6546831	0.0047304	1380	15	0.3	1375.485728	1	4.6	5.5	0.69	0.6905	94.04052496	9.4	61.7	911	1003	14920	6.1%	6.7%
2042	Unnamed rd	Single	Broxted	40	1	6.4	5.4	5	14430-11	2014	2278.1	2079.214286	1%	1.025478051	1.026527466	1.027876713	1.027776769	190.8	0.71855	0.00734	189.9	0.6629805	0.0094787	1380	15	0.8	1367.387851	1	5.6	5.6	0.71	0.7076	195.299389	8.3	69.1	2137	2342	15327	13.9%	15.3%
2043	Unnamed rd	Single	Royston	40	1	5.4	4.4	3.8	SW-02	2016	333.8	288.2857143	15%	1	1	1	1	47.6	0.52101	0.05042	29.4	0.5918367	0.1836735	1380	15	11.7	1204.429772	1	4.533333333	5.5	0.69	0.6905	38.5	11.5	55.6	288	334	11192	2.6%	3.0%
2044	Abbey St	Single	Inckleton	30	1	6.7	5.5	5.7	SW-38	2016	713.2	632.4285714	13%	1	1	1	1	77	0.62597	0.08571	68.8	0.6017442	0.1482558	1380	15	11.7	1204.522425	1	5.966666667	6.0	0.77	0.7703	72.9	10.2	61.4	632	713	13113	4.8%	5.4%
2045	Grande Rd	Single	Inckleton	40	1	6.2		6.3	SW-38	2016	713.2	632.4285714	13%	1	1	1	1	77	0.62597	0.08571	68.8	0.6017442	0.1482558	1380	15	11.7	1204.522425	1	6.25	6.3	0.82	0.81875	72.9	10.2	61.4	632	713	13937	4.5%	5.1%
2046	A1307	Single	Lindon	50	1	7.75		8.05	SW-09	2016	17829.8	16310	12%	1	1	1	1	1389.4	0.65942	0.10148	1463.4	0.6378297	0.1094711	1380	15	10.5	1221.784688	1	7.9	7.9	1.10	1.1009	1426.4	8.0	64.9	16310	17830	23712	68.8%	75.2%
2047	A1307	Dual	Babraham	60	1	14.9			SW-10	2016	18679.4	16610.85714	8%	1	1	1	1	1627.4	0.64729	0.08603	1649.2	0.7140432	0.068033	2100	20	7.7	1945.940223	1	14.9	14.9	4.08	1	1638.3	8.8	68.1	16611	18679	28986	57.3%	64.4%



Main Urban Areas

Areas of Search

Road Classification

Motorway

A Road

B Road

Minor Road

abc CRF Reference No

DRAFT

REV	DESCRIPTION	BY	CHK	APP	DATE

Client:

Uttlesford District Council

EXECUTIVE PARK
AVALON WAY
ANSTEY
LEICESTER
LE7 7GR
TEL: +44 (0)116 234 8000
FAX: +44 (0)116 234 8001
e-mail: leicester@wyg.com

Project:

District-Wide Transport Study

Drawing Title:

CRF Reference Numbers

Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
NTS	PT	02/08/16	GD	02/08/16	ASG	02/08/16

Project No.	Office	Type	Drawing No.	Revision
A081175-47	35	18	00X	-

Appendix C – TrafficMaster Data

REV	DATE	DRAWING NUMBER	DRAWN	CHECKED
--	11/04/16	UTTLESFORD DISTRICT	HP	--

DRAWING STATUS

DRAFT

RINGWAY JACOBS integrated expertise

Essex County Council

Mark Rowe, Service Director, Essex Highways
County Hall, Chelmsford. CM1 1QH
Tel: 0345 6037631

SCHEME TITLE

SOURCE:
2014-2015 TRAFFICMASTER DATA

DRAWING TITLE

AM (8-9) FREEFLOW COMPARISON
ALL MONTHS MEDIAN (FF OBSERVATIONS > 50 AND AM OBSERVATIONS >50)

DRAWING UNITS U.N.O
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

SCALE AT A3 (420x297mm)
AS SHOWN

REV	DATE	DRAWING NUMBER	DRAWN	CHECKED
--	11/04/16	UTTLESFORD DISTRICT	HP	--

DRAWING STATUS

DRAFT

RINGWAY JACOBS integrated expertise

Essex County Council

Mark Rowe, Service Director, Essex Highways
County Hall, Chelmsford. CM1 1QH
Tel: 0345 6037631

SCHEME TITLE

SOURCE:
2014-2015 TRAFFICMASTER DATA

DRAWING TITLE

PM (5-6) FREEFLOW COMPARISON
ALL MONTHS MEDIAN (FF OBSERVATIONS > 50 AND AM OBSERVATIONS >50)

DRAWING UNITS U.N.O
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

SCALE AT A3 (420x297mm)
AS SHOWN

Appendix D – Bus Routes

RIDGESHIRE
200 22 33 for information

ORDSHIRE
0 22 33 for information

Appendix E – Highways England Letter

Ian Parsons
Team Leader
Growth & Economic Development
Ash House
Falcon Road
Sowton Ind. Estate
Exeter
EX2 7LB

ian.parsons@highwayesengland.co.uk or
growthandplanning@highwaysengland.co.uk

Direct Line: +44 (0) 300 4704396

Date: Friday 29 July 2016

By email to Chris Stevenson
South East LEP
chris.stevenson@essex.gov.uk

Dear Chris,

Re: Highways England Growth & Housing Fund (GHF):
M11 J8 Improvement

We wrote to you on the 19 January 2016 to invite you to work with your local Highways England contact to develop and submit scheme proposals for consideration under the Growth and Housing Fund.

We received the above proposal from you at the end of March 2016. We are therefore writing to advise you of the sift outcome - and to confirm next steps where appropriate.

We completed our initial assessments in May 2016. This identified that we needed to better understand specific issues with a number of proposals.

For example, in some cases we needed to reassure ourselves that the package of works in scope of the proposal were needed from the Strategic Road Network perspective - or the realism of the cost base.

During June and July 2016 we worked with our local delivery team colleagues to understand these issues in detail, to ensure that we are able to make fair and transparent decisions on the schemes that will proceed to the next stage.

We are pleased to inform you this proposal will **proceed** to the next stage of assessment under the Growth and Housing Fund.

What happens next

The scheme will now be subject to a detailed Highways England appraisal, specific to the criteria of the Growth and Housing Fund.

It is highly likely that you will be asked to provide further information to inform this assessment and answer specific questions in the usual way.

The appraisal will comprise:

- **WebTAG compliant Scheme Appraisal Report (SAR). This will generate a Benefits Cost Ratio (BCR) and Value for Money (VFM) rating. Please note that schemes that demonstrate a low BCR or poor VFM are unlikely to proceed to final business case.**

- **Viability and deliverability assessment. This will look at the underlying economics of the sites to be supported to confirm the reasonableness of the private sector contributions identified (standard gap-funding assessment). This will also assess the realism of the forecasts for jobs and homes to be enabled by the scheme.**

- **Economic impact assessment. This will assess the additionality of the investment to the local and regional economy (in Gross Value Added terms).**

Where you have undertaken viability and economic impact assessments of your own, for example in support of other bids for funding at these locations, it will greatly speed up our assessment if you are able to share these with us.

Subject to a favourable outcome of the appraisal a business case will be prepared for consideration and final sign off by Highways England.

Depending on the information being available to enable us to complete our assessments, we hope to be able to finalise our investment decisions by the end of the calendar year, and by the end of the financial year at the latest.

Your local Highways England contact Mark Norman (0300 470 4938, mark.norman@highwaysengland.co.uk) to discuss specific aspects and next steps for the proposal.

You will also be aware that we are currently preparing the new Highways England Strategic Economic Growth Plan (SEGP) and preparing the next stage of Route Strategies to inform the Government's next Road Investment Strategy (RIS2).

The Growth and Housing Fund is a direct complement to both of these initiatives, and we have been careful to ensure that the specific work on the Growth and Housing Fund will not duplicate or otherwise crowd out work that you may have ongoing on the SEGP or Route Strategies.

If you have any queries about our sifting of this scheme - or the Growth and Housing Fund nationally please do contact me on the number or email above. You may alternatively contact the Growth and Housing Fund programme manager, Joe Ling joe.ling@highwaysengland.co.uk 07872 005 175.

Whilst your day-to-day liaison with will remain your local Highways England contact, we will be very happy to take any questions or queries by telephone or email regarding the fund.

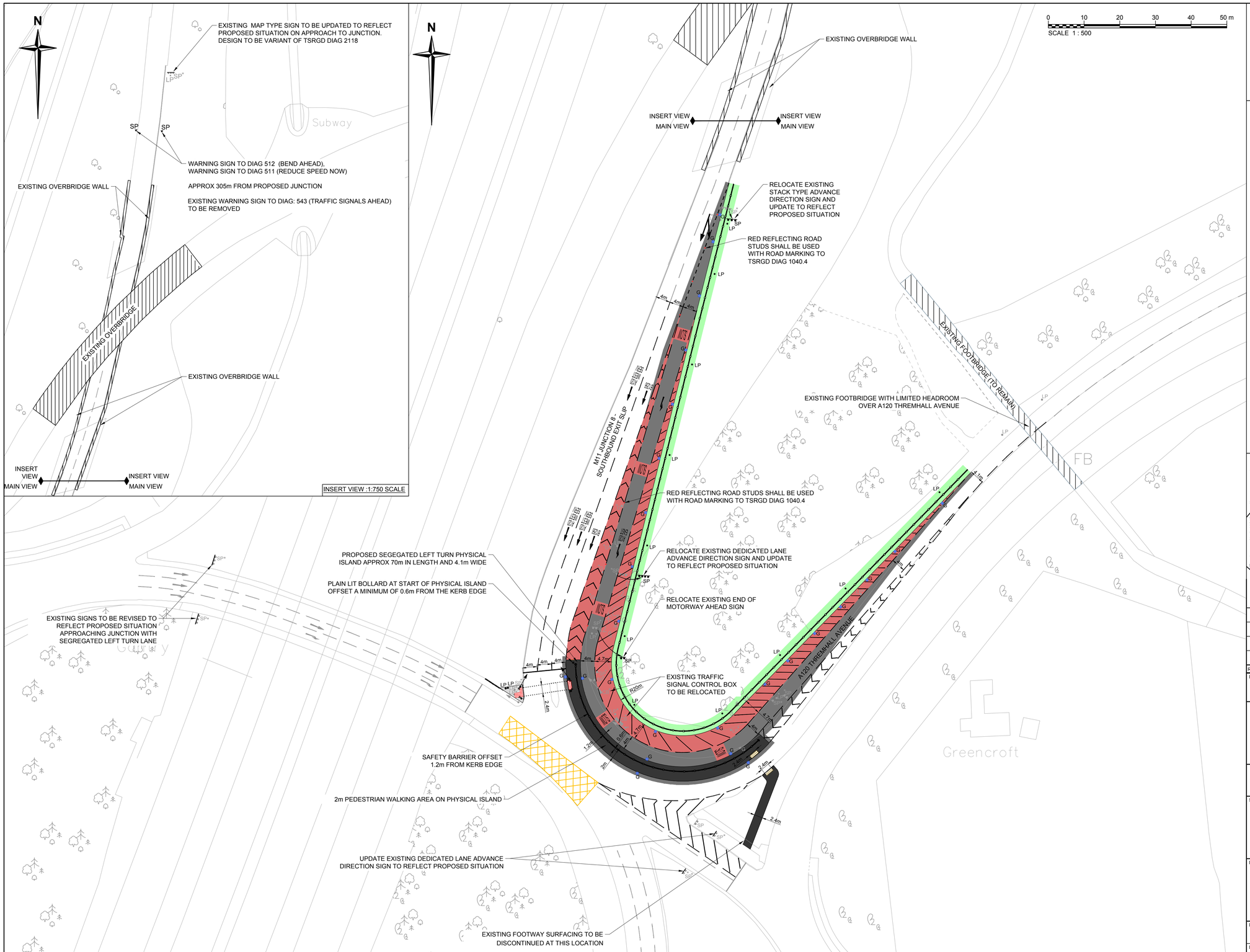
Please note that this letter does not constitute an offer to provide funding to the delivery of a scheme, and our work with you on the proposal is strictly without prejudice.

Funds will only be committed to delivery of a scheme following approval of a full Highways England business case.

Yours sincerely

Ian Parsons
Team Leader (Growth and Housing Fund Lead)
Growth & Economic Development

Appendix F – Proposed M11 J8 Improvements



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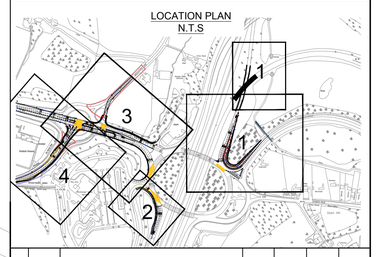
NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. DO NOT SCALE FROM THE DRAWING.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH JACOBS DESIGN PACKAGE.
4. ESSEX COUNTY COUNCIL HIGHWAY BOUNDARY BASED ON ECC RECORDS. EAST HERTS DISTRICT COUNCIL HIGHWAY BOUNDARY IS ASSUMED. ALL HIGHWAY NOT WITHIN BOUNDARIES SHOWN ASSUMED TO BE UNDER THE RESPONSIBILITY OF HIGHWAY ENGLAND.

KEY

- KERB LINE
- CARRIAGEWAY WORKS
- FOOTWAY WORKS
- TRAFFIC ISLAND/CENTRAL RESERVE
- GRASS VERGE
- SAFETY BARRIER
- TRAFFIC SIGNAL (PRIMARY/RIGHT-TURN)
- TRAFFIC SIGNAL (SECONDARY)
- TRAFFIC SIGNAL PUSH BUTTON
- LP – INDICATIVE LOCATION OF PROPOSED LAMP POST
- G – INDICATIVE LOCATION PROPOSED GULLY
- KEEP LEFT BOLLARD/CLEAR FACE BOLLARD
- BS – BUS STOP FLAG
- RED/BUFF TACTILE PAVING (400mmX400mm)
- COLORED CARRIAGEWAY SURFACING
- SP – EXISTING SIGN POST
- LP – EXISTING LAMP POST
- EXISTING TRAFFIC SIGNAL
- Gte – EXISTING GULLY
- CB – EXISTING CONTROL BOX

LOCATION PLAN
N.T.S



Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
A	04/04/16	ISSUED TO ECC FOR APPROVAL	JJO	JR	JR	AT

DRAWING STATUS

FEASIBILITY

RINGWAY JACOBS integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0845 6037631

SCHEME TITLE

M11 JUNCTION 8 JUNCTION IMPROVEMENTS

DRAWING TITLE

GENERAL ARRANGEMENT DEDICATED LEFT TURN LANE M11 SOUTHBOUND EXIT SLIP PROPOSAL LOCATION 3

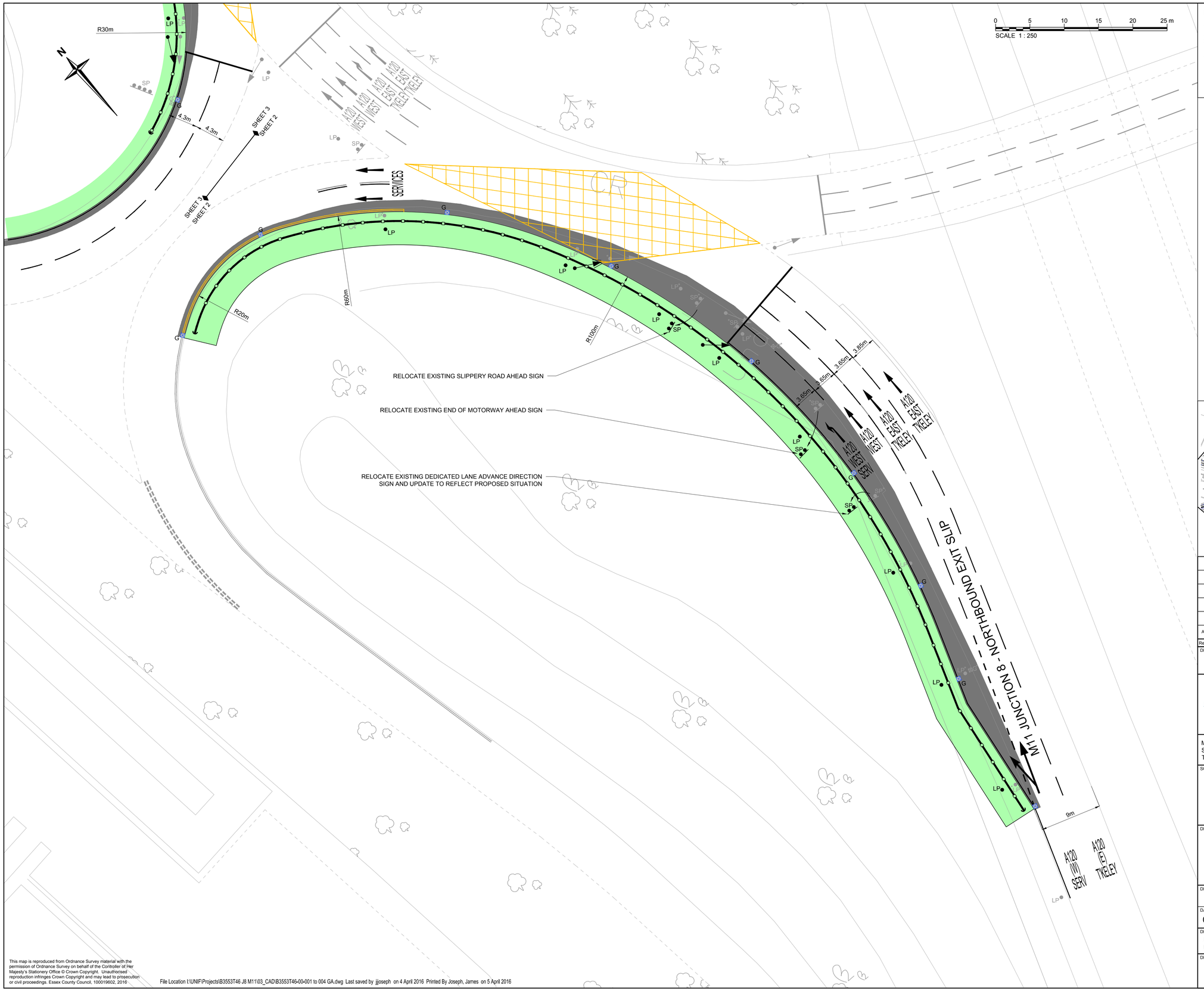
DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
JJO	JJO	JR	JR	AT
DATE	DATE	DATE	DATE	DATE
04/04/16	04/04/16	04/04/16	04/04/16	04/04/16

DRAWING UNITS U.N.O.: DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm): 1:500 @ A1

DRAWING No.: **B3553T46-00-001**

REV.: **A**



NOTES

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2. DO NOT SCALE FROM THE DRAWING.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH JACOBS DESIGN PACKAGE.
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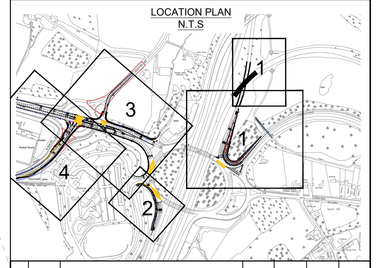
KEY

- KERB LINE
- CARRIAGEWAY WORKS
- GRASS VERGE
- SAFETY BARRIER
- TRAFFIC SIGNAL (PRIMARY/RIGHT-TURN)
- TRAFFIC SIGNAL (SECONDARY)
- TRAFFIC SIGNAL PUSH BUTTON
- LP — INDICATIVE LOCATION OF PROPOSED LAMP COLUMN
- G — INDICATIVE LOCATION PROPOSED GULLY
- *SP — EXISTING SIGN POST
- *LP — EXISTING LAMP POST
- * — EXISTING TRAFFIC SIGNAL
- *G — EXISTING GULLY

LOCATION PLAN
N.T.S



Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
A	04/04/16	ISSUED TO ECC FOR APPROVAL	JJO	JR	JR	

DRAWING STATUS

FEASIBILITY

RINGWAY JACOBS integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0845 6037631

SCHEME TITLE

M11 JUNCTION 8
JUNCTION IMPROVEMENTS

DRAWING TITLE

GENERAL ARRANGEMENT
LEFT TURN APPROACH LANE
M11 NORTHBOUND EXIT SLIP
PROPOSAL LOCATION 1

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
JJO	JJO	JR	JR	AT
DATE	DATE	DATE	DATE	DATE
04/04/16	04/04/16	04/04/16	04/04/16	04/04/16

DRAWING UNITS U.N.O.: DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm): 1:250 @ A1

DRAWING No.: **B3553T46-00-002**

REV.: **A**

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N

Notes

1. Do not scale.
2. Existing road markings are approximate
3. Existing lane destinations are omitted

Widen link to 3 lanes

Widen link to 3 lanes

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd

DRAWING STATUS

DRAFT

Essex Highways

Ringway Jacobs working in partnership with Essex County Council

Mark Rowe, Service Director, Essex Highways
County Hall, Chelmsford. CM1 1QH
Tel: 0845 6037631

SCHEME TITLE

M11 Junction 8 Headway Study

DRAWING TITLE

**M11 Junction 8 proposals
A120/A1250 signals**

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
ALT	ALT			
DATE	DATE	DATE	DATE	DATE
OCT 14	OCT 14			

CHECK PRINT

DRAWING UNITS U.N.O.
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

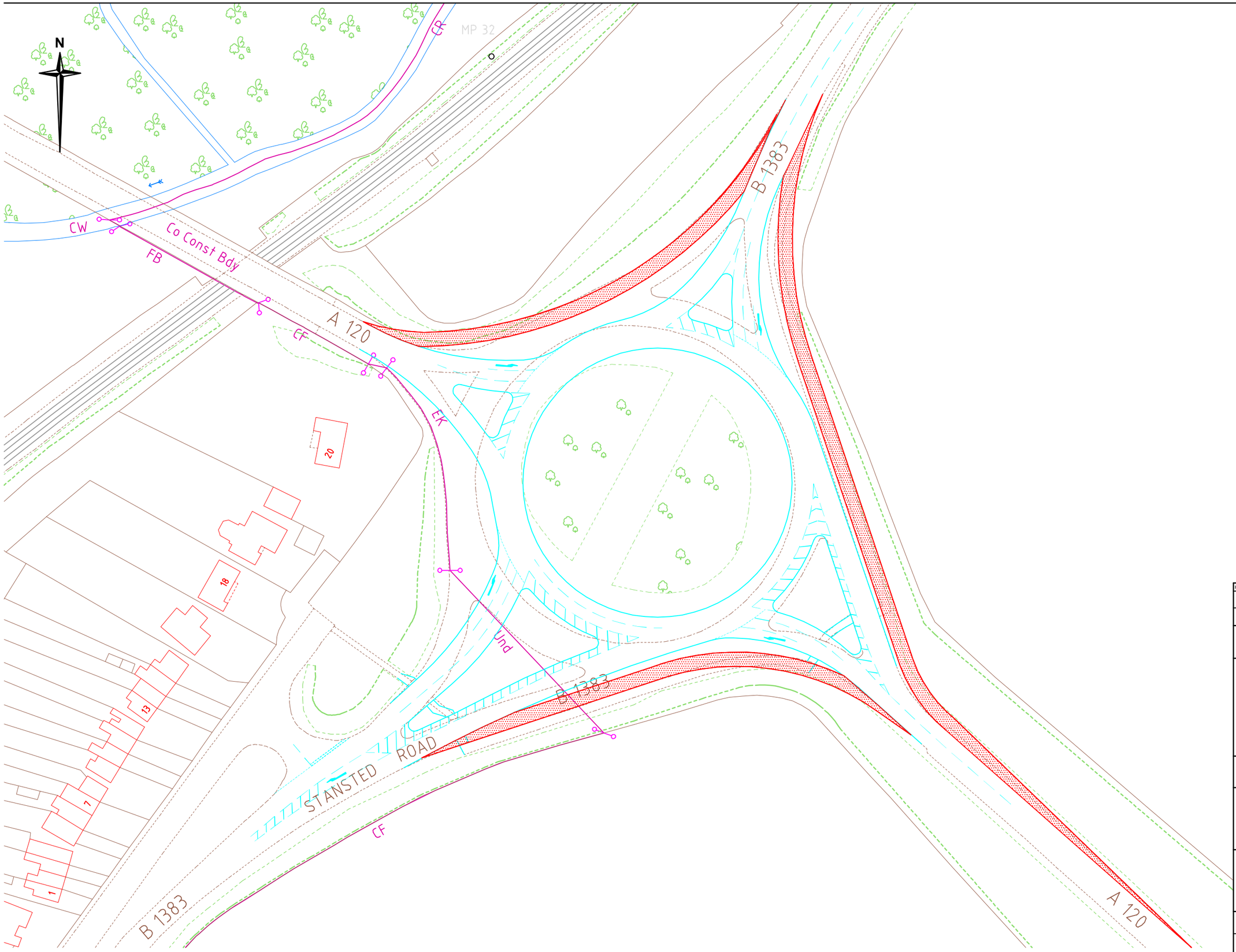
SCALE AT A3 (420x297mm)
1:1250

DRAWING No.
B3553R10-TP-xxx

REV.
-

File Location C:\Users\athurston\Desktop\M11 J7 J8\Technical\Junction 8\CAD\A120_A1250 signal design V2 rt out banned cycles.dwg Last saved by athurston on 4 November 2014 Printed By Thurston, Andrew on 11 November 2014

Appendix G – Proposed A120/B1383 Improvements



Notes

1. Do not scale.
2. Existing road markings are approximate
3. Existing lane destinations are omitted

Rev.	Date	Description of revision	Drawn	Checked	Review'd	App

DRAWING STATUS

DRAFT

Essex Highways

Ringway Jacobs working in partnership with Essex County Council

Mark Rowe, Service Director, Essex Highways
County Hall, Chelmsford. CM1 1QH
Tel: 0845 6037631

SCHEME TITLE

M11 Junction 8 Headway Study

DRAWING TITLE

M11 Junction 8 proposals A120/B1383

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
ALT	ALT			
DATE	DATE	DATE	DATE	DATE
NOV 14	NOV 14			

CHECK PRINT

DRAWING UNITS U.N.O.
DIMENSIONS IN MILLIMETRES
LEVELS IN METRES

SCALE AT A3 (420x297mm)
1:1000

DRAWING No.
B3553R10-TP-xxx

REV.
-

File Location C:\Users\athurston\Desktop\Old A11.dwg Last saved by athurston on 11 November 2014 Printed By Thurston, Andrew on 11 November 2014

Appendix H – TN4 Uncertainty Log Methodology

Please see the separate report:

"Uttlesford Transport Study - Technical Notes"

for latest details.

Appendix I – TN6 Modelling Methodology

Please see the separate report:

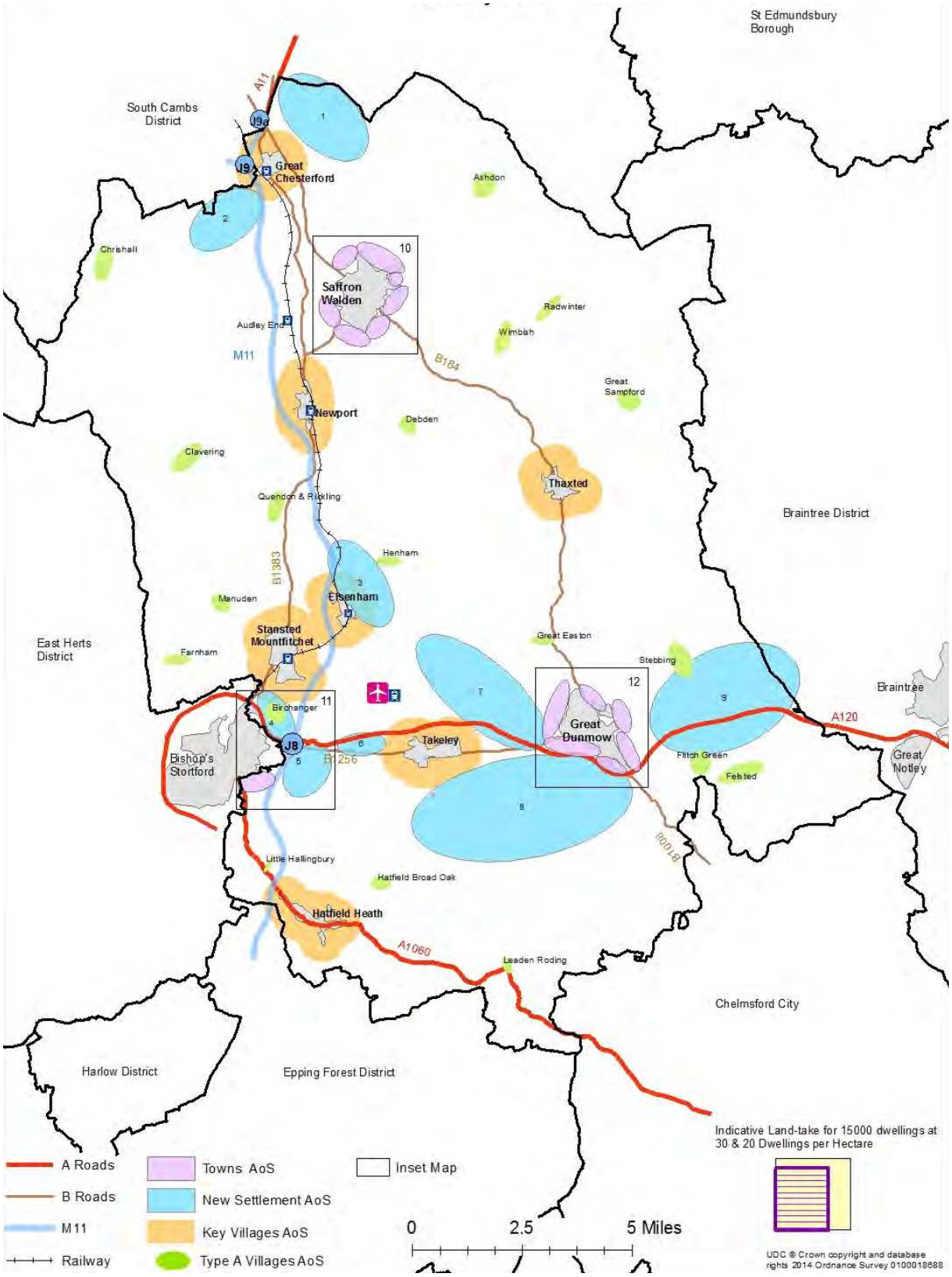
"Uttlesford Transport Study - Technical Notes"

for latest details.

Appendix J – Areas of Search

3 Areas of Search

Figure 1 Areas of Search



Appendix K – TN3 District Accessibility Appraisal

Please see the separate report:

"Uttlesford Transport Study - Technical Notes"

for latest details.

Appendix L – TN5 AoS Accessibility Appraisal

Please see the separate report:

"Uttlesford Transport Study - Technical Notes"

for latest details.

Appendix M – TN2 Trip Generation Methodology

Please see the separate report:

"Uttlesford Transport Study - Technical Notes"

for latest details.

Appendix N – Junction Capacity Assessments

Scenarios Tested

Scenario	Year	AM	PM	Comments
Existing Junction				
Base Flows	2014	✓	✓	Jacobs Base
Reference Case	2033	✓	✓	Jacobs Base + WYG Committed
Design Flows – Scenario 10	2033	✓	✓	Jacobs Base + WYG Committed + WYG Local Plan Development Flows
Design Flows – Scenario 11	2033	✓	✓	Jacobs Base + WYG Committed + WYG Local Plan Development Flows
M11J8 Interim Junction Improvement				
Design Flows – Scenario 10	2033	✓	✓	Jacobs Base + WYG Committed + WYG Local Plan Development Flows
Design Flows – Scenario 11	2033	✓	✓	Jacobs Base + WYG Committed + WYG Local Plan Development Flows

Capacity Assessment Results Summaries

Summaries of the traffic capacity assessments are presented in the following tables. Full outputs are attached at the end of this note.

M11 Junction 8

M11 Junction 8 - Existing Junction Layout

Scenario / Arm	2014 Base (DoS)		2033 Ref Case (DoS)		2033 Scenario 10 (DoS)		2033 Scenario 11 (DoS)	
	AM	PM	AM	PM	AM	PM	AM	PM
M11 NB Offslip	65.50%	83.30%	106.60%	110.90%	98.60%	108.20%	101.80%	110.70%
Services	66.60%	65.40%	79.20%	85.60%	86.50%	87.00%	84.70%	86.10%
A120 W	75.80%	93.50%	153.40%	179.00%	166.90%	190.50%	163.70%	186.80%
M11 SB Offslip	75.00%	77.90%	114.40%	89.10%	123.40%	90.20%	130.90%	88.00%
A120 E	46.90%	59.80%	91.20%	112.60%	97.60%	126.00%	94.10%	123.50%
B1256 Dunmow Rd	52.50%	51.50%	69.70%	107.20%	78.50%	113.10%	74.50%	110.70%
J8 Internal	55.30%	73.60%	91.50%	107.40%	105.10%	110.50%	103.10%	109.80%
J8 Overall DoS	75.80%	93.50%	153.40%	179.00%	166.90%	190.50%	163.70%	186.80%
J8 Overall PRC	*18.7%*	*-3.9%*	*-70.5%*	*-98.9%*	*-85.4%*	*-111.7%*	*-81.90%*	*-107.5%*

DoS = Degree of Saturation
PRC = Practical Reserve Capacity

M11J8 Short to Medium-Term Improvement Proposals

Short to medium-term improvements have been identified at M11J8 and at the adjacent A120/A1250 junction, to provide some additional traffic capacity. These are summarised below and illustrated in the plans in **Appendix E**.

- Reduce (using carriageway markings) the exit lane to the motorway service area (MSA) down to a single lane to reduce conflict, access from left lane only on southern bridge (as currently marked);
- Amend lane destinations and associated signing on the A120 West approach to better reflect required lane usage and balance lane flows;
- Amend signals on M11 southbound approach to the junction to allow an un-signalised dedicated lane towards the airport, with the remaining lane and two flares signalised for all other traffic;
- Amend signing and carriageway markings on the A120 Thremhall Avenue approach so that the left lane is marked only for left-turning traffic to the B1256 east (there is no requirement to sign for the M11 south at this point as this traffic is signed at the previous junction and directed via Junction 8a). Whilst this change has no impact upon capacity it removes potential confusion and conflict;
- Amend lane destinations and associated signing together with longitudinal markings on the M11 northbound approach to the junction so that the offside lane of the slip road accesses the middle lane on the approach to the stop line and provides access to the right hand flare, this will better reflect the requirements of traffic to access the appropriate lane on the circulatory carriageway;
- Construct an additional 3.5m wide flare on the M11 northbound approach to the junction for a distance of 60m to remove MSA traffic from the other traffic, improving capacity of this node of the gyratory;
- Reconfigure A120/A1250 roundabout to a fully signalised junction (the proposed layout is included at Appendix B);
- Construct a flare on the A120 West approach to the motorway junction, back to the signalised A1250/A120 junction;
- Construct an additional lane on the A120 West for westbound traffic between J8 and the A120/A1250 Dunmow Road signalised junction.

Funding has already been secured for elements of these proposed improvements, and further applications are ongoing. It should also be noted that Highways England are currently evaluating the motorway junction to establish the need, and possible options, for major improvements beyond those listed above which could be included in the next Road Investment Strategy (RIS2).

M11 J8 Junction Capacity Analysis: Medium-Term Improved Junction Layout

Scenario / Arm	2014 Base (DoS)		2033 Ref Case (DoS)		2033 Scenario 10 (DoS)		2033 Scenario 11 (DoS)	
	AM	PM	AM	PM	AM	PM	AM	PM
M11 NB Offslip	59.90%	67.50%	85.20%	93.20%	83.40%	93.20%	83.40%	93.20%
Services	58.30%	69.00%	84.70%	91.50%	84.70%	91.60%	84.70%	91.50%
A120 W	63.00%	72.50%	107.50%	100.30%	107.50%	100.30%	107.50%	100.30%
M11 SB Offslip	66.50%	71.70%	93.80%	93.10%	90.10%	93.10%	90.10%	93.10%
A120 E	41.60%	53.50%	58.10%	82.10%	61.70%	85.80%	61.70%	82.10%
B1256 Dunmow Rd	48.20%	47.20%	64.70%	101.50%	76.40%	78.40%	76.40%	101.50%
J8 Internal	58.90%	71.20%	87.60%	103.00%	88.40%	103.20%	88.40%	103.00%
J8 Overall DoS	66.50%	72.50%	107.50%	103.00%	107.50%	103.20%	107.50%	103.00%
J8 Overall PRC	*35.4%*	*24.2%*	*-19.4%*	*-14.4%*	*-19.4%*	*-14.6%*	*-19.4%*	*-14.4%*

DoS = Degree of Saturation
PRC = Practical Reserve Capacity

A120 / A1250 Roundabout

A120 / A1250 Junction Capacity Analysis: Existing Layout AM Peak Hour

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
AM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	2	5	0.67	104	119	1.07	259	347	1.18	201	252	1.14
A1250	1	6	0.49	444	1252	1.55	665	2073	1.70	622	1940	1.67
A120 W	1	4	0.46	13	31	0.94	33	67	1.01	28	59	0.99
Birchanger Ln	0	5	0.05	0	12	0.17	0	13	0.19	0	13	0.18

A120 / A1250 Junction Capacity Analysis: Existing Layout PM Peak Hour

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
PM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	2	4	0.62	210	268	1.15	334	463	1.23	302	418	1.21
A1250	2	8	0.62	791	2687	1.87	994	3352	2.01	920	3107	1.96
A120 W	1	3	0.39	3	7	0.70	4	10	0.79	4	9	0.76
Birchanger Ln	0	5	0.09	0	8	0.16	0	9	0.18	0	9	0.17

It can be seen that the junction operates satisfactorily in the base year, and that the addition of committed development would lead to the junction being significantly over capacity in 2033. The arms which would be likely to experience the most delays would be the A1250 Dunmow Road and the A120 east, and the effect of the latter would be traffic blocking back onto M11J8 and therefore seriously affecting the operation of the motorway junction. The situation is exacerbated with Local Plan development in place.

A120 / A1250 Junction Capacity Analysis: Proposed Signalised Layout AM Peak Hour

Scenario / Arm	2014 Base (DoS)	2033 Ref Case (DoS)	2033 Scenario 10 (DoS)	2033 Scenario 11 (DoS)
A120 Eastbound ahead	44.60%	95.50%	103.20%	101.90%
A120 Eastbound ahead + right	45.0 : 45.0%	95.7 : 95.7%	103.2 : 103.2%	101.9 : 101.9%
Birchanger Lane left	17.40%	40.40%	40.40%	40.40%
A120 Westbound ahead	32.70%	50.60%	55.40%	53.50%
A120 Westbound ahead	23.30%	36.30%	40.90%	39.30%
A120 Westbound ahead + right	39.3 : 39.3%	74.2 : 74.2%	74.2 : 74.2%	74.2 : 74.2%
A1250 Dunmow Road left + right	52.4 : 52.4%	98.5 : 98.5%	107.2 : 107.2%	105.5 : 105.5%
A1250 Dunmow Road right	51.90%	98.50%	107.20%	105.50%
A120 Eastbound left + ahead	45.70%	90.70%	93.50%	93.50%
A120 Eastbound ahead	45.60%	90.70%	93.30%	93.30%
A120 Westbound left	46.30%	67.80%	74.20%	71.70%
A120 Westbound ahead	52.30%	96.90%	109.00%	104.90%
A120 Westbound ahead	45.20%	96.20%	108.70%	104.60%
Overall DoS	52.40%	98.50%	109.00%	105.50%
Overall PRC	*71.8%*	*-9.5%*	*-21.1%*	*-17.3%*

A120 / A1250 Junction Capacity Analysis: Proposed Signalised Layout PM Peak Hour

Scenario / Arm	2014 Base (DoS)	2033 Ref Case (DoS)	2033 Scenario 10 (DoS)	2033 Scenario 11 (DoS)
A120 Eastbound ahead	39.50%	69.50%	76.40%	75.40%
A120 Eastbound ahead + right	40.4 : 40.4%	69.8 : 69.8%	76.7 : 76.7%	75.5 : 75.5%
Birchanger Lane left	34.70%	57.30%	57.30%	57.30%
A120 Westbound ahead	22.10%	42.00%	45.60%	44.90%
A120 Westbound ahead	25.50%	47.00%	50.00%	49.40%
A120 Westbound ahead + right	26.9 : 26.9%	49.0 : 49.0%	52.1 : 52.1%	51.4 : 51.4%
A1250 Dunmow Road left + right	59.6 : 59.6%	114.1 : 114.1%	122.1 : 122.1%	119.7 : 119.7%
A1250 Dunmow Road right	58.00%	114.10%	122.00%	119.50%
A120 Eastbound left + ahead	44.50%	78.70%	82.00%	81.60%
A120 Eastbound ahead	44.30%	78.80%	82.10%	81.60%
A120 Westbound left	31.40%	56.30%	61.10%	60.10%
A120 Westbound ahead	60.50%	115.00%	120.10%	120.90%
A120 Westbound ahead	60.40%	114.90%	120.10%	120.80%
Overall DoS	60.50%	115.00%	122.10%	120.90%
Overall PRC	*48.7%*	*-27.8%*	*-35.7%*	*-34.3%*

It can be seen that the junction operates within capacity in the base year, but would be at capacity by 2033 in the AM peak with committed development in place, and over capacity in the PM peak. For both the Local Plan development options the junction would be over capacity in 2033 in both peaks.

It should be noted that the adjacent M11J8 would also be over capacity at this time, and it is expected that the study investigating possible solutions for M11J8 would also encompass the junctions on either side of the motorway.

A120 / B1383 Roundabout

A scheme to improve the operation and capacity of the A120/B1383 roundabout junction is a planning condition of the Bishop's Stortford North development. In addition, ECC have identified additional improvements to the junction. The capacity of this junction, therefore, has been evaluated on the basis of its existing layout, the developer's proposed layout, and with the improved ECC scheme in place.

A120 / B1383 Junction Capacity Analysis: Existing Layout AM

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
AM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	17	7	0.61	84	175	1.10	199	496	1.24	155	384	1.19
B1383 Stansted Rd South	0	4	0.27	1	8	0.56	3	11	0.70	3	11	0.70
A120 W	2	8	0.65	100	254	1.15	229	677	1.35	223	665	1.34
B1383 Stansted Rd North	2	7	0.65	268	605	1.30	384	841	1.37	376	818	1.37

A120 / B1383 Junction Capacity Analysis: Existing Layout PM

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
PM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	2	7	0.66	328	708	1.36	538	1202	1.53	513	1151	1.51
B1383 Stansted Rd South	1	4	0.32	5	21	0.82	9	35	0.90	8	32	0.89
A120 W	3	10	0.70	89	251	1.15	153	499	1.27	133	419	1.23
B1383 Stansted Rd North	1	4	0.45	7	18	0.87	47	96	1.04	43	89	1.03

It can be seen that the existing junction layout operates satisfactorily in the base year but would be over capacity in 2033 with committed development in place, a situation which would worsen with Local Plan development.

A120 / B1383 Junction Capacity Analysis: Developer's Layout AM

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
AM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	2	6	0.58	25	58	0.99	102	197	1.11	71	135	1.07
B1383 Stansted Rd South	0	3	0.24	1	6	0.48	2	8	0.61	8	8	0.61
A120 W	1	6	0.55	21	58	0.98	106	233	1.15	103	225	1.14
B1383 Stansted Rd North	3	10	0.72	432	1037	1.49	595	1516	1.58	584	1480	1.57

A120 / B1383 Junction Capacity Analysis: Developer's Layout PM

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
PM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	2	6	0.62	244	518	1.28	402	921	1.38	383	877	1.36
B1383 Stansted Rd South	0	4	0.28	3	12	0.72	4	15	0.79	4	14	0.77
A120 W	2	6	0.59	18	56	0.97	60	151	1.08	45	118	1.05
B1383 Stansted Rd North	1	5	0.50	22	57	0.98	136	324	1.18	130	295	1.17

It can be seen that the developer's layout provides some mitigation at the junction but it would still be at, or over capacity in the reference case in both peaks, and worsen with the addition of Local Plan development.

A120 / B1383 Junction Capacity Analysis: ECC Layout AM

Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
AM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	1	4	0.35	4	12	0.77	6	19	0.86	5	16	0.83
B1383 Stansted Rd South	0	4	0.27	2	9	0.59	4	17	0.78	3	16	0.76
A120 W	1	4	0.32	1	7	0.56	2	9	0.64	2	8	0.63
B1383 Stansted Rd North	2	6	0.59	62	142	1.07	119	261	1.17	114	246	1.16

A120 / B1383 Junction Capacity Analysis: ECC Layout PM

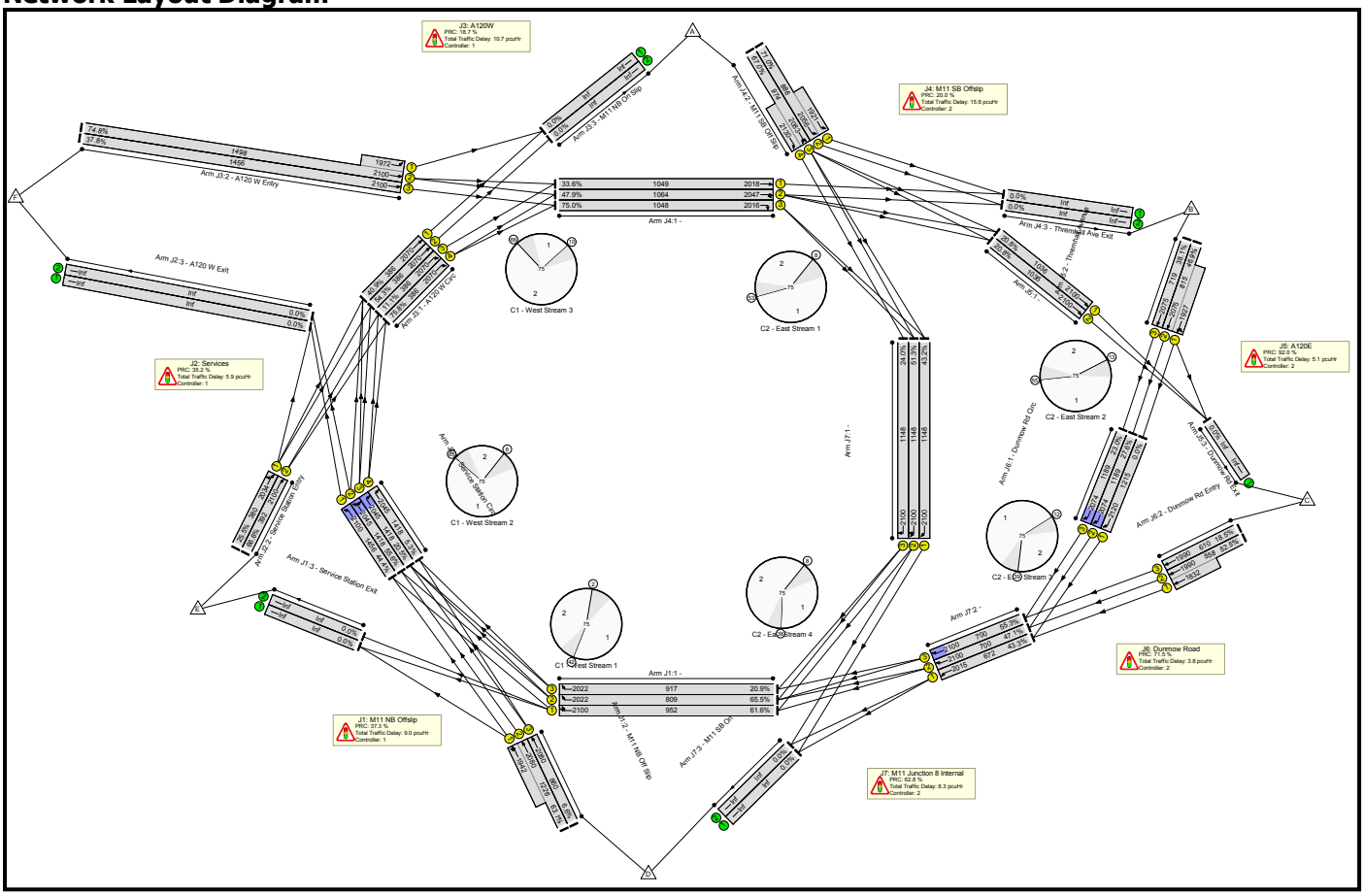
Scenario / Arm	2014 Base			2033 Ref Case			2033 Scenario 10			2033 Scenario 11		
PM	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC	Q (PCU)	Delay (secs)	RFC
A120 E	1	4	0.44	23	53	0.98	90	175	1.11	89	173	1.11
B1383 Stansted Rd South	1	4	0.31	13	58	0.96	43	150	1.07	35	127	1.05
A120 W	0	3	0.19	1	6	0.42	1	6	0.48	1	6	0.46
B1383 Stansted Rd North	1	4	0.36	3	9	0.70	6	20	0.86	6	19	0.85

The ECC layout improves the capacity of the junction in both peaks. However, the northern arm is likely to be over capacity in the 2033 reference case, worsening with the addition of Local Plan development, in the AM peak. During the PM peak the junction would be expected to be at capacity in the 2033 reference case, and over capacity with the addition of Local Plan development. However, it is likely that additional improvements may be possible to provide adequate capacity and it is recommended that more detailed modelling is undertaken.

M11 J8 Existing Layout Linsig Assessment

Project:	**M11 Junction 8**
Title:	**M11 Junction 8 Model - Existing Layout**
Location:	M11 J8 Essex
File name:	M11 J8 Network - Existing Layout optimised_V6_WYG.lsg3x
Author:	Andrew Thurston
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	

Scenario 1: '2014 AM Existing' (FG1: '2014 AM Existing', Plan 1: 'AM Existing')
Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**75.8%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**65.5%**	-
1/1	Ahead Right	U	C1:A		1	33	-	586	2100	952	61.6%	6.8
1/2	Right	U	C1:A		1	33	-	530	2022	809	65.5%	7.2
1/3	Right	U	C1:A		1	33	-	192	2022	917	20.9%	0.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	30	-	774	2080:1942	1226	63.1%	7.0
2/3	M11 NB Off Slip Ahead	U	C1:B		1	30	-	57	2080	860	6.6%	0.7
J2: Services	-	-	-		-	-	-	-	-	-	**66.6%**	-
1/1	Service Station Circ Left	U	C1:C		1	51	-	646	2100	1456	44.4%	2.5
1/2	Service Station Circ Left Right	U	C1:C		1	51	-	788	2045	1418	55.6%	2.7
1/3	Service Station Circ Right	U	C1:C		1	51	-	290	2045	1418	20.5%	0.1
1/4	Service Station Circ Right	U	C1:C		1	51	-	75	2045	1418	5.3%	0.3
2/1	Service Station Entry Left Ahead	U	C1:D		1	13	-	97	2034	380	25.5%	1.9
2/2	Service Station Entry Ahead	U	C1:D		1	13	-	261	2100	392	66.6%	6.0
J3: A120W	-	-	-		-	-	-	-	-	-	**75.8%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	13	-	158	2070	386	40.9%	2.3
1/2	A120 W Circ Ahead	U	C1:E		1	13	-	210	2070	386	54.3%	5.0
1/3	A120 W Circ Right	U	C1:E		1	13	-	43	2070	386	11.1%	0.5
1/4	A120 W Circ Right	U	C1:E		1	13	-	293	2070	386	75.8%	3.3
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	51	-	1121	2100:1972	1498	74.8%	12.6

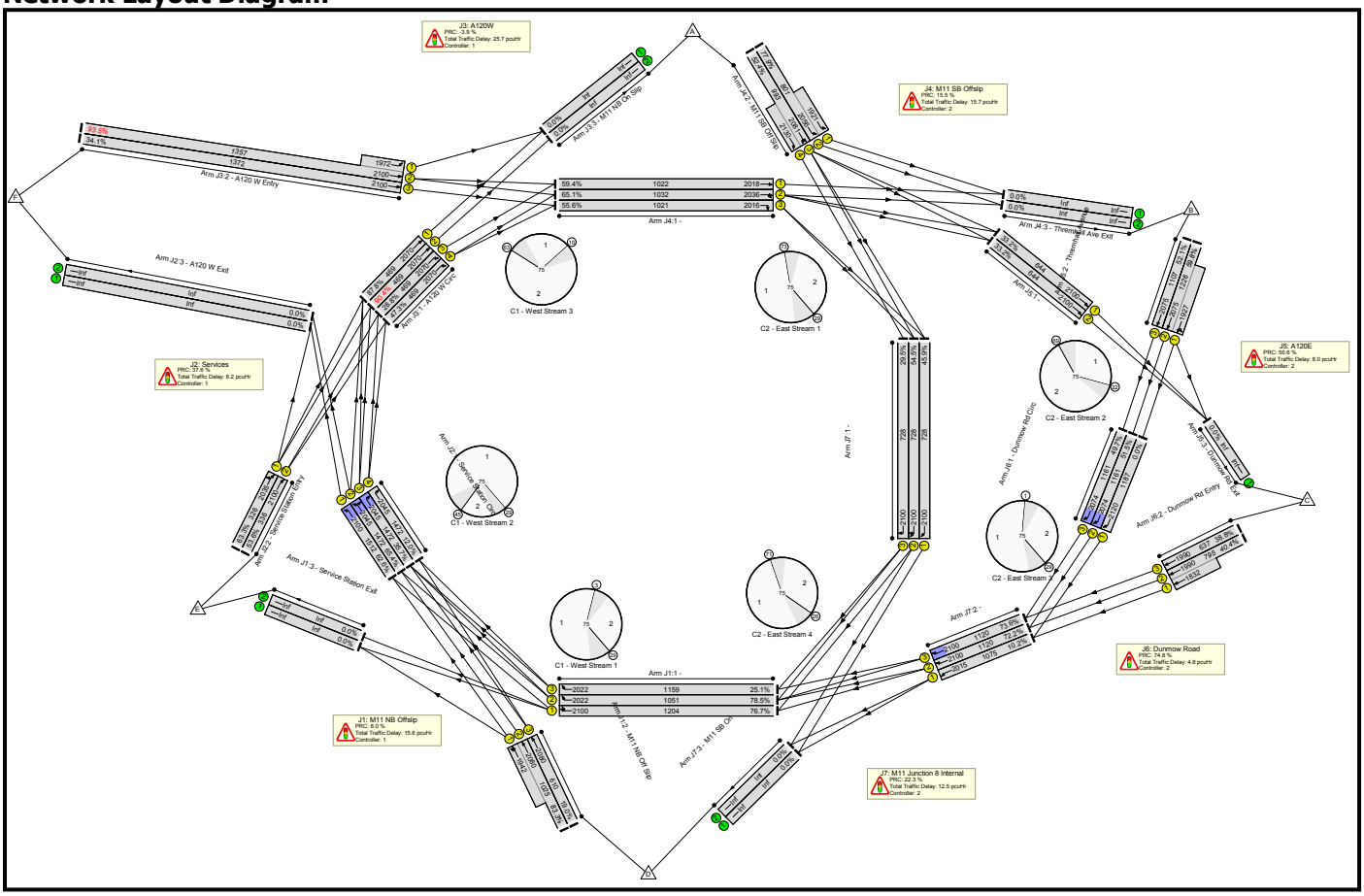
2/3	A120 W Entry Ahead	U	C1:F		1	51	-	550	2100	1456	37.8%	5.0
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**75.0%**	**-**
1/1	Ahead	U	C2:A		1	38	-	353	2018	1049	33.6%	3.3
1/2	Ahead Ahead2	U	C2:A		1	38	-	510	2047	1064	47.9%	5.0
1/3	Right	U	C2:A		1	38	-	786	2016	1048	75.0%	15.5
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	25	-	629	2056:1921	886	71.0%	7.8
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	25	-	653	2083:2130	974	67.0%	7.2
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**46.9%**	**-**
1/1	Ahead	U	C2:C		1	36	-	216	2100	1036	20.8%	1.2
1/2	Ahead	U	C2:C		1	36	-	216	2100	1036	20.8%	1.2
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	28	-	382	2075:1927	815	46.9%	5.7
2/3	Thremhall Avenue Ahead	U	C2:D		1	28	-	274	2075	719	38.1%	4.6
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	42	-	0	2120	1215	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	42	-	328	2074	1189	27.6%	0.8
1/3	Dunmow Rd Circ Right	U	C2:E		1	42	-	274	2074	1189	23.0%	0.6
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	22	-	293	1990:1832	558	52.5%	5.5
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	22	-	113	1990	610	18.5%	1.8
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**55.3%**	**-**
1/1	Right	U	C2:H		1	40	-	496	2100	1148	43.2%	9.5
1/2	Right Right2	U	C2:H		1	40	-	589	2100	1148	51.3%	6.8
1/3	Right	U	C2:H		1	40	-	276	2100	1148	24.0%	1.4
2/1	Ahead	U	C2:G		1	24	-	291	2015	672	43.3%	1.7
2/2	Ahead	U	C2:G		1	24	-	330	2100	700	47.1%	7.2

2/3	Ahead	U	C2:G		1	24	-	387	2100	700	55.3%	6.6

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	37.3	Total Delay for Signalled Lanes (pcuHr):	9.01	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	35.2	Total Delay for Signalled Lanes (pcuHr):	5.92	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	18.7	Total Delay for Signalled Lanes (pcuHr):	10.72	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	20.0	Total Delay for Signalled Lanes (pcuHr):	15.57	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	92.0	Total Delay for Signalled Lanes (pcuHr):	5.10	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	71.5	Total Delay for Signalled Lanes (pcuHr):	3.76	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	62.8	Total Delay for Signalled Lanes (pcuHr):	8.33	Cycle Time (s): 75
	PRC Over All Lanes (%):	18.7	Total Delay Over All Lanes(pcuHr):	58.42	

Scenario 2: '2014 PM Existing' (FG2: '2014 PM Existing', Plan 2: 'PM Existing')

Network Layout Diagram



Network Results

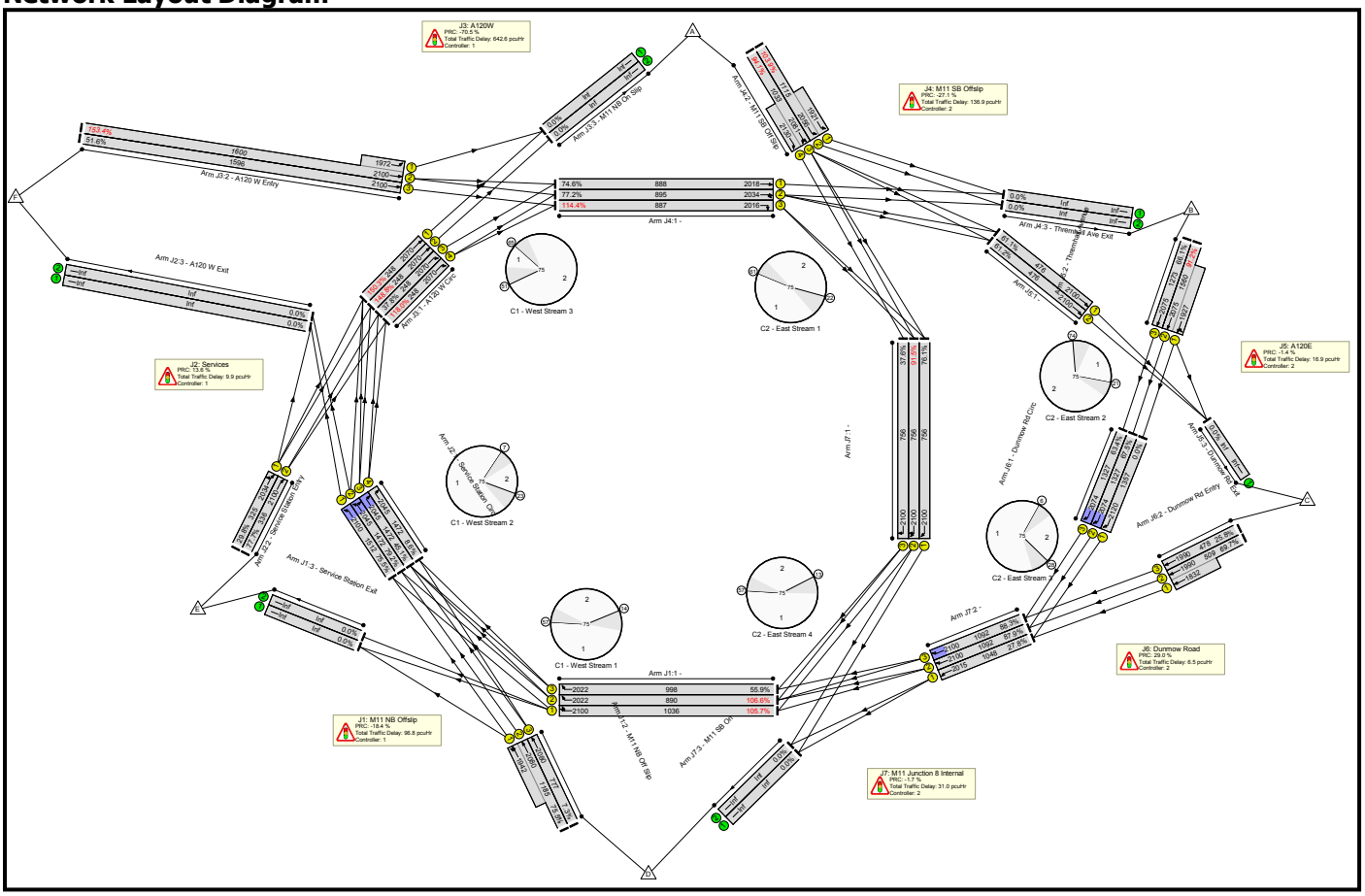
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**93.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**83.3%**	-
1/1	Ahead Right	U	C1:A		1	42	-	923	2100	1204	76.7%	7.6
1/2	Right	U	C1:A		1	42	-	825	2022	1051	78.5%	13.2
1/3	Right	U	C1:A		1	42	-	291	2022	1159	25.1%	0.6
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	21	-	854	2080:1942	1025	83.3%	10.4
2/3	M11 NB Off Slip Ahead	U	C1:B		1	21	-	116	2080	610	19.0%	1.9
J2: Services	-	-	-		-	-	-	-	-	-	**65.4%**	-
1/1	Service Station Circ Left	U	C1:C		1	53	-	947	2100	1512	62.6%	8.5
1/2	Service Station Circ Left Right	U	C1:C		1	53	-	963	2045	1472	65.4%	10.9
1/3	Service Station Circ Right	U	C1:C		1	53	-	526	2045	1472	35.7%	1.7
1/4	Service Station Circ Right	U	C1:C		1	53	-	177	2045	1472	12.0%	0.3
2/1	Service Station Entry Left Ahead	U	C1:D		1	11	-	206	2035	326	63.3%	4.9
2/2	Service Station Entry Ahead	U	C1:D		1	11	-	180	2100	336	53.6%	4.0
J3: A120W	-	-	-		-	-	-	-	-	-	**93.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	16	-	412	2070	469	87.8%	11.6
1/2	A120 W Circ Ahead	U	C1:E		1	16	-	424	2070	469	90.4%	12.1
1/3	A120 W Circ Right	U	C1:E		1	16	-	135	2070	469	28.8%	2.9
1/4	A120 W Circ Right	U	C1:E		1	16	-	222	2070	469	47.3%	5.1
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	48	-	1269	2100:1972	1357	93.5%	28.1

2/3	A120 W Entry Ahead	U	C1:F		1	48	-	468	2100	1372	34.1%	4.5
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**77.9%**	**-**
1/1	Ahead	U	C2:A		1	37	-	607	2018	1022	59.4%	8.6
1/2	Ahead Ahead2	U	C2:A		1	37	-	672	2036	1032	65.1%	9.7
1/3	Right	U	C2:A		1	37	-	568	2016	1021	55.6%	9.6
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	26	-	624	2056:1921	801	77.9%	10.7
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	26	-	520	2081:2130	993	52.4%	5.3
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**59.8%**	**-**
1/1	Ahead	U	C2:C		1	22	-	214	2100	644	33.2%	3.5
1/2	Ahead	U	C2:C		1	22	-	214	2100	644	33.2%	3.5
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	42	-	733	2075:1927	1226	59.8%	8.9
2/3	Thremhall Avenue Ahead	U	C2:D		1	42	-	577	2075	1107	52.1%	8.2
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**51.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	41	-	0	2120	1187	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	41	-	598	2074	1161	51.5%	0.8
1/3	Dunmow Rd Circ Right	U	C2:E		1	41	-	577	2074	1161	49.7%	0.8
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	23	-	321	1990:1832	795	40.4%	3.7
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	23	-	247	1990	637	38.8%	4.3
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.6%**	**-**
1/1	Right	U	C2:H		1	25	-	334	2100	728	45.9%	7.2
1/2	Right Right2	U	C2:H		1	25	-	397	2100	728	54.5%	6.3
1/3	Right	U	C2:H		1	25	-	215	2100	728	29.5%	1.3
2/1	Ahead	U	C2:G		1	39	-	110	2015	1075	10.2%	2.2
2/2	Ahead	U	C2:G		1	39	-	809	2100	1120	72.2%	8.0
2/3	Ahead	U	C2:G		1	39	-	824	2100	1120	73.6%	9.7

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	8.0	Total Delay for Signalled Lanes (pcuHr):	15.61	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	37.6	Total Delay for Signalled Lanes (pcuHr):	8.16	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-3.9	Total Delay for Signalled Lanes (pcuHr):	25.66	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	15.5	Total Delay for Signalled Lanes (pcuHr):	15.74	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	50.6	Total Delay for Signalled Lanes (pcuHr):	8.02	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	74.8	Total Delay for Signalled Lanes (pcuHr):	4.78	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	22.3	Total Delay for Signalled Lanes (pcuHr):	12.53	Cycle Time (s):	75
	PRC Over All Lanes (%):	-3.9	Total Delay Over All Lanes(pcuHr):	90.51		

Scenario 3: 'AM 2033 Ref case' (FG3: 'AM 2033 UDC Reference Case', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

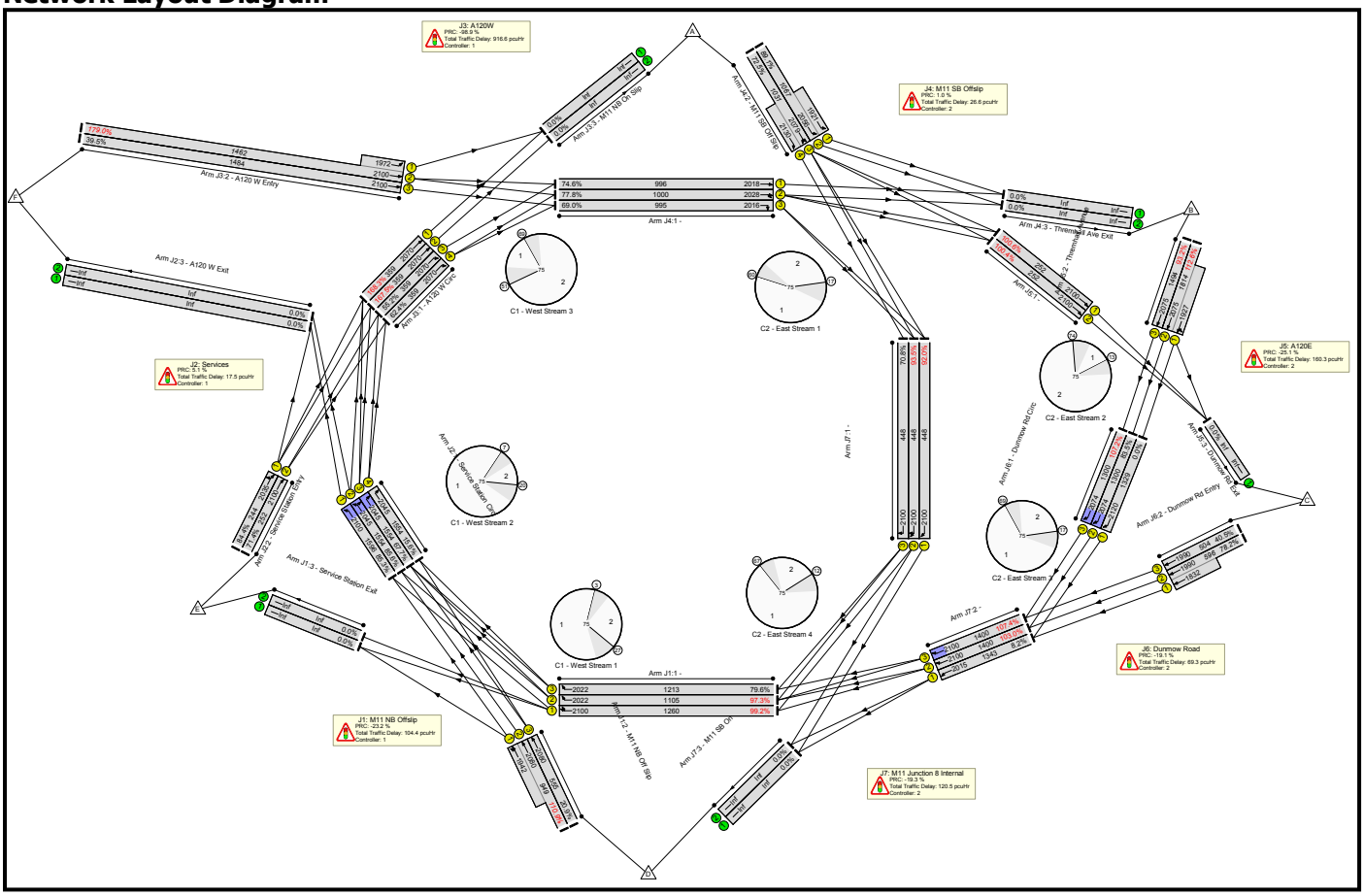
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**153.4%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**106.6%**	-
1/1	Ahead Right	U	C1:A		1	36	-	1098	2100	1036	105.7%	61.2
1/2	Right	U	C1:A		1	36	-	948	2022	890	106.6%	56.7
1/3	Right	U	C1:A		1	36	-	558	2022	998	55.9%	4.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	27	-	894	2080:1942	1185	75.5%	9.1
2/3	M11 NB Off Slip Ahead	U	C1:B		1	27	-	57	2080	777	7.3%	0.8
J2: Services	-	-	-		-	-	-	-	-	-	**79.2%**	-
1/1	Service Station Circ Left	U	C1:C		1	53	-	1200	2100	1512	75.5%	10.8
1/2	Service Station Circ Left Right	U	C1:C		1	53	-	1199	2045	1472	79.2%	4.8
1/3	Service Station Circ Right	U	C1:C		1	53	-	690	2045	1472	45.1%	5.1
1/4	Service Station Circ Right	U	C1:C		1	53	-	126	2045	1472	8.6%	0.3
2/1	Service Station Entry Left Ahead	U	C1:D		1	11	-	97	2034	325	29.8%	2.0
2/2	Service Station Entry Ahead	U	C1:D		1	11	-	261	2100	336	77.7%	6.8
J3: A120W	-	-	-		-	-	-	-	-	-	**153.4%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	8	-	387	2070	248	150.3%	76.0
1/2	A120 W Circ Ahead	U	C1:E		1	8	-	383	2070	248	148.8%	74.1
1/3	A120 W Circ Right	U	C1:E		1	8	-	94	2070	248	37.8%	1.4
1/4	A120 W Circ Right	U	C1:E		1	8	-	293	2070	248	118.0%	33.1
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	56	-	2455	2100:1972	1600	153.4%	504.0

2/3	A120 W Entry Ahead	U	C1:F		1	56	-	823	2100	1596	51.6%	7.2
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**114.4%**	**-**
1/1	Ahead	U	C2:A		1	32	-	966	2018	888	74.6%	12.4
1/2	Ahead Ahead2	U	C2:A		1	32	-	1030	2034	895	77.2%	13.1
1/3	Right	U	C2:A		1	32	-	1059	2016	887	114.4%	91.8
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	31	-	1159	2056:1921	1115	103.9%	52.6
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	31	-	972	2081:2130	1033	94.1%	22.5
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.2%**	**-**
1/1	Ahead	U	C2:C		1	16	-	349	2100	476	61.1%	6.1
1/2	Ahead	U	C2:C		1	16	-	349	2100	476	61.2%	6.1
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	48	-	1423	2075:1927	1560	91.2%	21.5
2/3	Thremhall Avenue Ahead	U	C2:D		1	48	-	841	2075	1273	66.1%	12.2
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**69.7%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	47	-	0	2120	1357	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	47	-	896	2074	1327	67.5%	1.3
1/3	Dunmow Rd Circ Right	U	C2:E		1	47	-	841	2074	1327	63.4%	1.2
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	17	-	355	1990:1832	509	69.7%	6.6
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	17	-	123	1990	478	25.8%	2.2
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**91.5%**	**-**
1/1	Right	U	C2:H		1	26	-	689	2100	756	76.1%	13.4
1/2	Right Right2	U	C2:H		1	26	-	750	2100	756	91.5%	17.6
1/3	Right	U	C2:H		1	26	-	284	2100	756	37.6%	3.5
2/1	Ahead	U	C2:G		1	38	-	291	2015	1048	27.8%	0.2
2/2	Ahead	U	C2:G		1	38	-	960	2100	1092	87.9%	16.0

2/3	Ahead	U	C2:G		1	38	-	964	2100	1092	88.3%	15.4

C1 - West	Stream: 1 PRC for Signalled Lanes (%): -18.4	Total Delay for Signalled Lanes (pcuHr):	96.82	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%): 13.6	Total Delay for Signalled Lanes (pcuHr):	9.91	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%): -70.5	Total Delay for Signalled Lanes (pcuHr):	642.64	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%): -27.1	Total Delay for Signalled Lanes (pcuHr):	136.94	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%): -1.4	Total Delay for Signalled Lanes (pcuHr):	16.91	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%): 29.0	Total Delay for Signalled Lanes (pcuHr):	6.53	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%): -1.7	Total Delay for Signalled Lanes (pcuHr):	30.98	Cycle Time (s):	75
	PRC Over All Lanes (%): -70.5	Total Delay Over All Lanes(pcuHr):	940.73		

Scenario 4: 'PM 2033 Ref case' (FG4: 'PM 2033 UDC Reference Case', Plan 2: 'PM Existing')
Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**179.0%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**110.9%**	-
1/1	Ahead Right	U	C1:A		1	44	-	1398	2100	1260	99.2%	39.8
1/2	Right	U	C1:A		1	44	-	1176	2022	1105	97.3%	32.0
1/3	Right	U	C1:A		1	44	-	1091	2022	1213	79.6%	8.1
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	19	-	1052	2080:1942	949	110.9%	73.7
2/3	M11 NB Off Slip Ahead	U	C1:B		1	19	-	116	2080	555	20.9%	2.0
J2: Services	-	-	-		-	-	-	-	-	-	**85.6%**	-
1/1	Service Station Circ Left	U	C1:C		1	56	-	1535	2100	1596	85.3%	10.6
1/2	Service Station Circ Left Right	U	C1:C		1	56	-	1466	2045	1554	85.6%	14.4
1/3	Service Station Circ Right	U	C1:C		1	56	-	1194	2045	1554	67.7%	2.2
1/4	Service Station Circ Right	U	C1:C		1	56	-	242	2045	1554	15.6%	2.3
2/1	Service Station Entry Left Ahead	U	C1:D		1	8	-	206	2035	244	84.4%	6.6
2/2	Service Station Entry Ahead	U	C1:D		1	8	-	180	2100	252	71.4%	4.8
J3: A120W	-	-	-		-	-	-	-	-	-	**179.0%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	12	-	682	2070	359	168.3%	145.7
1/2	A120 W Circ Ahead	U	C1:E		1	12	-	665	2070	359	167.5%	144.1
1/3	A120 W Circ Right	U	C1:E		1	12	-	198	2070	359	55.2%	3.7
1/4	A120 W Circ Right	U	C1:E		1	12	-	224	2070	359	62.4%	5.5
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	52	-	2617	2100:1972	1462	179.0%	666.5

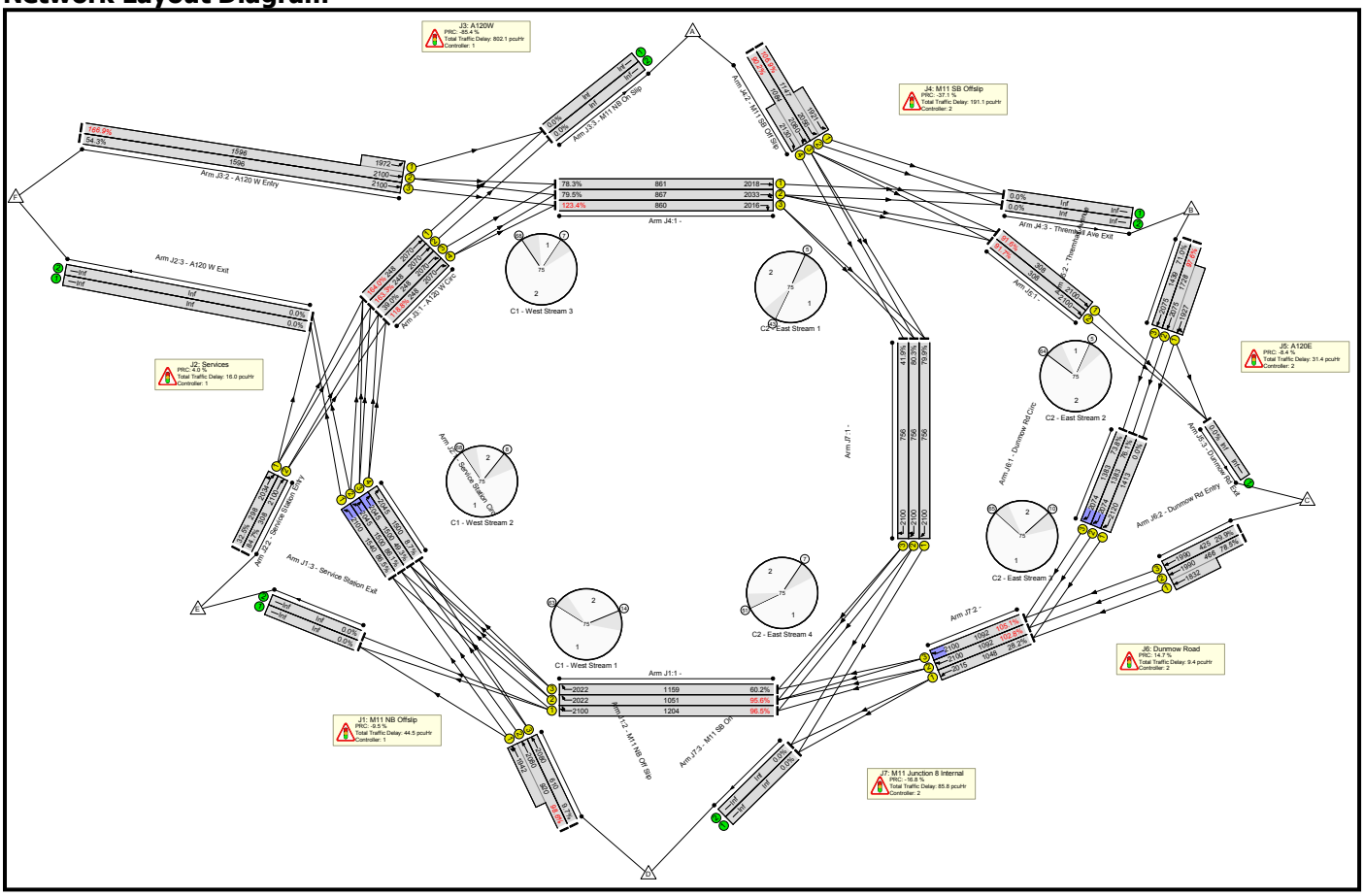
2/3	A120 W Entry Ahead	U	C1:F		1	52	-	586	2100	1484	39.5%	5.2
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**89.1%**	**-**
1/1	Ahead	U	C2:A		1	36	-	1173	2018	996	74.6%	13.5
1/2	Ahead Ahead2	U	C2:A		1	36	-	1296	2028	1000	77.8%	13.8
1/3	Right	U	C2:A		1	36	-	686	2016	995	69.0%	12.6
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	27	-	951	2056:1921	1067	89.1%	14.9
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	27	-	748	2079:2130	1031	72.5%	8.5
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**112.6%**	**-**
1/1	Ahead	U	C2:C		1	8	-	295	2100	252	100.6%	13.7
1/2	Ahead	U	C2:C		1	8	-	294	2100	252	100.4%	13.5
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	56	-	2042	2075:1927	1814	112.6%	163.1
2/3	Thremhall Avenue Ahead	U	C2:D		1	56	-	1393	2075	1494	93.2%	30.5
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**107.2%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	46	-	0	2120	1329	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	46	-	1222	2074	1300	83.5%	18.7
1/3	Dunmow Rd Circ Right	U	C2:E		1	46	-	1393	2074	1300	107.2%	84.9
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	18	-	466	1990:1832	596	78.2%	8.5
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	18	-	204	1990	504	40.5%	3.9
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**107.4%**	**-**
1/1	Right	U	C2:H		1	15	-	412	2100	448	92.0%	13.1
1/2	Right Right2	U	C2:H		1	15	-	419	2100	448	93.5%	13.7
1/3	Right	U	C2:H		1	15	-	317	2100	448	70.8%	3.3
2/1	Ahead	U	C2:G		1	49	-	110	2015	1343	8.2%	2.1
2/2	Ahead	U	C2:G		1	49	-	1578	2100	1400	103.0%	62.9

2/3	Ahead	U	C2:G		1	49	-	1597	2100	1400	107.4%	91.8

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-23.2	Total Delay for Signalled Lanes (pcuHr):	104.43	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	5.1	Total Delay for Signalled Lanes (pcuHr):	17.48	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-98.9	Total Delay for Signalled Lanes (pcuHr):	916.60	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	1.0	Total Delay for Signalled Lanes (pcuHr):	26.57	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	-25.1	Total Delay for Signalled Lanes (pcuHr):	160.35	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-19.1	Total Delay for Signalled Lanes (pcuHr):	69.29	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-19.3	Total Delay for Signalled Lanes (pcuHr):	120.51	Cycle Time (s): 75
	PRC Over All Lanes (%):	-98.9	Total Delay Over All Lanes(pcuHr):	1415.23	

Scenario 5: 'AM 2033 Scenario 10' (FG5: 'AM 2033 UDC Scenario H', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**166.9%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**98.6%**	-
1/1	Ahead Right	U	C1:A		1	42	-	1188	2100	1204	96.5%	31.2
1/2	Right	U	C1:A		1	42	-	1036	2022	1051	95.6%	27.3
1/3	Right	U	C1:A		1	42	-	731	2022	1159	60.2%	1.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	21	-	907	2080:1942	920	98.6%	23.6
2/3	M11 NB Off Slip Ahead	U	C1:B		1	21	-	59	2080	610	9.7%	0.9
J2: Services	-	-	-		-	-	-	-	-	-	**86.5%**	-
1/1	Service Station Circ Left	U	C1:C		1	54	-	1355	2100	1540	86.5%	12.5
1/2	Service Station Circ Left Right	U	C1:C		1	54	-	1319	2045	1500	86.1%	11.8
1/3	Service Station Circ Right	U	C1:C		1	54	-	776	2045	1500	49.3%	1.1
1/4	Service Station Circ Right	U	C1:C		1	54	-	131	2045	1500	8.7%	1.2
2/1	Service Station Entry Left Ahead	U	C1:D		1	10	-	97	2034	298	32.5%	2.0
2/2	Service Station Entry Ahead	U	C1:D		1	10	-	261	2100	308	84.7%	7.8
J3: A120W	-	-	-		-	-	-	-	-	-	**166.9%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	8	-	425	2070	248	164.0%	94.6
1/2	A120 W Circ Ahead	U	C1:E		1	8	-	425	2070	248	163.3%	94.0
1/3	A120 W Circ Right	U	C1:E		1	8	-	97	2070	248	39.0%	2.1
1/4	A120 W Circ Right	U	C1:E		1	8	-	295	2070	248	118.8%	33.2
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	56	-	2663	2100:1972	1596	166.9%	629.9

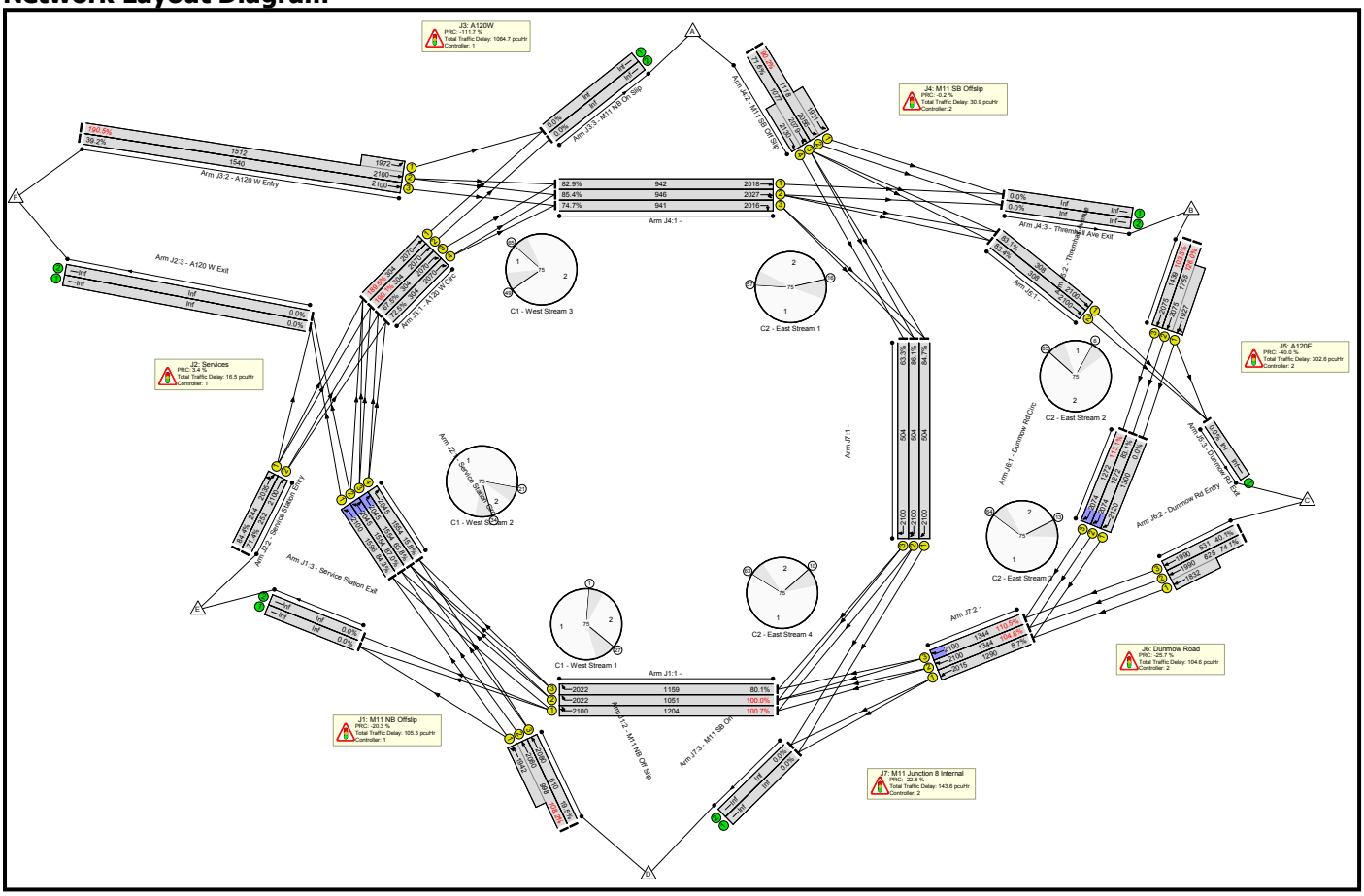
2/3	A120 W Entry Ahead	U	C1:F		1	56	-	866	2100	1596	54.3%	7.8
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**123.4%**	**-**
1/1	Ahead	U	C2:A		1	31	-	1060	2018	861	78.3%	12.7
1/2	Ahead Ahead2	U	C2:A		1	31	-	1122	2033	867	79.5%	12.8
1/3	Right	U	C2:A		1	31	-	1102	2016	860	123.4%	129.6
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	32	-	1226	2056:1921	1147	106.9%	69.6
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	32	-	978	2080:2130	1084	90.2%	19.1
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**97.6%**	**-**
1/1	Ahead	U	C2:C		1	10	-	353	2100	308	91.6%	9.9
1/2	Ahead	U	C2:C		1	10	-	353	2100	308	91.7%	9.9
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	54	-	1686	2075:1927	1728	97.6%	37.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	54	-	1021	2075	1439	71.0%	14.0
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	49	-	0	2120	1413	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	49	-	1052	2074	1383	76.1%	3.5
1/3	Dunmow Rd Circ Right	U	C2:E		1	49	-	1021	2074	1383	73.8%	3.3
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	15	-	366	1990:1832	466	78.5%	7.5
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	15	-	127	1990	425	29.9%	2.4
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**105.1%**	**-**
1/1	Right	U	C2:H		1	26	-	774	2100	756	79.9%	14.5
1/2	Right Right2	U	C2:H		1	26	-	679	2100	756	80.3%	12.6
1/3	Right	U	C2:H		1	26	-	317	2100	756	41.9%	1.8
2/1	Ahead	U	C2:G		1	38	-	295	2015	1048	28.2%	6.2
2/2	Ahead	U	C2:G		1	38	-	1123	2100	1092	102.8%	50.3

2/3	Ahead	U	C2:G		1	38	-	1148	2100		1092	105.1%	61.1

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-9.5	Total Delay for Signalled Lanes (pcuHr):	44.54	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	4.0	Total Delay for Signalled Lanes (pcuHr):	16.02	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-85.4	Total Delay for Signalled Lanes (pcuHr):	802.10	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-37.1	Total Delay for Signalled Lanes (pcuHr):	191.14	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	-8.4	Total Delay for Signalled Lanes (pcuHr):	31.45	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	14.7	Total Delay for Signalled Lanes (pcuHr):	9.37	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-16.8	Total Delay for Signalled Lanes (pcuHr):	85.75	Cycle Time (s): 75
	PRC Over All Lanes (%):	-85.4	Total Delay Over All Lanes(pcuHr):	1180.37	

Scenario 6: 'PM 2033 Scenario 10' (FG6: 'PM 2033 UDC Scenario H ', Plan 2: 'PM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**190.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**108.2%**	-
1/1	Ahead Right	U	C1:A		1	42	-	1490	2100	1204	100.7%	45.0
1/2	Right	U	C1:A		1	42	-	1244	2022	1051	100.0%	38.2
1/3	Right	U	C1:A		1	42	-	1156	2022	1159	80.1%	12.7
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	21	-	1080	2080:1942	998	108.2%	64.6
2/3	M11 NB Off Slip Ahead	U	C1:B		1	21	-	119	2080	610	19.5%	2.0
J2: Services	-	-	-		-	-	-	-	-	-	**87.0%**	-
1/1	Service Station Circ Left	U	C1:C		1	56	-	1644	2100	1596	84.3%	9.2
1/2	Service Station Circ Left Right	U	C1:C		1	56	-	1557	2045	1554	87.0%	19.2
1/3	Service Station Circ Right	U	C1:C		1	56	-	1247	2045	1554	63.8%	1.1
1/4	Service Station Circ Right	U	C1:C		1	56	-	245	2045	1554	15.8%	0.5
2/1	Service Station Entry Left Ahead	U	C1:D		1	8	-	206	2035	244	84.4%	6.6
2/2	Service Station Entry Ahead	U	C1:D		1	8	-	180	2100	252	71.4%	4.8
J3: A120W	-	-	-		-	-	-	-	-	-	**190.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	10	-	701	2070	304	189.5%	158.3
1/2	A120 W Circ Ahead	U	C1:E		1	10	-	709	2070	304	190.1%	159.5
1/3	A120 W Circ Right	U	C1:E		1	10	-	205	2070	304	67.5%	4.1
1/4	A120 W Circ Right	U	C1:E		1	10	-	220	2070	304	72.5%	5.9
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	54	-	2880	2100:1972	1512	190.5%	786.5

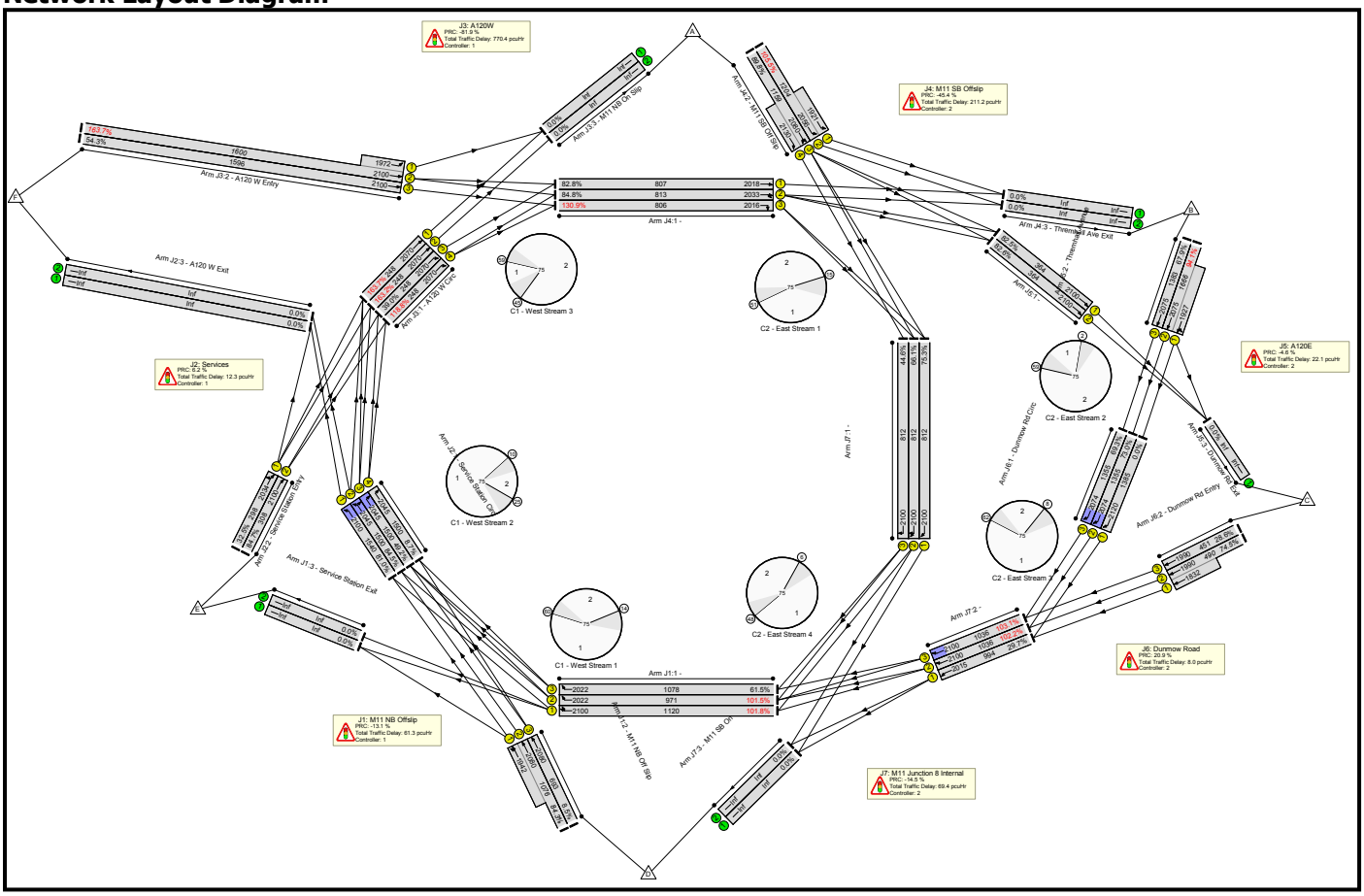
2/3	A120 W Entry Ahead	U	C1:F		1	54	-	603	2100	1540	39.2%	5.0
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.2%**	**-**
1/1	Ahead	U	C2:A		1	34	-	1301	2018	942	82.9%	16.4
1/2	Ahead Ahead2	U	C2:A		1	34	-	1431	2027	946	85.4%	17.0
1/3	Right	U	C2:A		1	34	-	703	2016	941	74.7%	13.9
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	29	-	1008	2056:1921	1118	90.2%	16.4
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	29	-	771	2079:2130	1077	71.6%	8.7
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**126.0%**	**-**
1/1	Ahead	U	C2:C		1	10	-	301	2100	308	83.1%	7.2
1/2	Ahead	U	C2:C		1	10	-	302	2100	308	83.4%	7.3
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	54	-	2212	2075:1927	1755	126.0%	289.2
2/3	Thremhall Avenue Ahead	U	C2:D		1	54	-	1489	2075	1439	103.5%	67.7
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**113.1%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	45	-	0	2120	1300	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	45	-	1332	2074	1272	83.1%	18.0
1/3	Dunmow Rd Circ Right	U	C2:E		1	45	-	1489	2074	1272	113.1%	120.9
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	463	1990:1832	625	74.1%	7.8
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	213	1990	531	40.1%	3.9
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**110.5%**	**-**
1/1	Right	U	C2:H		1	17	-	427	2100	504	84.7%	11.5
1/2	Right Right2	U	C2:H		1	17	-	434	2100	504	86.1%	11.2
1/3	Right	U	C2:H		1	17	-	319	2100	504	63.3%	2.9
2/1	Ahead	U	C2:G		1	47	-	112	2015	1290	8.7%	2.2
2/2	Ahead	U	C2:G		1	47	-	1683	2100	1344	104.8%	71.3

2/3	Ahead	U	C2:G		1	47	-	1702	2100	1344	110.5%	109.3

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-20.3	Total Delay for Signalled Lanes (pcuHr):	105.34	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	3.4	Total Delay for Signalled Lanes (pcuHr):	16.49	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-111.7	Total Delay for Signalled Lanes (pcuHr):	1064.72	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-0.2	Total Delay for Signalled Lanes (pcuHr):	30.94	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	-40.0	Total Delay for Signalled Lanes (pcuHr):	302.60	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-25.7	Total Delay for Signalled Lanes (pcuHr):	104.56	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-22.8	Total Delay for Signalled Lanes (pcuHr):	143.64	Cycle Time (s): 75
	PRC Over All Lanes (%):	-111.7	Total Delay Over All Lanes(pcuHr):	1768.28	

Scenario 7: 'AM 2033 Scenario 11' (FG7: 'AM 2033 UDC Scenario I', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

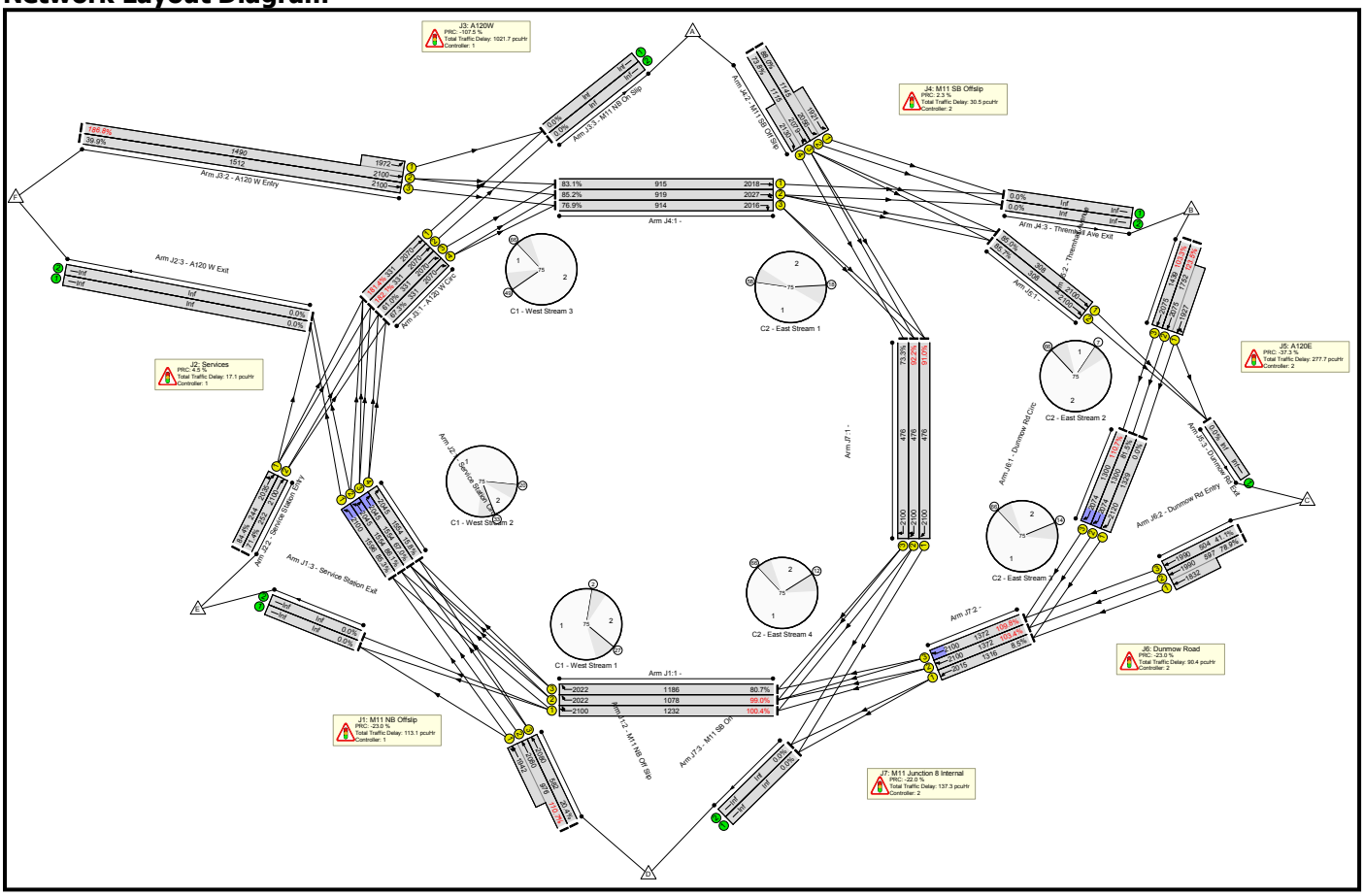
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**163.7%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**101.8%**	-
1/1	Ahead Right	U	C1:A		1	39	-	1162	2100	1120	101.8%	46.7
1/2	Right	U	C1:A		1	39	-	1003	2022	971	101.5%	40.4
1/3	Right	U	C1:A		1	39	-	682	2022	1078	61.5%	1.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	24	-	907	2080:1942	1076	84.3%	11.0
2/3	M11 NB Off Slip Ahead	U	C1:B		1	24	-	59	2080	693	8.5%	0.9
J2: Services	-	-	-		-	-	-	-	-	-	**84.7%**	-
1/1	Service Station Circ Left	U	C1:C		1	54	-	1285	2100	1540	81.0%	7.4
1/2	Service Station Circ Left Right	U	C1:C		1	54	-	1293	2045	1500	84.5%	14.3
1/3	Service Station Circ Right	U	C1:C		1	54	-	764	2045	1500	49.2%	2.4
1/4	Service Station Circ Right	U	C1:C		1	54	-	131	2045	1500	8.7%	0.2
2/1	Service Station Entry Left Ahead	U	C1:D		1	10	-	97	2034	298	32.5%	2.0
2/2	Service Station Entry Ahead	U	C1:D		1	10	-	261	2100	308	84.7%	7.8
J3: A120W	-	-	-		-	-	-	-	-	-	**163.7%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	8	-	420	2070	248	163.7%	92.4
1/2	A120 W Circ Ahead	U	C1:E		1	8	-	418	2070	248	163.2%	91.7
1/3	A120 W Circ Right	U	C1:E		1	8	-	97	2070	248	39.0%	1.8
1/4	A120 W Circ Right	U	C1:E		1	8	-	295	2070	248	118.8%	34.2
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	56	-	2620	2100:1972	1600	163.7%	594.6

2/3	A120 W Entry Ahead	U	C1:F		1	56	-	866	2100	1596	54.3%	7.8
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**130.9%**	**-**
1/1	Ahead	U	C2:A		1	29	-	1032	2018	807	82.8%	14.4
1/2	Ahead Ahead2	U	C2:A		1	29	-	1091	2033	813	84.8%	15.2
1/3	Right	U	C2:A		1	29	-	1102	2016	806	130.9%	153.9
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	34	-	1270	2056:1921	1204	105.5%	65.2
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	34	-	1040	2080:2130	1159	89.8%	19.4
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**94.1%**	**-**
1/1	Ahead	U	C2:C		1	12	-	366	2100	364	82.5%	8.1
1/2	Ahead	U	C2:C		1	12	-	366	2100	364	82.6%	8.2
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	52	-	1568	2075:1927	1666	94.1%	26.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	52	-	939	2075	1383	67.9%	12.8
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**74.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	48	-	0	2120	1385	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	48	-	989	2074	1355	73.0%	2.6
1/3	Dunmow Rd Circ Right	U	C2:E		1	48	-	939	2074	1355	69.3%	2.4
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	16	-	365	1990:1832	490	74.5%	7.1
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	16	-	129	1990	451	28.6%	2.4
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**103.1%**	**-**
1/1	Right	U	C2:H		1	28	-	839	2100	812	75.3%	14.1
1/2	Right Right2	U	C2:H		1	28	-	605	2100	812	66.1%	8.7
1/3	Right	U	C2:H		1	28	-	362	2100	812	44.6%	4.0
2/1	Ahead	U	C2:G		1	36	-	295	2015	994	29.7%	6.3
2/2	Ahead	U	C2:G		1	36	-	1059	2100	1036	102.2%	45.5

2/3	Ahead	U	C2:G		1	36	-	1068	2100	1036	103.1%	49.1

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-13.1	Total Delay for Signalled Lanes (pcuHr):	61.32	Cycle Time (s): 75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	6.2	Total Delay for Signalled Lanes (pcuHr):	12.30	Cycle Time (s): 75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-81.9	Total Delay for Signalled Lanes (pcuHr):	770.35	Cycle Time (s): 75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-45.4	Total Delay for Signalled Lanes (pcuHr):	211.16	Cycle Time (s): 75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	-4.6	Total Delay for Signalled Lanes (pcuHr):	22.13	Cycle Time (s): 75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	20.9	Total Delay for Signalled Lanes (pcuHr):	8.03	Cycle Time (s): 75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-14.5	Total Delay for Signalled Lanes (pcuHr):	69.37	Cycle Time (s): 75
	PRC Over All Lanes (%):	-81.9	Total Delay Over All Lanes(pcuHr):	1154.67	

Scenario 8: 'PM 2033 Scenario 11' (FG8: 'PM 2033 UDC Scenario I ', Plan 2: 'PM Existing')
Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 Junction 8 Model - Existing Layout	-	-	-		-	-	-	-	-	-	**186.8%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**110.7%**	-
1/1	Ahead Right	U	C1:A		1	43	-	1479	2100	1232	100.4%	44.9
1/2	Right	U	C1:A		1	43	-	1236	2022	1078	99.0%	35.8
1/3	Right	U	C1:A		1	43	-	1164	2022	1186	80.7%	10.5
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	20	-	1080	2080:1942	976	110.7%	74.9
2/3	M11 NB Off Slip Ahead	U	C1:B		1	20	-	119	2080	582	20.4%	2.0
J2: Services	-	-	-		-	-	-	-	-	-	**86.1%**	-
1/1	Service Station Circ Left	U	C1:C		1	56	-	1630	2100	1596	85.3%	9.9
1/2	Service Station Circ Left Right	U	C1:C		1	56	-	1530	2045	1554	86.1%	20.1
1/3	Service Station Circ Right	U	C1:C		1	56	-	1277	2045	1554	67.0%	3.2
1/4	Service Station Circ Right	U	C1:C		1	56	-	245	2045	1554	15.8%	0.6
2/1	Service Station Entry Left Ahead	U	C1:D		1	8	-	206	2035	244	84.4%	6.6
2/2	Service Station Entry Ahead	U	C1:D		1	8	-	180	2100	252	71.4%	4.8
J3: A120W	-	-	-		-	-	-	-	-	-	**186.8%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	11	-	718	2070	331	181.4%	158.0
1/2	A120 W Circ Ahead	U	C1:E		1	11	-	723	2070	331	182.1%	159.3
1/3	A120 W Circ Right	U	C1:E		1	11	-	202	2070	331	61.0%	3.8
1/4	A120 W Circ Right	U	C1:E		1	11	-	223	2070	331	67.3%	5.6
2/2+2/1	A120 W Entry Ahead Left	U	C1:F		1	53	-	2784	2100:1972	1490	186.8%	744.0

2/3	A120 W Entry Ahead	U	C1:F		1	53	-	603	2100	1512	39.9%	5.2
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.0%**	**-**
1/1	Ahead	U	C2:A		1	33	-	1245	2018	915	83.1%	16.1
1/2	Ahead Ahead2	U	C2:A		1	33	-	1356	2027	919	85.2%	16.5
1/3	Right	U	C2:A		1	33	-	703	2016	914	76.9%	14.3
2/2+2/1	M11 SB Off Slip Left	U	C2:B		1	30	-	1008	2056:1921	1145	88.0%	15.0
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	30	-	823	2079:2130	1115	73.8%	9.5
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**123.5%**	**-**
1/1	Ahead	U	C2:C		1	10	-	306	2100	308	85.0%	7.6
1/2	Ahead	U	C2:C		1	10	-	308	2100	308	85.7%	7.9
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	54	-	2164	2075:1927	1752	123.5%	263.8
2/3	Thremhall Avenue Ahead	U	C2:D		1	54	-	1486	2075	1439	103.3%	66.4
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**110.7%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	46	-	0	2120	1329	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	46	-	1309	2074	1300	81.5%	16.8
1/3	Dunmow Rd Circ Right	U	C2:E		1	46	-	1486	2074	1300	110.7%	107.2
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	18	-	471	1990:1832	597	78.9%	8.6
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	18	-	207	1990	504	41.1%	3.9
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**109.8%**	**-**
1/1	Right	U	C2:H		1	16	-	433	2100	476	91.0%	13.2
1/2	Right Right2	U	C2:H		1	16	-	439	2100	476	92.2%	13.6
1/3	Right	U	C2:H		1	16	-	349	2100	476	73.3%	4.3
2/1	Ahead	U	C2:G		1	48	-	112	2015	1316	8.5%	2.2
2/2	Ahead	U	C2:G		1	48	-	1668	2100	1372	103.4%	64.3

2/3	Ahead	U	C2:G		1	48	-	1693	2100	1372	109.8%	106.7

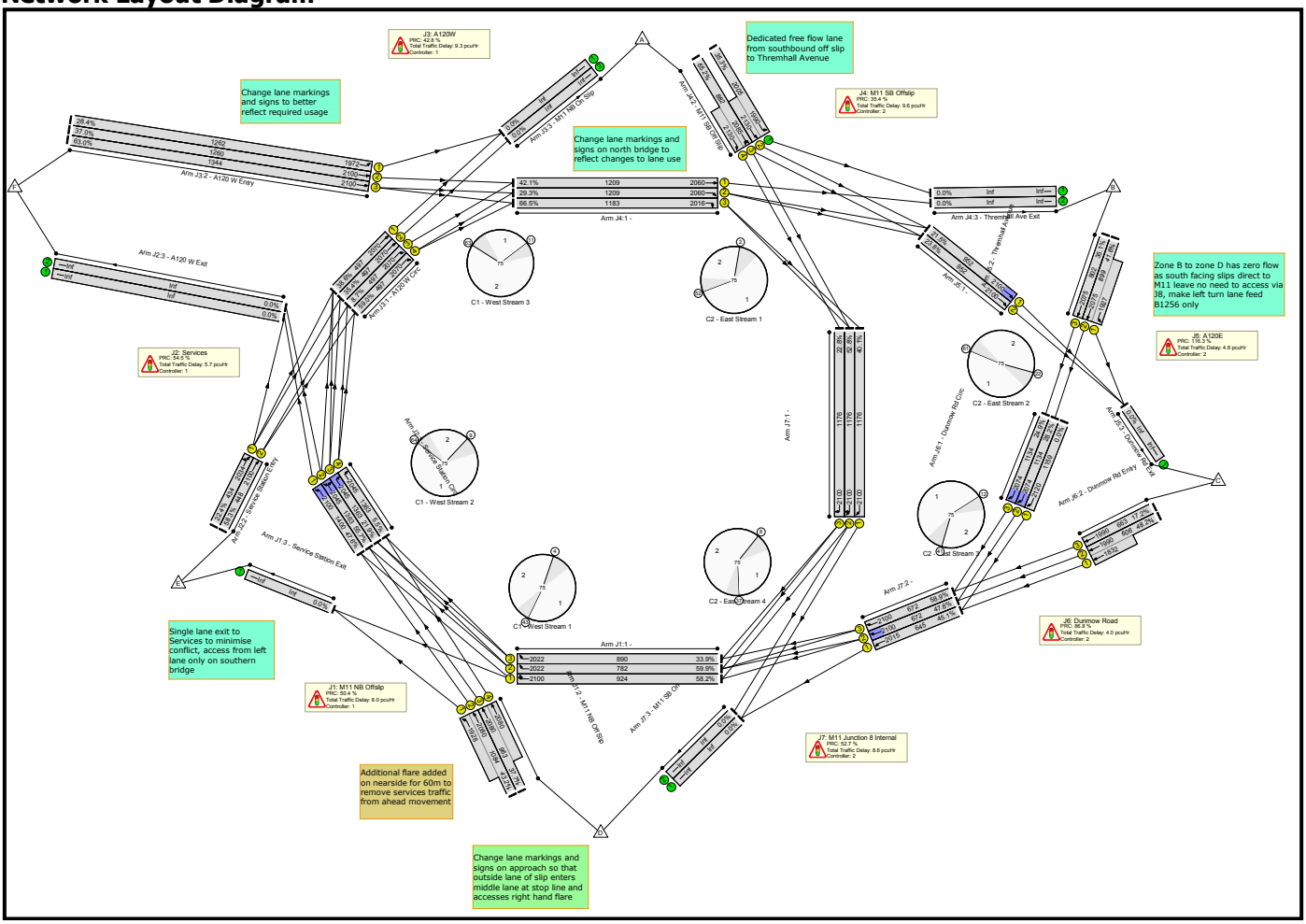
C1 - West	Stream: 1 PRC for Signalled Lanes (%): -23.0	Total Delay for Signalled Lanes (pcuHr):	113.07	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%): 4.5	Total Delay for Signalled Lanes (pcuHr):	17.10	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%): -107.5	Total Delay for Signalled Lanes (pcuHr):	1021.72	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%): 2.3	Total Delay for Signalled Lanes (pcuHr):	30.48	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%): -37.3	Total Delay for Signalled Lanes (pcuHr):	277.70	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%): -23.0	Total Delay for Signalled Lanes (pcuHr):	90.40	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%): -22.0	Total Delay for Signalled Lanes (pcuHr):	137.27	Cycle Time (s):	75
	PRC Over All Lanes (%): -107.5	Total Delay Over All Lanes(pcuHr):	1687.73		

M11 Junction 8 with Short to Medium-Term Improvements

M11 J8 A120 Option 3 Linsig Assessment

Project:	**M11 Junction 8**
Title:	**M11 J8 A120 Option 3 Linsig Assessment**
Location:	M11 J8 Essex
File name:	M11 J8 Network - Option 3_V6_WYG.lsg3x
Author:	Andrew Thurston
Company:	Jacobs UK Ltd
Address:	Chelmsford, Essex
Notes:	

Scenario 1: '2014 AM Existing' (FG1: '2014 AM Existing', Plan 1: 'AM Existing')
Network Layout Diagram



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**66.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**59.9%**	-
1/1	Ahead Right	U	C1:A		1	32	-	538	2100	924	58.2%	7.2
1/2	Right	U	C1:A		1	32	-	468	2022	782	59.9%	6.6
1/3	Right	U	C1:A		1	32	-	302	2022	890	33.9%	0.8
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	31	-	468	2080:1928	1084	43.2%	5.2
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	31	-	363	2080:2080	963	37.7%	4.6
J2: Services	-	-	-		-	-	-	-	-	-	**58.3%**	-
1/1	Service Station Circ Left	U	C1:C		1	49	-	666	2100	1400	47.6%	3.1
1/2	Service Station Circ Left Right	U	C1:C		1	49	-	760	2045	1363	55.7%	2.6
1/3	Service Station Circ Right	U	C1:C		1	49	-	298	2045	1363	21.9%	0.1
1/4	Service Station Circ Right	U	C1:C		1	49	-	75	2045	1363	5.5%	0.4
2/1	Service Station Entry Left Ahead	U	C1:D		1	15	-	97	2034	434	22.4%	1.8
2/2	Service Station Entry Ahead	U	C1:D		1	15	-	261	2100	448	58.3%	5.6
J3: A120W	-	-	-		-	-	-	-	-	-	**63.0%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	17	-	192	2070	497	38.6%	3.3
1/2	A120 W Circ Ahead	U	C1:E		1	17	-	176	2070	497	35.4%	3.7
1/3	A120 W Circ Right	U	C1:E		1	17	-	43	2070	497	8.7%	0.5
1/4	A120 W Circ Right	U	C1:E		1	17	-	293	2070	497	59.0%	2.3
2/1	A120 W Entry Left	U	C1:F		1	47	-	358	1972	1262	28.4%	3.4
2/2	A120 W Entry Ahead	U	C1:F		1	47	-	466	2100	1260	37.0%	5.2

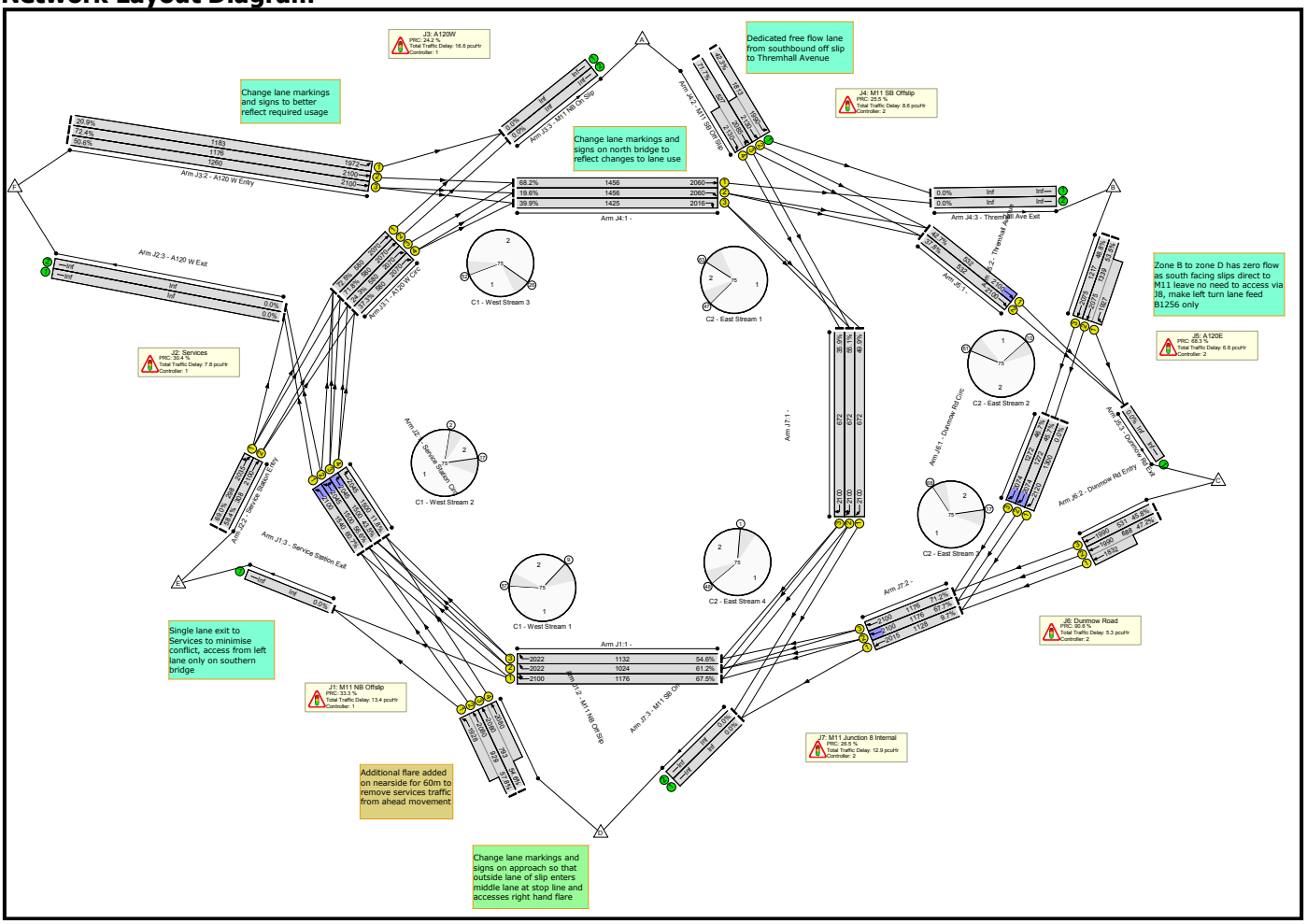
2/3	A120 W Entry Ahead	U	C1:F		1	47	-	847	2100	1344	63.0%	11.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**66.5%**	**-**
1/1	Ahead	U	C2:A		1	43	-	509	2060	1209	42.1%	4.1
1/2	Ahead	U	C2:A		1	43	-	354	2060	1209	29.3%	2.8
1/3	Right	U	C2:A		1	43	-	786	2016	1183	66.5%	9.0
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	707	1990:2130	2005	35.3%	1.5
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	20	-	575	2085:2130	882	65.2%	6.3
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**41.6%**	**-**
1/1	Ahead	U	C2:C		1	33	-	205	2100	952	21.5%	1.8
1/2	Ahead	U	C2:C		1	33	-	227	2100	952	23.8%	2.1
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	31	-	374	2075:1927	899	41.6%	5.2
2/3	Thremhall Avenue Ahead	U	C2:D		1	31	-	282	2075	802	35.1%	4.4
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**48.2%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	40	-	0	2120	1159	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	40	-	320	2074	1134	28.2%	1.6
1/3	Dunmow Rd Circ Right	U	C2:E		1	40	-	282	2074	1134	24.9%	1.4
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	24	-	292	1990:1832	606	48.2%	5.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	24	-	114	1990	663	17.2%	1.8
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.9%**	**-**
1/1	Right	U	C2:H		1	41	-	472	2100	1176	40.1%	8.3
1/2	Right Right2	U	C2:H		1	41	-	621	2100	1176	52.8%	5.9
1/3	Right	U	C2:H		1	41	-	268	2100	1176	22.8%	0.9
2/1	Ahead	U	C2:G		1	23	-	291	2015	645	45.1%	2.0

2/2	Ahead	U	C2:G		1	23	-	321	2100	672	47.8%	7.0
2/3	Ahead	U	C2:G		1	23	-	396	2100	672	58.9%	7.1

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	50.4	Total Delay for Signalled Lanes (pcuHr):	8.01	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	54.5	Total Delay for Signalled Lanes (pcuHr):	5.66	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	42.8	Total Delay for Signalled Lanes (pcuHr):	9.25	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	35.4	Total Delay for Signalled Lanes (pcuHr):	8.91	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	116.3	Total Delay for Signalled Lanes (pcuHr):	4.56	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	86.8	Total Delay for Signalled Lanes (pcuHr):	4.05	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	52.7	Total Delay for Signalled Lanes (pcuHr):	8.55	Cycle Time (s):	75
	PRC Over All Lanes (%):	35.4	Total Delay Over All Lanes(pcuHr):	49.71		

Scenario 2: '2014 PM Existing' (FG2: '2014 PM Existing', Plan 2: 'PM Existing')

Network Layout Diagram



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**72.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**67.5%**	-
1/1	Ahead Right	U	C1:A		1	41	-	794	2100	1176	67.5%	11.7
1/2	Right	U	C1:A		1	41	-	627	2022	1024	61.2%	10.7
1/3	Right	U	C1:A		1	41	-	618	2022	1132	54.6%	1.7
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	22	-	537	2080:1928	929	57.8%	6.6
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	22	-	433	2080:2080	793	54.6%	6.0
J2: Services	-	-	-		-	-	-	-	-	-	**69.0%**	-
1/1	Service Station Circ Left	U	C1:C		1	54	-	935	2100	1540	60.7%	4.6
1/2	Service Station Circ Left Right	U	C1:C		1	54	-	849	2045	1500	56.6%	2.4
1/3	Service Station Circ Right	U	C1:C		1	54	-	652	2045	1500	43.5%	1.2
1/4	Service Station Circ Right	U	C1:C		1	54	-	177	2045	1500	11.8%	0.5
2/1	Service Station Entry Left Ahead	U	C1:D		1	10	-	206	2035	298	69.0%	5.2
2/2	Service Station Entry Ahead	U	C1:D		1	10	-	180	2100	308	58.4%	4.2
J3: A120W	-	-	-		-	-	-	-	-	-	**72.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	20	-	420	2070	580	72.5%	8.3
1/2	A120 W Circ Ahead	U	C1:E		1	20	-	416	2070	580	71.8%	8.8
1/3	A120 W Circ Right	U	C1:E		1	20	-	141	2070	580	24.3%	2.0
1/4	A120 W Circ Right	U	C1:E		1	20	-	216	2070	580	37.3%	4.8
2/1	A120 W Entry Left	U	C1:F		1	44	-	247	1972	1183	20.9%	2.5
2/2	A120 W Entry Ahead	U	C1:F		1	44	-	852	2100	1176	72.4%	14.3

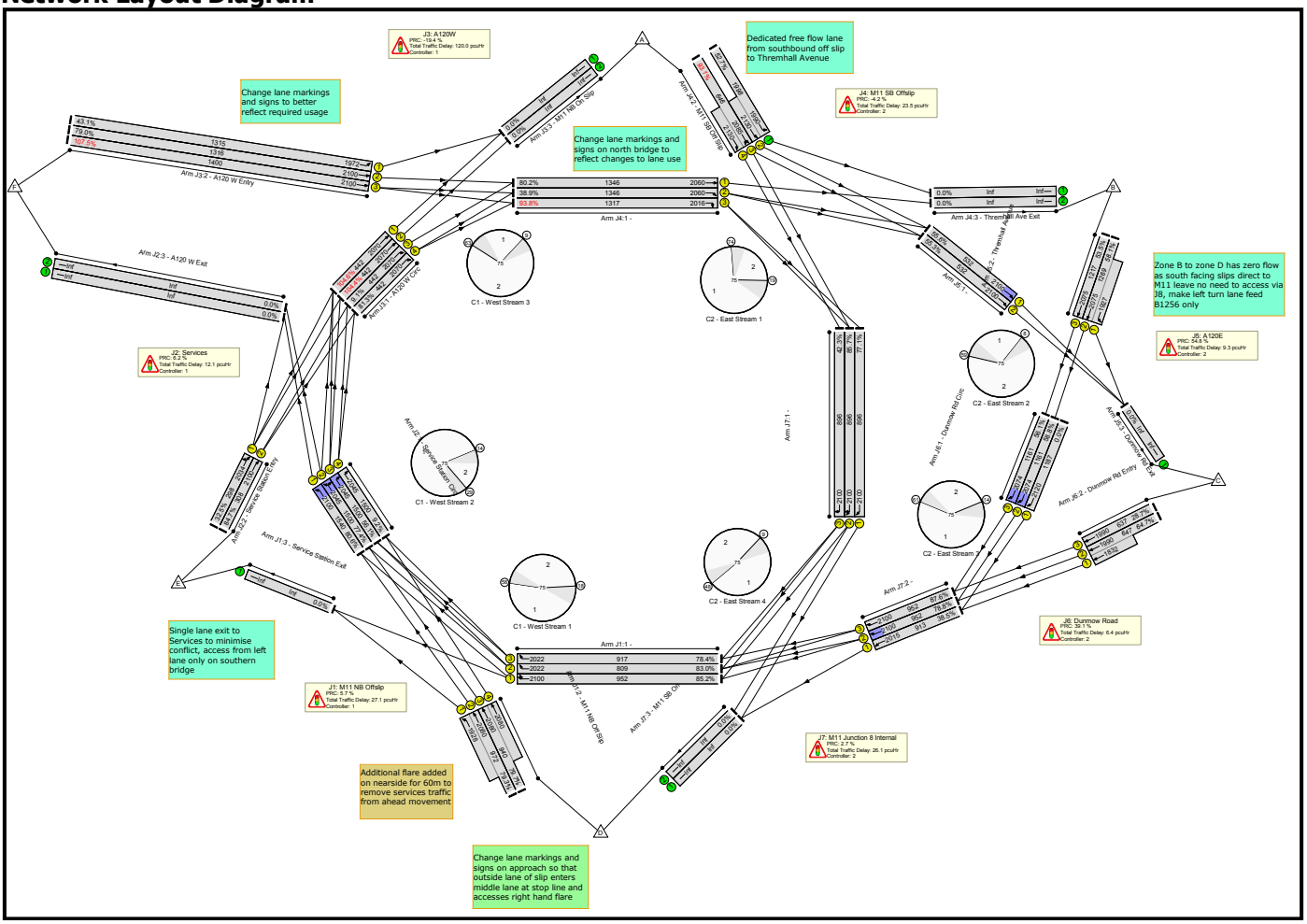
2/3	A120 W Entry Ahead	U	C1:F		1	44	-	638	2100	1260	50.6%	8.1
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.7%**	**-**
1/1	Ahead	U	C2:A		1	52	-	993	2060	1456	68.2%	5.7
1/2	Ahead	U	C2:A		1	52	-	286	2060	1456	19.6%	2.6
1/3	Right	U	C2:A		1	52	-	568	2016	1425	39.9%	6.0
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	766	1990:2130	1813	42.3%	3.0
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	11	-	378	2085:2130	527	71.7%	6.0
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**53.5%**	**-**
1/1	Ahead	U	C2:C		1	18	-	227	2100	532	42.7%	4.2
1/2	Ahead	U	C2:C		1	18	-	201	2100	532	37.8%	2.3
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	46	-	716	2075:1927	1339	53.5%	7.5
2/3	Thremhall Avenue Ahead	U	C2:D		1	46	-	594	2075	1217	48.8%	7.6
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**47.2%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	45	-	0	2120	1300	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	45	-	581	2074	1272	45.7%	0.7
1/3	Dunmow Rd Circ Right	U	C2:E		1	45	-	594	2074	1272	46.7%	0.7
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	325	1990:1832	688	47.2%	4.1
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	243	1990	531	45.8%	4.6
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.2%**	**-**
1/1	Right	U	C2:H		1	23	-	335	2100	672	49.9%	7.4
1/2	Right Right2	U	C2:H		1	23	-	370	2100	672	55.1%	5.6
1/3	Right	U	C2:H		1	23	-	241	2100	672	35.9%	0.7
2/1	Ahead	U	C2:G		1	41	-	110	2015	1128	9.7%	0.2

2/2	Ahead	U	C2:G		1	41	-	796	2100	1176	67.7%	10.0
2/3	Ahead	U	C2:G		1	41	-	837	2100	1176	71.2%	10.7

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	33.3	Total Delay for Signalled Lanes (pcuHr):	13.42	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	30.4	Total Delay for Signalled Lanes (pcuHr):	7.83	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	24.2	Total Delay for Signalled Lanes (pcuHr):	16.57	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	25.5	Total Delay for Signalled Lanes (pcuHr):	7.07	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	68.3	Total Delay for Signalled Lanes (pcuHr):	6.59	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	90.6	Total Delay for Signalled Lanes (pcuHr):	5.33	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	26.5	Total Delay for Signalled Lanes (pcuHr):	12.91	Cycle Time (s):	75
	PRC Over All Lanes (%):	24.2	Total Delay Over All Lanes(pcuHr):	71.21		

Scenario 3: 'AM 2033 Ref case' (FG3: 'AM 2033 UDC Reference Case', Plan 1: 'AM Existing')

Network Layout Diagram



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**107.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**85.2%**	-
1/1	Ahead Right	U	C1:A		1	33	-	812	2100	952	85.2%	14.6
1/2	Right	U	C1:A		1	33	-	671	2022	809	83.0%	15.4
1/3	Right	U	C1:A		1	33	-	719	2022	917	78.4%	3.6
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	30	-	771	2080:1928	972	79.3%	13.4
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	30	-	749	2080:2080	940	79.7%	13.6
J2: Services	-	-	-		-	-	-	-	-	-	**84.7%**	-
1/1	Service Station Circ Left	U	C1:C		1	54	-	1242	2100	1540	80.6%	6.5
1/2	Service Station Circ Left Right	U	C1:C		1	54	-	1160	2045	1500	77.4%	13.8
1/3	Service Station Circ Right	U	C1:C		1	54	-	841	2045	1500	56.1%	6.5
1/4	Service Station Circ Right	U	C1:C		1	54	-	138	2045	1500	9.2%	0.5
2/1	Service Station Entry Left Ahead	U	C1:D		1	10	-	97	2034	298	32.5%	2.0
2/2	Service Station Entry Ahead	U	C1:D		1	10	-	261	2100	308	84.7%	7.8
J3: A120W	-	-	-		-	-	-	-	-	-	**107.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	15	-	462	2070	442	104.6%	27.1
1/2	A120 W Circ Ahead	U	C1:E		1	15	-	461	2070	442	104.4%	26.7
1/3	A120 W Circ Right	U	C1:E		1	15	-	40	2070	442	9.1%	0.9
1/4	A120 W Circ Right	U	C1:E		1	15	-	359	2070	442	81.3%	9.3
2/1	A120 W Entry Left	U	C1:F		1	49	-	566	1972	1315	43.1%	5.9
2/2	A120 W Entry Ahead	U	C1:F		1	49	-	1039	2100	1316	79.0%	17.7

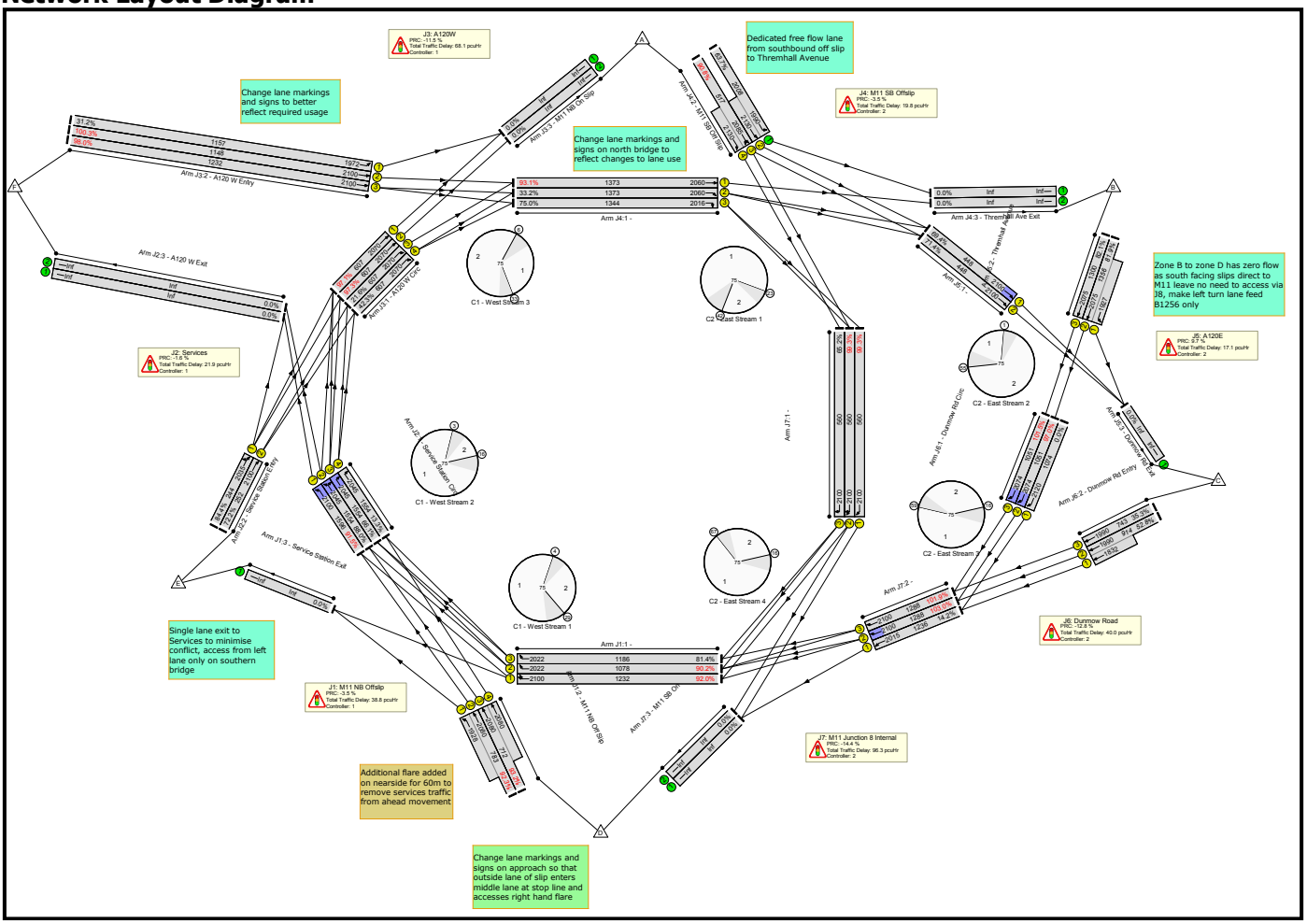
2/3	A120 W Entry Ahead	U	C1:F		1	49	-	1505	2100	1400	107.5%	92.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.8%**	**-**
1/1	Ahead	U	C2:A		1	48	-	1079	2060	1346	80.2%	9.5
1/2	Ahead	U	C2:A		1	48	-	554	2060	1346	38.9%	4.9
1/3	Right	U	C2:A		1	48	-	1310	2016	1317	93.8%	27.3
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	1054	1990:2130	1998	52.7%	1.7
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	15	-	602	2085:2130	646	93.1%	13.4
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**58.1%**	**-**
1/1	Ahead	U	C2:C		1	18	-	310	2100	532	55.6%	5.4
1/2	Ahead	U	C2:C		1	18	-	310	2100	532	55.3%	6.4
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	46	-	738	2075:1927	1269	58.1%	9.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	46	-	651	2075	1217	53.5%	8.7
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**64.7%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	41	-	0	2120	1187	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	41	-	683	2074	1161	58.8%	2.0
1/3	Dunmow Rd Circ Right	U	C2:E		1	41	-	651	2074	1161	56.1%	1.9
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	23	-	419	1990:1832	647	64.7%	7.1
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	23	-	183	1990	637	28.7%	3.0
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.6%**	**-**
1/1	Right	U	C2:H		1	31	-	726	2100	896	77.1%	13.0
1/2	Right Right2	U	C2:H		1	31	-	807	2100	896	85.7%	17.0
1/3	Right	U	C2:H		1	31	-	379	2100	896	42.3%	8.3
2/1	Ahead	U	C2:G		1	33	-	352	2015	913	38.5%	7.6

2/2	Ahead	U	C2:G		1	33	-	750	2100	952	78.8%	8.1
2/3	Ahead	U	C2:G		1	33	-	834	2100	952	87.6%	12.2

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	5.7	Total Delay for Signalled Lanes (pcuHr):	27.07	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	6.2	Total Delay for Signalled Lanes (pcuHr):	12.06	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-19.4	Total Delay for Signalled Lanes (pcuHr):	120.03	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-4.2	Total Delay for Signalled Lanes (pcuHr):	22.48	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	54.8	Total Delay for Signalled Lanes (pcuHr):	9.30	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	39.1	Total Delay for Signalled Lanes (pcuHr):	6.40	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	2.7	Total Delay for Signalled Lanes (pcuHr):	26.12	Cycle Time (s):	75
	PRC Over All Lanes (%):	-19.4	Total Delay Over All Lanes(pcuHr):	224.45		

Scenario 4: 'PM 2033 Ref case' (FG4: 'PM 2033 UDC Reference Case', Plan 2: 'PM Existing')

Network Layout Diagram



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**103.0%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**93.2%**	-
1/1	Ahead Right	U	C1:A		1	43	-	1162	2100	1232	92.0%	22.8
1/2	Right	U	C1:A		1	43	-	993	2022	1078	90.2%	22.2
1/3	Right	U	C1:A		1	43	-	996	2022	1186	81.4%	8.4
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	20	-	723	2080:1928	783	92.3%	15.7
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	20	-	663	2080:2080	712	93.2%	16.0
J2: Services	-	-	-		-	-	-	-	-	-	**91.5%**	-
1/1	Service Station Circ Left	U	C1:C		1	56	-	1486	2100	1596	91.5%	20.2
1/2	Service Station Circ Left Right	U	C1:C		1	56	-	1385	2045	1554	88.0%	16.0
1/3	Service Station Circ Right	U	C1:C		1	56	-	1061	2045	1554	66.1%	4.4
1/4	Service Station Circ Right	U	C1:C		1	56	-	206	2045	1554	13.3%	2.8
2/1	Service Station Entry Left Ahead	U	C1:D		1	8	-	206	2035	244	84.4%	6.6
2/2	Service Station Entry Ahead	U	C1:D		1	8	-	182	2100	252	72.2%	4.9
J3: A120W	-	-	-		-	-	-	-	-	-	**100.3%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	21	-	607	2070	607	97.1%	20.7
1/2	A120 W Circ Ahead	U	C1:E		1	21	-	607	2070	607	97.3%	20.8
1/3	A120 W Circ Right	U	C1:E		1	21	-	131	2070	607	21.6%	1.2
1/4	A120 W Circ Right	U	C1:E		1	21	-	257	2070	607	42.3%	1.2
2/1	A120 W Entry Left	U	C1:F		1	43	-	361	1972	1157	31.2%	3.9
2/2	A120 W Entry Ahead	U	C1:F		1	43	-	1152	2100	1148	100.3%	42.1

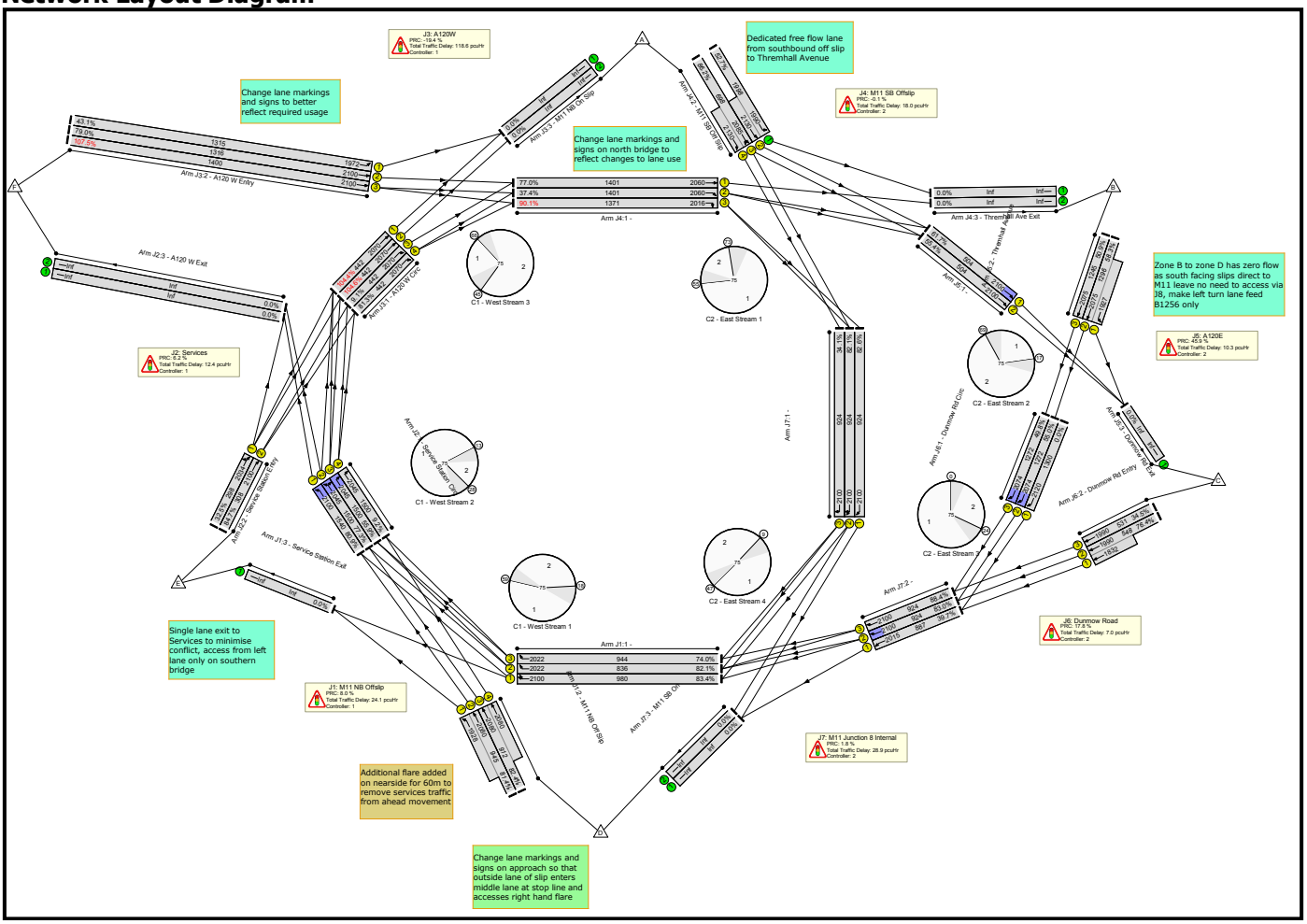
2/3	A120 W Entry Ahead	U	C1:F		1	43	-	1207	2100	1232	98.0%	36.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**-**
1/1	Ahead	U	C2:A		1	49	-	1283	2060	1373	93.1%	21.6
1/2	Ahead	U	C2:A		1	49	-	456	2060	1373	33.2%	4.6
1/3	Right	U	C2:A		1	49	-	1008	2016	1344	75.0%	7.2
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	1280	1990:2130	2008	63.7%	4.0
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	14	-	469	2085:2130	517	90.8%	11.7
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.1%**	**-**
1/1	Ahead	U	C2:C		1	15	-	311	2100	448	69.4%	7.2
1/2	Ahead	U	C2:C		1	15	-	320	2100	448	71.4%	7.4
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	49	-	1111	2075:1927	1356	81.9%	18.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	49	-	1067	2075	1300	82.1%	19.1
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	37	-	0	2120	1074	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	37	-	1019	2074	1051	97.0%	30.3
1/3	Dunmow Rd Circ Right	U	C2:E		1	37	-	1067	2074	1051	101.5%	43.4
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	27	-	483	1990:1832	914	52.8%	5.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	27	-	262	1990	743	35.3%	4.2
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**103.0%**	**-**
1/1	Right	U	C2:H		1	19	-	556	2100	560	99.3%	22.2
1/2	Right Right2	U	C2:H		1	19	-	556	2100	560	99.3%	22.2
1/3	Right	U	C2:H		1	19	-	365	2100	560	65.2%	8.5
2/1	Ahead	U	C2:G		1	45	-	176	2015	1236	14.2%	3.7

2/2	Ahead	U	C2:G		1	45	-	1326	2100	1288	103.0%	58.5
2/3	Ahead	U	C2:G		1	45	-	1329	2100	1288	101.9%	53.2

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	38.75	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	21.87	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	68.14	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	17.63	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	9.7	Total Delay for Signalled Lanes (pcuHr):	17.12	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-12.8	Total Delay for Signalled Lanes (pcuHr):	40.04	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-14.4	Total Delay for Signalled Lanes (pcuHr):	96.27	Cycle Time (s):	75
	PRC Over All Lanes (%):	-14.4	Total Delay Over All Lanes(pcuHr):	301.97		

Scenario 5: 'AM 2033 Scenario 10' (FG5: 'AM 2033 UDC Spatial Option H', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**107.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**83.4%**	-
1/1	Ahead Right	U	C1:A		1	34	-	818	2100	980	83.4%	17.0
1/2	Right	U	C1:A		1	34	-	686	2022	836	82.1%	15.3
1/3	Right	U	C1:A		1	34	-	698	2022	944	74.0%	3.1
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	29	-	769	2080:1928	945	81.4%	13.8
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	29	-	751	2080:2080	912	82.4%	14.2
J2: Services	-	-	-		-	-	-	-	-	-	**84.7%**	-
1/1	Service Station Circ Left	U	C1:C		1	54	-	1246	2100	1540	80.9%	7.8
1/2	Service Station Circ Left Right	U	C1:C		1	54	-	1159	2045	1500	77.3%	12.1
1/3	Service Station Circ Right	U	C1:C		1	54	-	838	2045	1500	55.9%	12.8
1/4	Service Station Circ Right	U	C1:C		1	54	-	138	2045	1500	9.2%	0.6
2/1	Service Station Entry Left Ahead	U	C1:D		1	10	-	97	2034	298	32.5%	2.0
2/2	Service Station Entry Ahead	U	C1:D		1	10	-	261	2100	308	84.7%	7.8
J3: A120W	-	-	-		-	-	-	-	-	-	**107.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	15	-	461	2070	442	104.4%	26.6
1/2	A120 W Circ Ahead	U	C1:E		1	15	-	462	2070	442	104.6%	27.0
1/3	A120 W Circ Right	U	C1:E		1	15	-	40	2070	442	9.1%	0.6
1/4	A120 W Circ Right	U	C1:E		1	15	-	359	2070	442	81.3%	9.5
2/1	A120 W Entry Left	U	C1:F		1	49	-	566	1972	1315	43.1%	5.9
2/2	A120 W Entry Ahead	U	C1:F		1	49	-	1039	2100	1316	79.0%	17.7

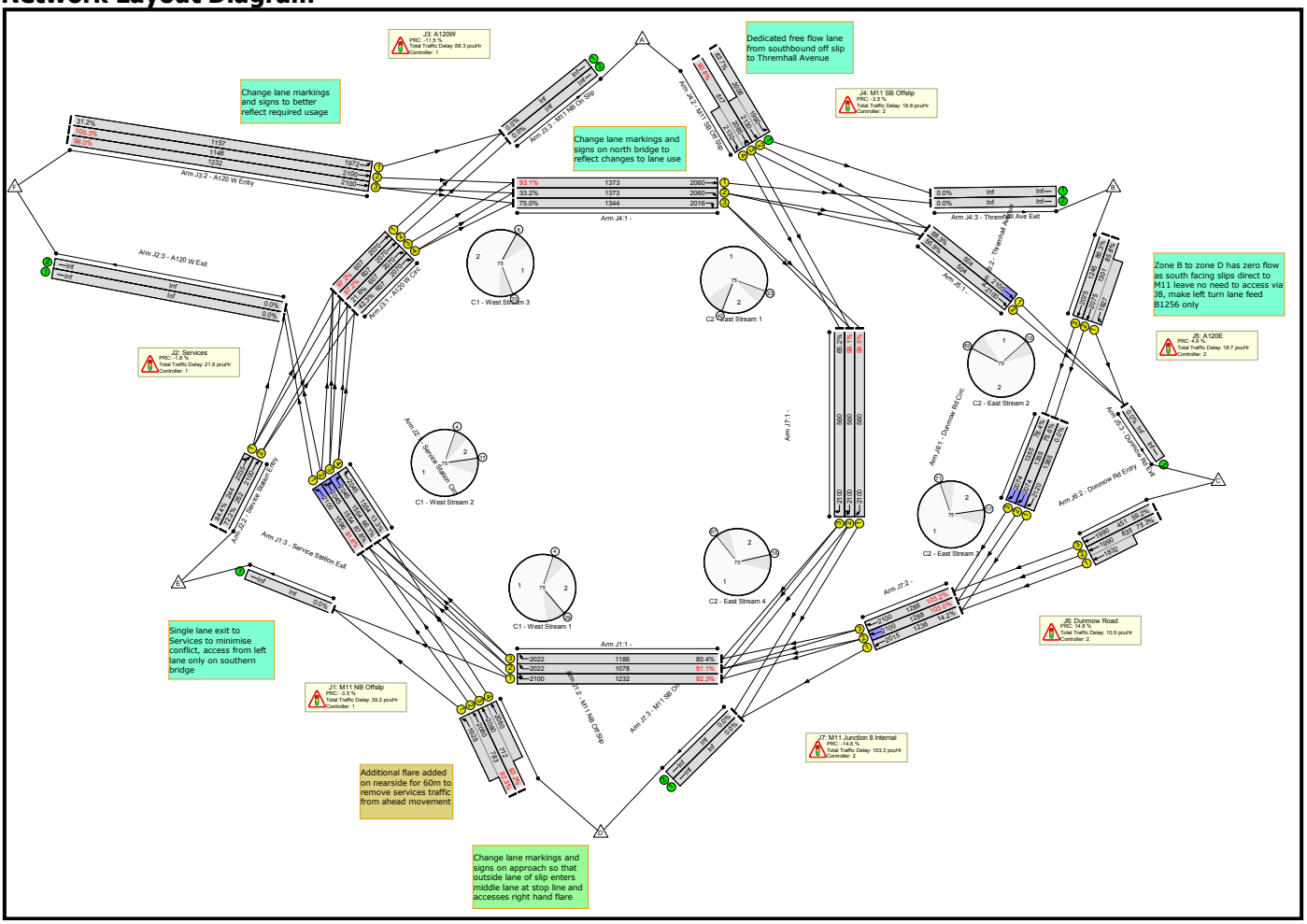
2/3	A120 W Entry Ahead	U	C1:F		1	49	-	1505	2100	1400	107.5%	92.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.1%**	**-**
1/1	Ahead	U	C2:A		1	50	-	1079	2060	1401	77.0%	9.2
1/2	Ahead	U	C2:A		1	50	-	554	2060	1401	37.4%	4.1
1/3	Right	U	C2:A		1	50	-	1310	2016	1371	90.1%	21.7
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	1054	1990:2130	1998	52.7%	1.7
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	13	-	602	2085:2130	698	86.2%	9.2
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.7%**	**-**
1/1	Ahead	U	C2:C		1	17	-	326	2100	504	61.7%	5.9
1/2	Ahead	U	C2:C		1	17	-	294	2100	504	55.4%	4.4
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	47	-	755	2075:1927	1296	58.3%	9.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	47	-	634	2075	1245	50.9%	8.1
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.4%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	45	-	0	2120	1300	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	45	-	700	2074	1272	55.0%	0.9
1/3	Dunmow Rd Circ Right	U	C2:E		1	45	-	634	2074	1272	49.8%	0.8
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	419	1990:1832	548	76.4%	8.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	183	1990	531	34.5%	3.3
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.4%**	**-**
1/1	Right	U	C2:H		1	32	-	803	2100	924	82.6%	18.2
1/2	Right Right2	U	C2:H		1	32	-	794	2100	924	82.1%	12.5
1/3	Right	U	C2:H		1	32	-	315	2100	924	34.1%	1.0
2/1	Ahead	U	C2:G		1	32	-	352	2015	887	39.7%	1.0

2/2	Ahead	U	C2:G		1	32	-	767	2100	924	83.0%	14.2
2/3	Ahead	U	C2:G		1	32	-	817	2100	924	88.4%	15.7

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	8.0	Total Delay for Signalled Lanes (pcuHr):	24.11	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	6.2	Total Delay for Signalled Lanes (pcuHr):	12.40	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-19.4	Total Delay for Signalled Lanes (pcuHr):	118.58	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-0.1	Total Delay for Signalled Lanes (pcuHr):	16.97	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	45.9	Total Delay for Signalled Lanes (pcuHr):	10.31	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	6.98	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	1.8	Total Delay for Signalled Lanes (pcuHr):	28.94	Cycle Time (s):	75
	PRC Over All Lanes (%):	-19.4	Total Delay Over All Lanes(pcuHr):	219.32		

Scenario 6: 'PM 2033 Scenario 10' (FG6: 'PM 2033 UDC Spatial Option H ', Plan 2: 'PM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**103.2%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**93.2%**	-
1/1	Ahead Right	U	C1:A		1	43	-	1165	2100	1232	92.3%	23.5
1/2	Right	U	C1:A		1	43	-	1003	2022	1078	91.1%	22.8
1/3	Right	U	C1:A		1	43	-	983	2022	1186	80.4%	7.1
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	20	-	723	2080:1928	783	92.3%	15.7
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	20	-	663	2080:2080	712	93.2%	16.0
J2: Services	-	-	-		-	-	-	-	-	-	**91.6%**	-
1/1	Service Station Circ Left	U	C1:C		1	56	-	1489	2100	1596	91.6%	19.9
1/2	Service Station Circ Left Right	U	C1:C		1	56	-	1382	2045	1554	87.8%	15.7
1/3	Service Station Circ Right	U	C1:C		1	56	-	1061	2045	1554	66.1%	4.0
1/4	Service Station Circ Right	U	C1:C		1	56	-	206	2045	1554	13.3%	2.9
2/1	Service Station Entry Left Ahead	U	C1:D		1	8	-	206	2035	244	84.4%	6.6
2/2	Service Station Entry Ahead	U	C1:D		1	8	-	182	2100	252	72.2%	4.9
J3: A120W	-	-	-		-	-	-	-	-	-	**100.3%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	21	-	607	2070	607	97.2%	20.7
1/2	A120 W Circ Ahead	U	C1:E		1	21	-	607	2070	607	97.2%	20.8
1/3	A120 W Circ Right	U	C1:E		1	21	-	131	2070	607	21.6%	1.2
1/4	A120 W Circ Right	U	C1:E		1	21	-	257	2070	607	42.3%	1.4
2/1	A120 W Entry Left	U	C1:F		1	43	-	361	1972	1157	31.2%	3.9
2/2	A120 W Entry Ahead	U	C1:F		1	43	-	1152	2100	1148	100.3%	42.1

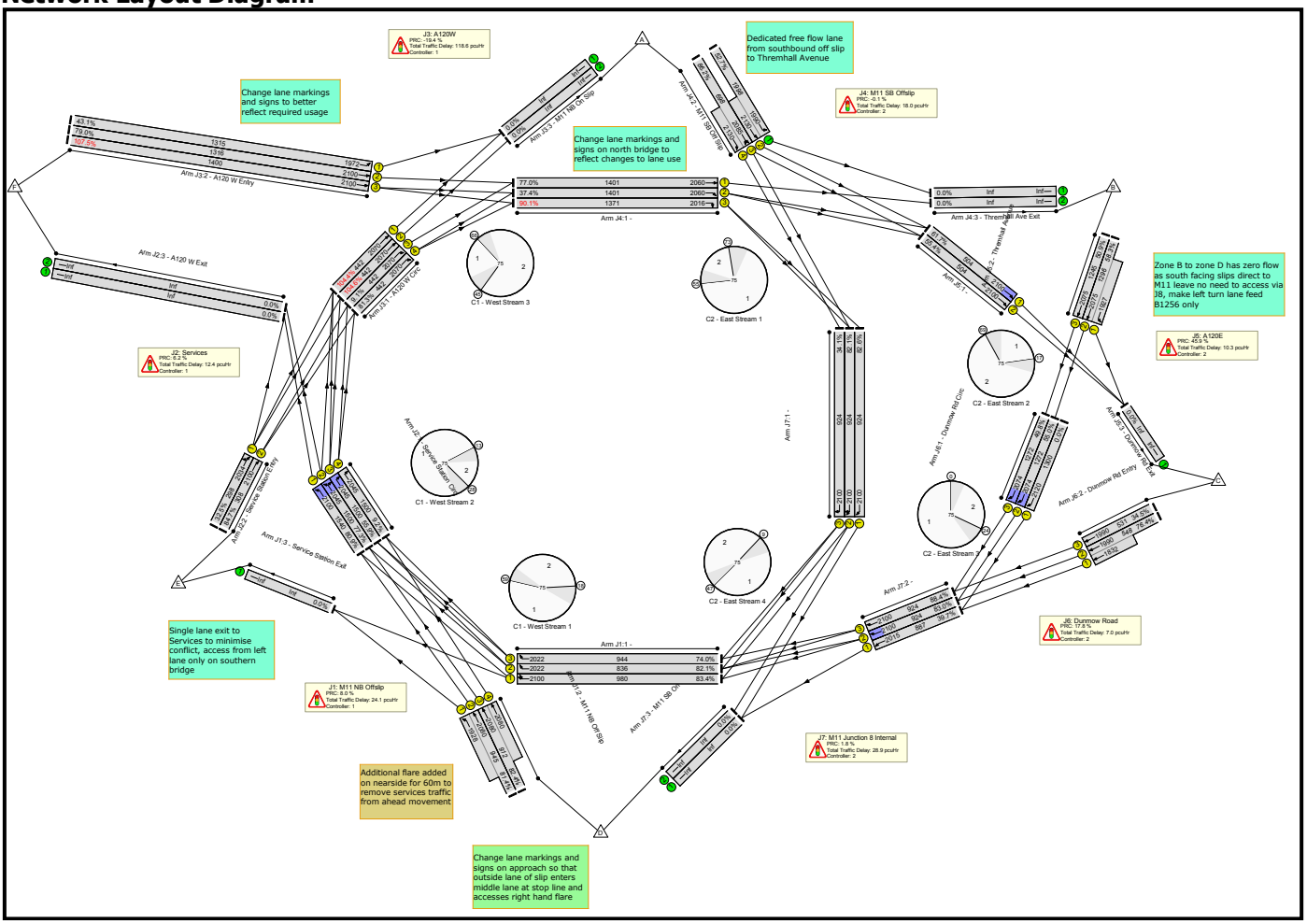
2/3	A120 W Entry Ahead	U	C1:F		1	43	-	1207	2100	1232	98.0%	36.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**-**
1/1	Ahead	U	C2:A		1	49	-	1283	2060	1373	93.1%	21.6
1/2	Ahead	U	C2:A		1	49	-	456	2060	1373	33.2%	4.6
1/3	Right	U	C2:A		1	49	-	1008	2016	1344	75.0%	7.2
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	1280	1990:2130	2008	63.7%	4.0
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	14	-	469	2085:2130	517	90.8%	11.7
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**85.8%**	**-**
1/1	Ahead	U	C2:C		1	17	-	344	2100	504	68.3%	7.7
1/2	Ahead	U	C2:C		1	17	-	287	2100	504	56.9%	6.0
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	47	-	1116	2075:1927	1301	85.8%	20.7
2/3	Thremhall Avenue Ahead	U	C2:D		1	47	-	1062	2075	1245	85.3%	20.8
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**78.4%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	48	-	0	2120	1385	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	48	-	1024	2074	1355	75.6%	1.8
1/3	Dunmow Rd Circ Right	U	C2:E		1	48	-	1062	2074	1355	78.4%	2.1
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	16	-	478	1990:1832	635	75.3%	7.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	16	-	267	1990	451	59.2%	5.6
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**103.2%**	**-**
1/1	Right	U	C2:H		1	19	-	557	2100	560	99.5%	22.4
1/2	Right Right2	U	C2:H		1	19	-	555	2100	560	99.1%	22.0
1/3	Right	U	C2:H		1	19	-	365	2100	560	65.2%	8.5
2/1	Ahead	U	C2:G		1	45	-	176	2015	1236	14.2%	3.7

2/2	Ahead	U	C2:G		1	45	-	1326	2100	1288	103.0%	58.5
2/3	Ahead	U	C2:G		1	45	-	1329	2100	1288	103.2%	59.7

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	39.22	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-1.8	Total Delay for Signalled Lanes (pcuHr):	21.83	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	68.32	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	17.61	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	4.9	Total Delay for Signalled Lanes (pcuHr):	18.68	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	14.8	Total Delay for Signalled Lanes (pcuHr):	10.92	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-14.6	Total Delay for Signalled Lanes (pcuHr):	103.25	Cycle Time (s):	75
	PRC Over All Lanes (%):	-14.6	Total Delay Over All Lanes(pcuHr):	281.97		

Scenario 7: 'AM 2033 Scenario 11' (FG7: 'AM 2033 UDC Spatial Option I ', Plan 1: 'AM Existing')

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**107.5%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**83.4%**	-
1/1	Ahead Right	U	C1:A		1	34	-	818	2100	980	83.4%	17.0
1/2	Right	U	C1:A		1	34	-	686	2022	836	82.1%	15.3
1/3	Right	U	C1:A		1	34	-	698	2022	944	74.0%	3.1
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	29	-	769	2080:1928	945	81.4%	13.8
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	29	-	751	2080:2080	912	82.4%	14.2
J2: Services	-	-	-		-	-	-	-	-	-	**84.7%**	-
1/1	Service Station Circ Left	U	C1:C		1	54	-	1246	2100	1540	80.9%	7.8
1/2	Service Station Circ Left Right	U	C1:C		1	54	-	1159	2045	1500	77.3%	12.1
1/3	Service Station Circ Right	U	C1:C		1	54	-	838	2045	1500	55.9%	12.8
1/4	Service Station Circ Right	U	C1:C		1	54	-	138	2045	1500	9.2%	0.6
2/1	Service Station Entry Left Ahead	U	C1:D		1	10	-	97	2034	298	32.5%	2.0
2/2	Service Station Entry Ahead	U	C1:D		1	10	-	261	2100	308	84.7%	7.8
J3: A120W	-	-	-		-	-	-	-	-	-	**107.5%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	15	-	461	2070	442	104.4%	26.6
1/2	A120 W Circ Ahead	U	C1:E		1	15	-	462	2070	442	104.6%	27.0
1/3	A120 W Circ Right	U	C1:E		1	15	-	40	2070	442	9.1%	0.6
1/4	A120 W Circ Right	U	C1:E		1	15	-	359	2070	442	81.3%	9.5
2/1	A120 W Entry Left	U	C1:F		1	49	-	566	1972	1315	43.1%	5.9
2/2	A120 W Entry Ahead	U	C1:F		1	49	-	1039	2100	1316	79.0%	17.7

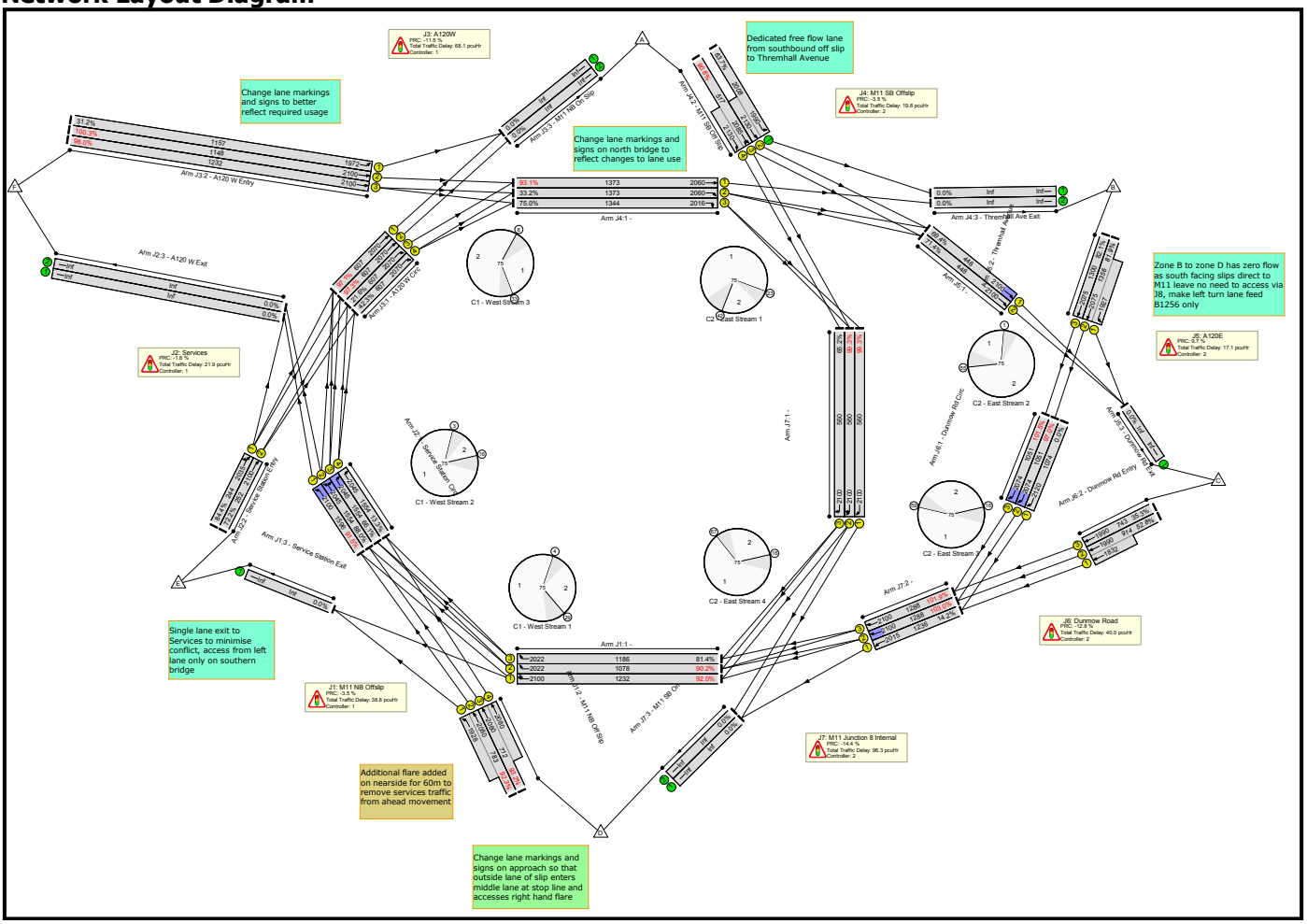
2/3	A120 W Entry Ahead	U	C1:F		1	49	-	1505	2100	1400	107.5%	92.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**90.1%**	**-**
1/1	Ahead	U	C2:A		1	50	-	1079	2060	1401	77.0%	9.2
1/2	Ahead	U	C2:A		1	50	-	554	2060	1401	37.4%	4.1
1/3	Right	U	C2:A		1	50	-	1310	2016	1371	90.1%	21.7
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	1054	1990:2130	1998	52.7%	1.7
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	13	-	602	2085:2130	698	86.2%	9.2
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**61.7%**	**-**
1/1	Ahead	U	C2:C		1	17	-	326	2100	504	61.7%	5.9
1/2	Ahead	U	C2:C		1	17	-	294	2100	504	55.4%	4.4
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	47	-	755	2075:1927	1296	58.3%	9.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	47	-	634	2075	1245	50.9%	8.1
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**76.4%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	45	-	0	2120	1300	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	45	-	700	2074	1272	55.0%	0.9
1/3	Dunmow Rd Circ Right	U	C2:E		1	45	-	634	2074	1272	49.8%	0.8
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	419	1990:1832	548	76.4%	8.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	19	-	183	1990	531	34.5%	3.3
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**88.4%**	**-**
1/1	Right	U	C2:H		1	32	-	803	2100	924	82.6%	18.2
1/2	Right Right2	U	C2:H		1	32	-	794	2100	924	82.1%	12.5
1/3	Right	U	C2:H		1	32	-	315	2100	924	34.1%	1.0
2/1	Ahead	U	C2:G		1	32	-	352	2015	887	39.7%	1.0

2/2	Ahead	U	C2:G		1	32	-	767	2100	924	83.0%	14.2
2/3	Ahead	U	C2:G		1	32	-	817	2100	924	88.4%	15.7

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	8.0	Total Delay for Signalled Lanes (pcuHr):	24.11	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	6.2	Total Delay for Signalled Lanes (pcuHr):	12.40	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-19.4	Total Delay for Signalled Lanes (pcuHr):	118.58	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-0.1	Total Delay for Signalled Lanes (pcuHr):	16.97	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	45.9	Total Delay for Signalled Lanes (pcuHr):	10.31	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	17.8	Total Delay for Signalled Lanes (pcuHr):	6.98	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	1.8	Total Delay for Signalled Lanes (pcuHr):	28.94	Cycle Time (s):	75
	PRC Over All Lanes (%):	-19.4	Total Delay Over All Lanes(pcuHr):	219.32		

Scenario 8: 'PM 2033 Scenario 11' (FG8: 'PM 2033 UDC Spatial Option I', Plan 2: 'PM Existing')

Network Layout Diagram



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Mean Max Queue (pcu)
Network: M11 J8 A120 Option 3 Linsig Assessment	-	-	-		-	-	-	-	-	-	**103.0%**	-
J1: M11 NB Offslip	-	-	-		-	-	-	-	-	-	**93.2%**	-
1/1	Ahead Right	U	C1:A		1	43	-	1162	2100	1232	92.0%	22.8
1/2	Right	U	C1:A		1	43	-	993	2022	1078	90.2%	22.2
1/3	Right	U	C1:A		1	43	-	996	2022	1186	81.4%	8.4
2/2+2/1	M11 NB Off Slip Ahead Ahead2	U	C1:B		1	20	-	723	2080:1928	783	92.3%	15.7
2/3+2/4	M11 NB Off Slip Ahead	U	C1:B		1	20	-	663	2080:2080	712	93.2%	16.0
J2: Services	-	-	-		-	-	-	-	-	-	**91.5%**	-
1/1	Service Station Circ Left	U	C1:C		1	56	-	1486	2100	1596	91.5%	20.2
1/2	Service Station Circ Left Right	U	C1:C		1	56	-	1385	2045	1554	88.0%	16.0
1/3	Service Station Circ Right	U	C1:C		1	56	-	1061	2045	1554	66.1%	4.4
1/4	Service Station Circ Right	U	C1:C		1	56	-	206	2045	1554	13.3%	2.8
2/1	Service Station Entry Left Ahead	U	C1:D		1	8	-	206	2035	244	84.4%	6.6
2/2	Service Station Entry Ahead	U	C1:D		1	8	-	182	2100	252	72.2%	4.9
J3: A120W	-	-	-		-	-	-	-	-	-	**100.3%**	-
1/1	A120 W Circ Ahead	U	C1:E		1	21	-	607	2070	607	97.1%	20.7
1/2	A120 W Circ Ahead	U	C1:E		1	21	-	607	2070	607	97.3%	20.8
1/3	A120 W Circ Right	U	C1:E		1	21	-	131	2070	607	21.6%	1.2
1/4	A120 W Circ Right	U	C1:E		1	21	-	257	2070	607	42.3%	1.2
2/1	A120 W Entry Left	U	C1:F		1	43	-	361	1972	1157	31.2%	3.9
2/2	A120 W Entry Ahead	U	C1:F		1	43	-	1152	2100	1148	100.3%	42.1

2/3	A120 W Entry Ahead	U	C1:F		1	43	-	1207	2100	1232	98.0%	36.4
J4: M11 SB Offslip	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**93.1%**	**-**
1/1	Ahead	U	C2:A		1	49	-	1283	2060	1373	93.1%	21.6
1/2	Ahead	U	C2:A		1	49	-	456	2060	1373	33.2%	4.6
1/3	Right	U	C2:A		1	49	-	1008	2016	1344	75.0%	7.2
2/1+2/2	M11 SB Off Slip Left Ahead	U	- C2:B		-	-	-	1280	1990:2130	2008	63.7%	4.0
2/3+2/4	M11 SB Off Slip Ahead Ahead2	U	C2:B		1	14	-	469	2085:2130	517	90.8%	11.7
J5: A120E	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**82.1%**	**-**
1/1	Ahead	U	C2:C		1	15	-	311	2100	448	69.4%	7.2
1/2	Ahead	U	C2:C		1	15	-	320	2100	448	71.4%	7.4
2/2+2/1	Thremhall Avenue Left Ahead	U	C2:D		1	49	-	1111	2075:1927	1356	81.9%	18.4
2/3	Thremhall Avenue Ahead	U	C2:D		1	49	-	1067	2075	1300	82.1%	19.1
J6: Dunmow Road	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**101.5%**	**-**
1/1	Dunmow Rd Circ Right	U	C2:E		1	37	-	0	2120	1074	0.0%	0.0
1/2	Dunmow Rd Circ Right	U	C2:E		1	37	-	1019	2074	1051	97.0%	30.3
1/3	Dunmow Rd Circ Right	U	C2:E		1	37	-	1067	2074	1051	101.5%	43.4
2/2+2/1	Dunmow Rd Entry Ahead	U	C2:F		1	27	-	483	1990:1832	914	52.8%	5.2
2/3	Dunmow Rd Entry Ahead	U	C2:F		1	27	-	262	1990	743	35.3%	4.2
J7: M11 Junction 8 Internal	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**103.0%**	**-**
1/1	Right	U	C2:H		1	19	-	556	2100	560	99.3%	22.2
1/2	Right Right2	U	C2:H		1	19	-	556	2100	560	99.3%	22.2
1/3	Right	U	C2:H		1	19	-	365	2100	560	65.2%	8.5
2/1	Ahead	U	C2:G		1	45	-	176	2015	1236	14.2%	3.7

2/2	Ahead	U	C2:G		1	45	-	1326	2100	1288	103.0%	58.5
2/3	Ahead	U	C2:G		1	45	-	1329	2100	1288	101.9%	53.2

C1 - West	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	38.75	Cycle Time (s):	75
C1 - West	Stream: 2 PRC for Signalled Lanes (%):	-1.6	Total Delay for Signalled Lanes (pcuHr):	21.87	Cycle Time (s):	75
C1 - West	Stream: 3 PRC for Signalled Lanes (%):	-11.5	Total Delay for Signalled Lanes (pcuHr):	68.14	Cycle Time (s):	75
C2 - East	Stream: 1 PRC for Signalled Lanes (%):	-3.5	Total Delay for Signalled Lanes (pcuHr):	17.63	Cycle Time (s):	75
C2 - East	Stream: 2 PRC for Signalled Lanes (%):	9.7	Total Delay for Signalled Lanes (pcuHr):	17.12	Cycle Time (s):	75
C2 - East	Stream: 3 PRC for Signalled Lanes (%):	-12.8	Total Delay for Signalled Lanes (pcuHr):	40.04	Cycle Time (s):	75
C2 - East	Stream: 4 PRC for Signalled Lanes (%):	-14.4	Total Delay for Signalled Lanes (pcuHr):	96.27	Cycle Time (s):	75
	PRC Over All Lanes (%):	-14.4	Total Delay Over All Lanes(pcuHr):	301.97		

A120/A1250 Existing Layout

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.0.1.4646 [] © Copyright TRL Limited, 2016
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Filename: A120_A1250 Junctions 9 2016 V2_WYG.j9
Path: C:\Users\Andrew.Thurston\Desktop\WYG modelling\A120_A1250 Arcady Models
Report generation date: 17/08/2016 08:49:06

»(Default Analysis Set) - A120_A1250 Rbt, AM_2014
»(Default Analysis Set) - A120_A1250 Rbt, PM_2014
»(Default Analysis Set) - A120_A1250 Rbt, AM_2033 Ref case
»(Default Analysis Set) - A120_A1250 Rbt, PM_2033 Ref case
»(Default Analysis Set) - A120_A1250 Rbt, AM_2033 Scenario 10
»(Default Analysis Set) - A120_A1250 Rbt, PM_2033 Scenario 10
»(Default Analysis Set) - A120_A1250 Rbt, AM_2033 Scenario 11
»(Default Analysis Set) - A120_A1250 Rbt, PM_2033 Scenario 11

Summary of junction performance

	AM_2014				PM_2014				AM_2033 Ref case				PM_2033 Ref case			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - Link to Junction 8	2.2	4.58	0.67	A	1.8	4.03	0.62	A	104.0	119.23	1.07	F	210.4	268.40	1.15	F
B - Dunmow Road	1.0	5.62	0.49	A	1.8	7.93	0.62	A	444.1	1251.52	1.55	F	791.2	2686.73	1.87	F
C - A120 West	0.9	3.68	0.46	A	0.7	3.33	0.39	A	13.0	30.62	0.94	D	2.6	7.23	0.70	A
D - Birchanger Lane	0.1	4.64	0.05	A	0.1	4.78	0.09	A	0.2	11.83	0.17	B	0.2	7.91	0.16	A

	AM_2033 Scenario H				PM_2033 Scenario H				AM_2033 Scenario I				PM_2033 Scenario I			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - Link to Junction 8	258.7	347.14	1.18	F	334.1	463.45	1.23	F	200.8	252.44	1.14	F	302.3	418.39	1.21	F
B - Dunmow Road	664.7	2073.05	1.70	F	994.0	3351.52	2.01	F	621.8	1940.31	1.67	F	919.7	3106.84	1.96	F
C - A120 West	33.3	67.24	1.01	F	4.0	10.13	0.79	B	28.1	58.89	0.99	F	3.5	9.02	0.76	A
D - Birchanger Lane	0.2	13.33	0.19	B	0.2	9.17	0.18	A	0.2	13.11	0.18	B	0.2	8.75	0.17	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	A120_A1250 Rbt
Location	
Site number	
Date	17/08/2016
Version	
Status	
Identifier	
Client	WYG
Jobnumber	
Enumerator	ATUM\Andrew.Thurston
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	A120_A1250 Rbt	AM_2014	ONE HOUR	07:45	09:15	15	
D2	A120_A1250 Rbt	PM_2014	ONE HOUR	16:45	18:15	15	
D3	A120_A1250 Rbt	AM_2033 Ref case	ONE HOUR	07:45	09:15	15	
D4	A120_A1250 Rbt	PM_2033 Ref case	ONE HOUR	16:45	18:15	15	
D5	A120_A1250 Rbt	AM_2033 Scenario 10	ONE HOUR	07:45	09:15	15	
D6	A120_A1250 Rbt	PM_2033 Scenario 10	ONE HOUR	16:45	18:15	15	
D7	A120_A1250 Rbt	AM_2033 Scenario 11	ONE HOUR	07:45	09:15	15	
D8	A120_A1250 Rbt	PM_2033 Scenario 11	ONE HOUR	16:45	18:15	15	

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	(Default Analysis Set)		100.000	100.000

(Default Analysis Set) - A120_A1250 Rbt, AM_2014

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	0.67	4.58	2.2	A	1442	2162
B - Dunmow Road	0.49	5.62	1.0	A	563	845
C - A120 West	0.46	3.68	0.9	A	764	1147
D - Birchanger Lane	0.05	4.64	0.1	A	41	62

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1183	296	16	2598	0.455	1179	1085	0.0	0.9	2.784	A
B - Dunmow Road	462	116	697	1535	0.301	460	498	0.0	0.5	3.679	A
C - A120 West	627	157	513	2117	0.296	625	645	0.0	0.5	2.650	A
D - Birchanger Lane	34	8	1067	1115	0.030	34	71	0.0	0.0	3.660	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1412	353	19	2596	0.544	1411	1299	0.9	1.3	3.335	A
B - Dunmow Road	552	138	834	1470	0.376	551	595	0.5	0.7	4.307	A
C - A120 West	749	187	614	2064	0.363	748	771	0.5	0.6	3.007	A
D - Birchanger Lane	40	10	1277	1026	0.039	40	85	0.0	0.0	4.018	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1730	432	23	2594	0.667	1726	1589	1.3	2.2	4.545	A
B - Dunmow Road	676	169	1021	1381	0.489	674	729	0.7	1.0	5.589	A
C - A120 West	917	229	751	1993	0.460	916	944	0.6	0.9	3.675	A
D - Birchanger Lane	50	12	1563	904	0.055	49	104	0.0	0.1	4.635	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1730	432	23	2594	0.667	1730	1592	2.2	2.2	4.581	A
B - Dunmow Road	676	169	1023	1380	0.490	676	730	1.0	1.0	5.621	A
C - A120 West	917	229	753	1992	0.460	917	946	0.9	0.9	3.684	A
D - Birchanger Lane	50	12	1566	903	0.055	50	105	0.1	0.1	4.642	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1412	353	19	2596	0.544	1416	1303	2.2	1.3	3.365	A
B - Dunmow Road	552	138	837	1468	0.376	553	597	1.0	0.7	4.335	A
C - A120 West	749	187	617	2063	0.363	750	774	0.9	0.6	3.018	A
D - Birchanger Lane	40	10	1281	1024	0.040	41	86	0.1	0.0	4.028	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1183	296	16	2598	0.455	1184	1090	1.3	0.9	2.805	A
B - Dunmow Road	462	116	700	1533	0.301	463	500	0.7	0.5	3.701	A
C - A120 West	627	157	516	2116	0.296	628	648	0.6	0.5	2.661	A
D - Birchanger Lane	34	8	1072	1113	0.030	34	72	0.0	0.0	3.668	A

(Default Analysis Set) - A120_A1250 Rbt, PM_2014

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	0.62	4.03	1.8	A	1342	2012
B - Dunmow Road	0.62	7.93	1.8	A	692	1038
C - A120 West	0.39	3.33	0.7	A	637	955
D - Birchanger Lane	0.09	4.78	0.1	A	65	98

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1101	275	20	2596	0.424	1097	1095	0.0	0.8	2.637	A
B - Dunmow Road	568	142	771	1500	0.378	565	346	0.0	0.7	4.224	A
C - A120 West	522	131	565	2090	0.250	521	771	0.0	0.4	2.521	A
D - Birchanger Lane	53	13	1061	1118	0.048	53	25	0.0	0.1	3.719	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1314	329	23	2594	0.507	1313	1311	0.8	1.1	3.089	A
B - Dunmow Road	678	169	922	1428	0.475	677	414	0.7	1.0	5.261	A
C - A120 West	624	156	677	2032	0.307	623	922	0.4	0.5	2.812	A
D - Birchanger Lane	64	16	1270	1029	0.062	64	30	0.1	0.1	4.104	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1610	402	29	2591	0.621	1607	1603	1.1	1.8	4.014	A
B - Dunmow Road	830	208	1129	1330	0.624	827	507	1.0	1.8	7.819	A
C - A120 West	764	191	827	1953	0.391	763	1129	0.5	0.7	3.327	A
D - Birchanger Lane	78	20	1554	907	0.086	78	36	0.1	0.1	4.774	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1610	402	29	2591	0.621	1610	1607	1.8	1.8	4.035	A
B - Dunmow Road	830	208	1131	1329	0.625	830	508	1.8	1.8	7.929	A
C - A120 West	764	191	830	1951	0.392	764	1131	0.7	0.7	3.334	A
D - Birchanger Lane	78	20	1558	906	0.086	78	36	0.1	0.1	4.784	A

17:45 - 18:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	1314	329	23	2594	0.507	1317	1317	1.8	1.1	3.109	A
B - Dunmow Road	678	169	925	1427	0.475	681	415	1.8	1.0	5.334	A
C - A120 West	624	156	681	2029	0.307	625	925	0.7	0.5	2.820	A
D - Birchanger Lane	64	16	1276	1026	0.062	64	30	0.1	0.1	4.117	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1101	275	20	2596	0.424	1102	1101	1.1	0.8	2.654	A
B - Dunmow Road	568	142	774	1498	0.379	569	347	1.0	0.7	4.266	A
C - A120 West	522	131	569	2088	0.250	523	774	0.5	0.4	2.532	A
D - Birchanger Lane	53	13	1067	1115	0.048	54	25	0.1	0.1	3.731	A

(Default Analysis Set) - A120_A1250 Rbt, AM_2033 UDC Reference Case

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	1.07	119.23	104.0	F	2308	3463
B - Dunmow Road	1.55	1251.52	444.1	F	1454	2181
C - A120 West	0.94	30.62	13.0	D	1364	2046
D - Birchanger Lane	0.17	11.83	0.2	B	57	85

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1894	473	16	2598	0.729	1882	2285	0.0	2.9	5.449	A
B - Dunmow Road	1193	298	1138	1326	0.900	1162	760	0.0	7.8	21.247	C
C - A120 West	1119	280	1230	1742	0.642	1111	1070	0.0	1.9	6.202	A
D - Birchanger Lane	47	12	2255	608	0.077	46	87	0.0	0.1	7.040	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2262	565	19	2596	0.871	2246	2558	2.9	6.8	10.837	B
B - Dunmow Road	1425	356	1358	1221	1.166	1211	907	7.8	61.1	115.271	F
C - A120 West	1336	334	1293	1709	0.782	1329	1276	1.9	3.8	10.157	B
D - Birchanger Lane	56	14	2521	495	0.113	56	101	0.1	0.1	9.013	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2770	692	23	2594	1.068	2562	2763	6.8	58.7	54.142	F
B - Dunmow Road	1745	436	1550	1131	1.543	1130	1036	61.1	214.7	447.244	F
C - A120 West	1637	409	1225	1745	0.938	1605	1455	3.8	11.5	24.247	C
D - Birchanger Lane	68	17	2718	411	0.166	68	113	0.1	0.2	11.544	B

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2770	692	23	2594	1.068	2589	2781	58.7	104.0	119.232	F
B - Dunmow Road	1745	436	1565	1123	1.553	1123	1046	214.7	370.1	936.186	F
C - A120 West	1637	409	1219	1748	0.936	1630	1470	11.5	13.0	30.623	D
D - Birchanger Lane	68	17	2736	403	0.169	68	114	0.2	0.2	11.828	B

08:45 - 09:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	2262	565	19	2596	0.871	2569	2521	104.0	27.2	94.995	F
B - Dunmow Road	1425	356	1554	1129	1.262	1129	1035	370.1	444.1	1251.521	F
C - A120 West	1336	334	1224	1745	0.766	1373	1459	13.0	3.8	11.610	B
D - Birchanger Lane	56	14	2484	510	0.109	56	113	0.2	0.1	8.724	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	1894	473	16	2598	0.729	1990	2427	27.2	3.0	7.590	A
B - Dunmow Road	1193	298	1204	1295	0.922	1291	803	444.1	419.5	1203.797	F
C - A120 West	1119	280	1363	1673	0.669	1125	1132	3.8	2.3	7.311	A
D - Birchanger Lane	47	12	2396	548	0.085	47	92	0.1	0.1	7.903	A

(Default Analysis Set) - A120_A1250 Rbt, PM_2033 UDC Reference Case

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	1.15	268.40	210.4	F	2485	3727
B - Dunmow Road	1.87	2686.73	791.2	F	1576	2364
C - A120 West	0.70	7.23	2.6	A	1082	1623
D - Birchanger Lane	0.16	7.91	0.2	A	77	116

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2039	510	19	2596	0.785	2023	2065	0.0	3.9	6.738	A
B - Dunmow Road	1293	323	1406	1199	1.079	1160	636	0.0	33.2	63.098	F
C - A120 West	888	222	1172	1773	0.501	883	1395	0.0	1.1	4.432	A
D - Birchanger Lane	63	16	2021	708	0.089	63	34	0.0	0.1	6.133	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2434	609	23	2594	0.938	2399	2164	3.9	12.6	17.804	C
B - Dunmow Road	1544	386	1668	1075	1.437	1074	755	33.2	150.7	322.572	F
C - A120 West	1060	265	1092	1815	0.584	1058	1650	1.1	1.5	5.225	A
D - Birchanger Lane	76	19	2112	669	0.113	75	38	0.1	0.1	6.663	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2981	745	29	2591	1.151	2581	2353	12.6	112.6	94.133	F
B - Dunmow Road	1891	473	1794	1015	1.863	1015	816	150.7	369.8	930.258	F
C - A120 West	1298	325	1036	1844	0.704	1294	1773	1.5	2.6	7.149	A
D - Birchanger Lane	92	23	2289	594	0.156	92	41	0.1	0.2	7.893	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2981	745	29	2591	1.151	2590	2354	112.6	210.4	228.727	F
B - Dunmow Road	1891	473	1800	1012	1.869	1012	819	369.8	589.6	1711.375	F
C - A120 West	1298	325	1033	1845	0.704	1298	1779	2.6	2.6	7.233	A
D - Birchanger Lane	92	23	2291	593	0.156	92	41	0.2	0.2	7.909	A

17:45 - 18:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	2434	609	23	2594	0.938	2580	2112	210.4	173.9	268.398	F
B - Dunmow Road	1544	386	1793	1015	1.521	1015	810	589.6	721.8	2329.553	F
C - A120 West	1060	265	1036	1844	0.575	1064	1772	2.6	1.5	5.110	A
D - Birchanger Lane	76	19	2060	692	0.109	76	41	0.2	0.1	6.435	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2039	510	20	2596	0.785	2580	1929	173.9	38.6	150.596	F
B - Dunmow Road	1293	323	1793	1015	1.273	1015	806	721.8	791.2	2686.732	F
C - A120 West	888	222	1036	1843	0.482	890	1772	1.5	1.0	4.159	A
D - Birchanger Lane	63	16	1885	766	0.083	63	41	0.1	0.1	5.636	A

(Default Analysis Set) - A120_A1250 Rbt, AM_2033 UDC Option H

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	1.18	347.14	258.7	F	2562	3842
B - Dunmow Road	1.70	2073.05	664.7	F	1581	2371
C - A120 West	1.01	67.24	33.3	F	1471	2207
D - Birchanger Lane	0.19	13.33	0.2	B	57	85

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2102	525	16	2598	0.809	2084	2415	0.0	4.5	7.460	A
B - Dunmow Road	1297	324	1271	1263	1.027	1205	829	0.0	23.0	46.199	E
C - A120 West	1207	302	1273	1720	0.702	1197	1203	0.0	2.5	7.441	A
D - Birchanger Lane	47	12	2385	553	0.084	46	86	0.0	0.1	7.802	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2510	627	19	2596	0.967	2458	2605	4.5	17.5	22.775	C
B - Dunmow Road	1549	387	1499	1155	1.341	1153	978	23.0	121.8	237.159	F
C - A120 West	1441	360	1235	1740	0.828	1432	1417	2.5	4.9	12.465	B
D - Birchanger Lane	56	14	2568	475	0.117	56	98	0.1	0.1	9.444	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	3074	768	23	2594	1.185	2589	2837	17.5	138.7	114.858	F
B - Dunmow Road	1897	474	1579	1117	1.698	1117	1033	121.8	316.8	713.077	F
C - A120 West	1765	441	1203	1756	1.005	1692	1492	4.9	23.3	40.002	E
D - Birchanger Lane	68	17	2792	379	0.180	68	103	0.1	0.2	12.712	B

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	3074	768	23	2594	1.185	2594	2870	138.7	258.7	279.561	F
B - Dunmow Road	1897	474	1582	1115	1.700	1115	1035	316.8	512.1	1342.367	F
C - A120 West	1765	441	1202	1757	1.005	1725	1495	23.3	33.3	67.238	F
D - Birchanger Lane	68	17	2824	365	0.187	68	103	0.2	0.2	13.326	B

08:45 - 09:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	2510	627	19	2596	0.967	2585	2691	258.7	239.8	347.140	F
B - Dunmow Road	1549	387	1577	1118	1.385	1118	1028	512.1	619.8	1827.242	F
C - A120 West	1441	360	1204	1756	0.821	1552	1490	33.3	5.5	27.216	D
D - Birchanger Lane	56	14	2654	438	0.127	56	102	0.2	0.2	10.376	B

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2102	525	16	2598	0.809	2586	2352	239.8	118.6	250.518	F
B - Dunmow Road	1297	324	1577	1118	1.160	1118	1025	619.8	664.7	2073.047	F
C - A120 West	1207	302	1204	1756	0.687	1219	1491	5.5	2.5	7.542	A
D - Birchanger Lane	47	12	2321	580	0.080	47	102	0.2	0.1	7.430	A

(Default Analysis Set) - A120_A1250 Rbt, PM_2033 UDC Option H

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	1.23	463.45	334.1	F	2661	3991
B - Dunmow Road	2.01	3351.52	994.0	F	1704	2556
C - A120 West	0.79	10.13	4.0	B	1212	1817
D - Birchanger Lane	0.18	9.17	0.2	A	77	116

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2183	546	19	2596	0.841	2161	2150	0.0	5.5	8.714	A
B - Dunmow Road	1398	350	1493	1158	1.208	1138	688	0.0	65.0	112.970	F
C - A120 West	994	249	1151	1783	0.557	989	1480	0.0	1.4	4.949	A
D - Birchanger Lane	63	16	2107	672	0.094	63	33	0.0	0.1	6.500	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2607	652	23	2594	1.005	2514	2260	5.5	28.6	32.502	D
B - Dunmow Road	1670	417	1737	1042	1.602	1042	801	65.0	222.0	507.753	F
C - A120 West	1187	297	1060	1831	0.648	1184	1718	1.4	2.0	6.100	A
D - Birchanger Lane	76	19	2208	628	0.120	75	37	0.1	0.1	7.157	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	3193	798	29	2591	1.232	2588	2509	28.6	179.7	150.337	F
B - Dunmow Road	2045	511	1788	1018	2.009	1018	829	222.0	478.8	1245.289	F
C - A120 West	1454	363	1038	1843	0.789	1446	1768	2.0	3.9	9.790	A
D - Birchanger Lane	92	23	2446	527	0.176	92	38	0.1	0.2	9.102	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	3193	798	29	2591	1.232	2591	2516	179.7	330.2	357.513	F
B - Dunmow Road	2045	511	1790	1017	2.011	1017	830	478.8	735.7	2154.400	F
C - A120 West	1454	363	1037	1843	0.789	1453	1770	3.9	4.0	10.130	B
D - Birchanger Lane	92	23	2452	524	0.176	92	38	0.2	0.2	9.174	A

17:45 - 18:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	2607	652	23	2594	1.005	2591	2246	330.2	334.1	463.451	F
B - Dunmow Road	1670	417	1790	1017	1.642	1017	825	735.7	899.0	2896.060	F
C - A120 West	1187	297	1037	1843	0.644	1195	1770	4.0	2.0	6.180	A
D - Birchanger Lane	76	19	2194	635	0.119	76	38	0.2	0.1	7.091	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2183	546	20	2596	0.841	2587	2041	334.1	233.0	394.972	F
B - Dunmow Road	1398	350	1787	1018	1.373	1018	820	899.0	994.0	3351.524	F
C - A120 West	994	249	1038	1843	0.539	997	1767	2.0	1.3	4.697	A
D - Birchanger Lane	63	16	1997	718	0.088	63	38	0.1	0.1	6.046	A

(Default Analysis Set) - A120_A1250 Rbt, AM_2033 UDC Option I

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	1.14	252.44	200.8	F	2472	3708
B - Dunmow Road	1.67	1940.31	621.8	F	1557	2335
C - A120 West	0.99	58.89	28.1	F	1453	2179
D - Birchanger Lane	0.18	13.11	0.2	B	57	85

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2028	507	16	2598	0.781	2013	2402	0.0	3.8	6.607	A
B - Dunmow Road	1277	319	1227	1284	0.995	1207	802	0.0	17.4	37.688	E
C - A120 West	1192	298	1276	1718	0.694	1182	1159	0.0	2.4	7.263	A
D - Birchanger Lane	47	12	2372	558	0.084	46	86	0.0	0.1	7.727	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2422	605	19	2596	0.933	2390	2606	3.8	11.9	16.966	C
B - Dunmow Road	1525	381	1457	1175	1.298	1172	952	17.4	105.7	201.002	F
C - A120 West	1423	356	1254	1729	0.823	1414	1374	2.4	4.8	12.191	B
D - Birchanger Lane	56	14	2569	474	0.118	56	99	0.1	0.1	9.452	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2966	742	23	2594	1.143	2584	2827	11.9	107.5	90.120	F
B - Dunmow Road	1868	467	1575	1119	1.670	1119	1032	105.7	293.0	648.040	F
C - A120 West	1743	436	1208	1754	0.994	1679	1485	4.8	20.7	36.875	E
D - Birchanger Lane	68	17	2782	384	0.178	68	106	0.1	0.2	12.534	B

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2966	742	23	2594	1.143	2593	2858	107.5	200.8	218.388	F
B - Dunmow Road	1868	467	1581	1116	1.674	1116	1036	293.0	480.9	1253.048	F
C - A120 West	1743	436	1206	1755	0.993	1713	1491	20.7	28.1	58.888	F
D - Birchanger Lane	68	17	2813	370	0.184	68	106	0.2	0.2	13.111	B

08:45 - 09:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	2422	605	19	2596	0.933	2582	2655	200.8	160.8	252.439	F
B - Dunmow Road	1525	381	1574	1119	1.363	1119	1028	480.9	582.4	1714.313	F
C - A120 West	1423	356	1209	1753	0.812	1515	1484	28.1	5.1	21.837	C
D - Birchanger Lane	56	14	2618	453	0.123	56	106	0.2	0.2	9.978	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2028	507	16	2598	0.781	2580	2337	160.8	22.7	130.812	F
B - Dunmow Road	1277	319	1573	1120	1.141	1120	1023	582.4	621.8	1940.305	F
C - A120 West	1192	298	1209	1753	0.680	1203	1484	5.1	2.4	7.335	A
D - Birchanger Lane	47	12	2306	586	0.080	47	106	0.2	0.1	7.341	A

(Default Analysis Set) - A120_A1250 Rbt, PM_2033 UDC Option I

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - Link to Junction 8	1.21	418.39	302.3	F	2622	3934
B - Dunmow Road	1.96	3106.84	919.7	F	1656	2485
C - A120 West	0.76	9.02	3.5	A	1172	1757
D - Birchanger Lane	0.17	8.75	0.2	A	77	116

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2151	538	19	2596	0.829	2131	2122	0.0	5.0	8.198	A
B - Dunmow Road	1359	340	1473	1167	1.165	1143	677	0.0	53.9	95.337	F
C - A120 West	961	240	1156	1781	0.540	956	1461	0.0	1.3	4.771	A
D - Birchanger Lane	63	16	2079	684	0.093	63	33	0.0	0.1	6.375	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2569	642	23	2594	0.990	2495	2226	5.0	23.6	28.402	D
B - Dunmow Road	1623	406	1725	1048	1.549	1047	793	53.9	197.8	444.901	F
C - A120 West	1148	287	1066	1828	0.628	1146	1706	1.3	1.8	5.783	A
D - Birchanger Lane	76	19	2174	643	0.117	75	38	0.1	0.1	6.975	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	3146	787	29	2591	1.214	2588	2462	23.6	163.4	135.903	F
B - Dunmow Road	1988	497	1789	1017	1.954	1017	827	197.8	440.3	1134.913	F
C - A120 West	1406	351	1037	1843	0.763	1399	1769	1.8	3.4	8.801	A
D - Birchanger Lane	92	23	2398	547	0.169	92	39	0.1	0.2	8.697	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	3146	787	29	2591	1.214	2591	2467	163.4	302.3	327.011	F
B - Dunmow Road	1988	497	1791	1016	1.956	1016	828	440.3	683.2	1994.699	F
C - A120 West	1406	351	1036	1844	0.763	1405	1771	3.4	3.5	9.024	A
D - Birchanger Lane	92	23	2403	545	0.170	92	39	0.2	0.2	8.749	A

17:45 - 18:00

Arm	Total Demand	Junction Arrivals	Circulating flow	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit)	Start queue	End queue	Delay (s)	LOS

	(PCU/hr)	(PCU)	(PCU/hr)				(PCU/hr)	(PCU)	(PCU)		
A - Link to Junction 8	2569	642	23	2594	0.990	2584	2206	302.3	298.5	418.387	F
B - Dunmow Road	1623	406	1787	1018	1.594	1018	821	683.2	834.3	2688.034	F
C - A120 West	1148	287	1038	1843	0.623	1154	1767	3.5	1.8	5.807	A
D - Birchanger Lane	76	19	2154	651	0.116	76	39	0.2	0.1	6.885	A

18:00 - 18:15

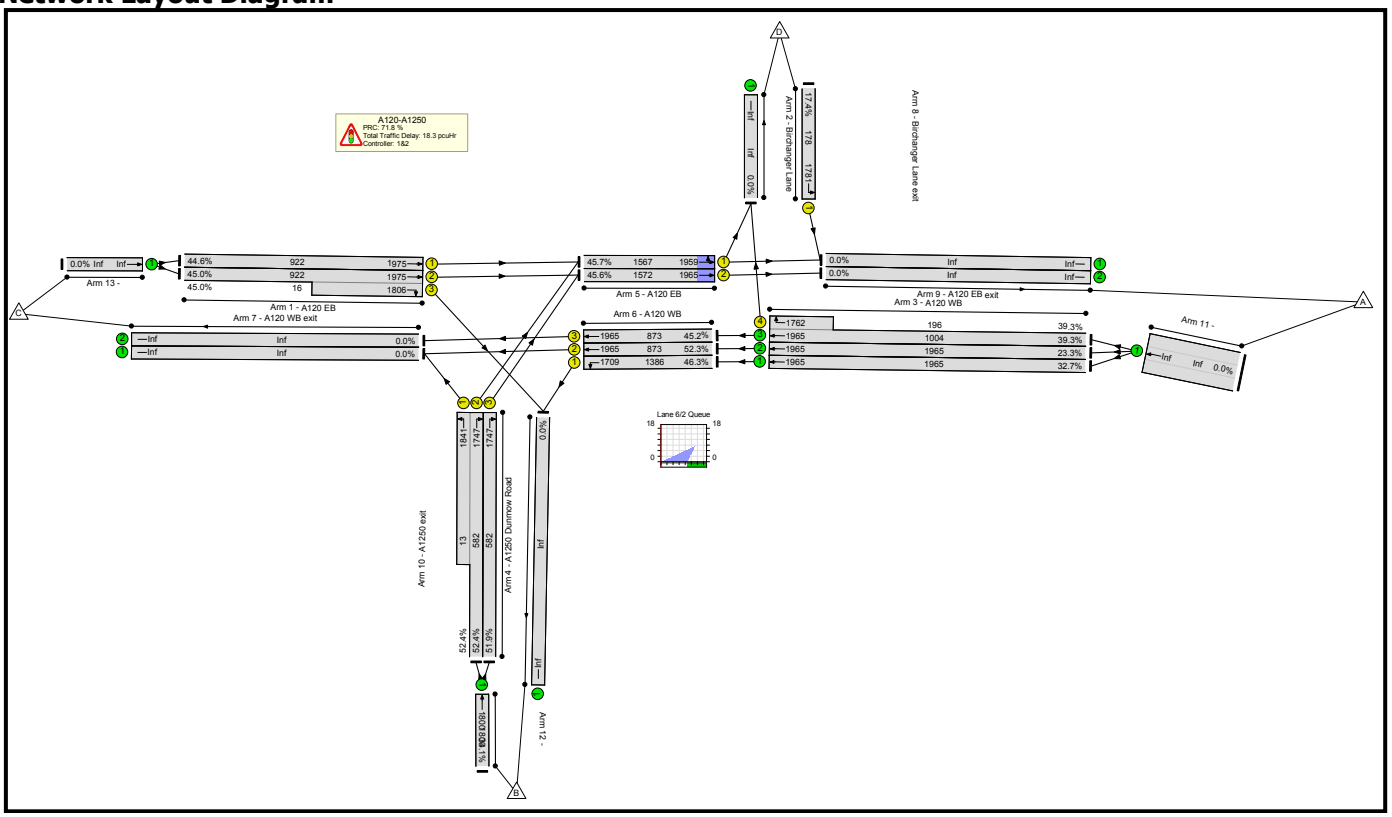
Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	LOS
A - Link to Junction 8	2151	538	20	2596	0.829	2586	2007	298.5	189.7	340.409	F
B - Dunmow Road	1359	340	1788	1018	1.335	1018	818	834.3	919.7	3106.835	F
C - A120 West	961	240	1038	1843	0.522	964	1768	1.8	1.2	4.517	A
D - Birchanger Lane	63	16	1963	733	0.086	63	39	0.1	0.1	5.917	A

A120/A1250 Proposed Layout

A120_A1250 signalised

Project:	**A120/A1250**
Title:	
Location:	
File name:	A120-A1250 signalised jn_V5_WYG.lsg3x
Author:	Andrew Thurston
Company:	Jacobs
Address:	Chelmsford, Essex
Notes:	

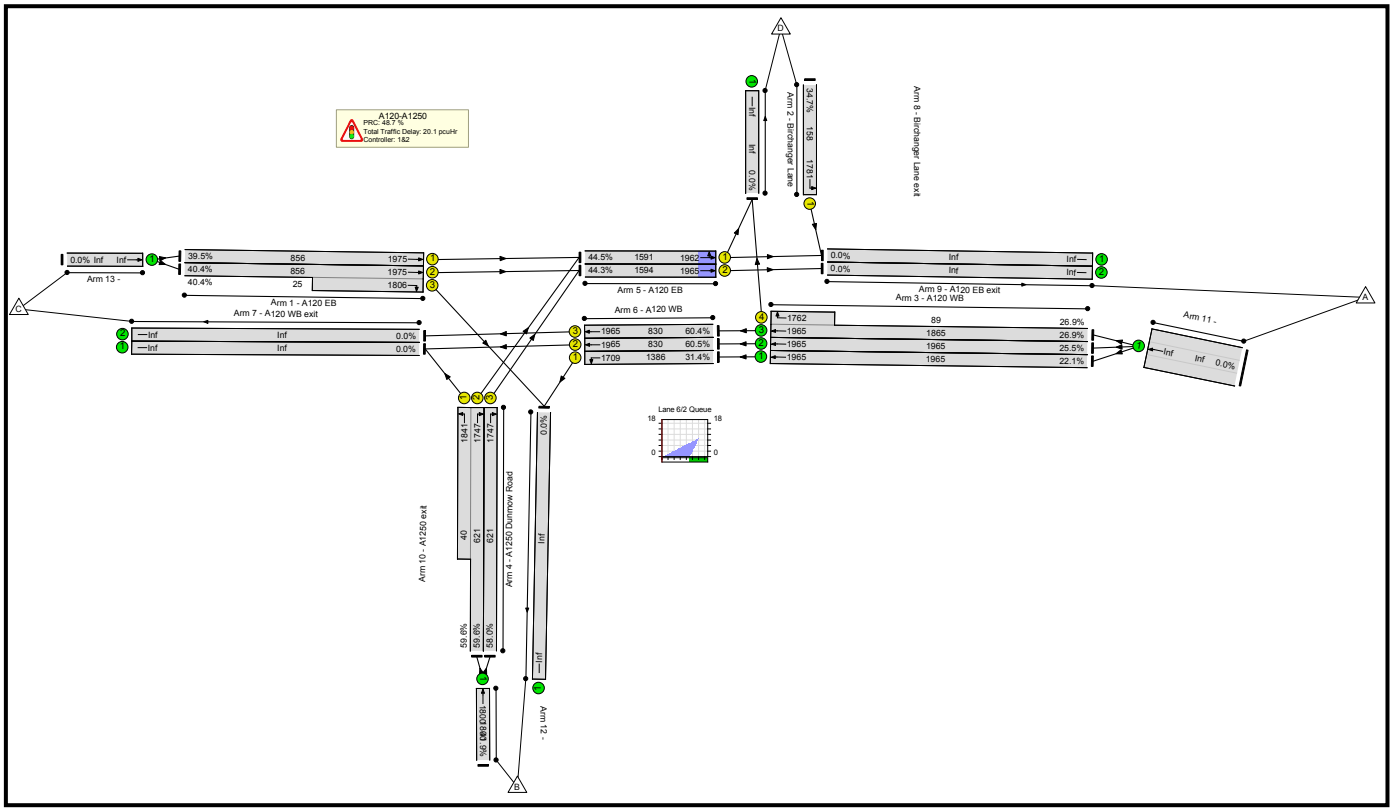
Scenario 1: 'am 2014' (FG1: 'AM Base', Plan 1: 'Network Control Plan 1')
Network Layout Diagram



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.4%**	**0**	**0**	**0**	**18.3**	**-**	**-**
A120-A1250	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**52.4%**	**0**	**0**	**0**	**18.3**	**-**	**-**
1/1	A120 EB Ahead	U	C1:A		2	40	-	411	1975	922	44.6%	-	-	-	1.7	15.2	6.1
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	40:7	-	422	1975:1806	922+16	45.0 : 45.0%	-	-	-	1.8	15.6	6.2
2/1	Birchanger Lane Left	U	C2:C		1	8	-	31	1781	178	17.4%	-	-	-	0.4	49.4	0.8
3/1	A120 WB Ahead	U	-		-	-	-	642	1965	1965	32.7%	-	-	-	0.2	1.4	0.2
3/2	A120 WB Ahead	U	-		-	-	-	457	1965	1965	23.3%	-	-	-	0.2	1.2	0.2
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	472	1965:1762	1004+196	39.3 : 39.3%	-	-	-	1.1	8.5	2.1
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	29:38	-	312	1747:1841	582+13	52.4 : 52.4%	-	-	-	2.6	30.3	6.6
4/3	A1250 Dunmow Road Right	U	C1:E		1	29	-	302	1747	582	51.9%	-	-	-	2.6	30.6	6.6
5/1	A120 EB Left Ahead	U	C2:A		1	71	-	716	1959	1567	45.7%	-	-	-	0.6	3.2	2.0
5/2	A120 EB Ahead	U	C2:A		1	71	-	717	1965	1572	45.6%	-	-	-	0.6	3.2	2.0
6/1	A120 WB Left	U	C1:B	C1:F	1	72	33	642	1709	1386	46.3%	-	-	-	0.9	5.0	5.2
6/2	A120 WB Ahead	U	C1:B		1	39	-	457	1965	873	52.3%	-	-	-	2.8	22.4	8.8
6/3	A120 WB Ahead	U	C1:B		1	39	-	395	1965	873	45.2%	-	-	-	2.3	21.1	7.2
12/1	Ahead	U	-		-	-	-	614	1800	1800	34.1%	-	-	-	0.3	1.5	0.3

C1	PRC for Signalled Lanes (%):	71.8	Total Delay for Signalled Lanes (pcuHr):	14.82	Cycle Time (s):	90
C2	PRC for Signalled Lanes (%):	97.0	Total Delay for Signalled Lanes (pcuHr):	1.71	Cycle Time (s):	90
	PRC Over All Lanes (%):	71.8	Total Delay Over All Lanes(pcuHr):	18.30		

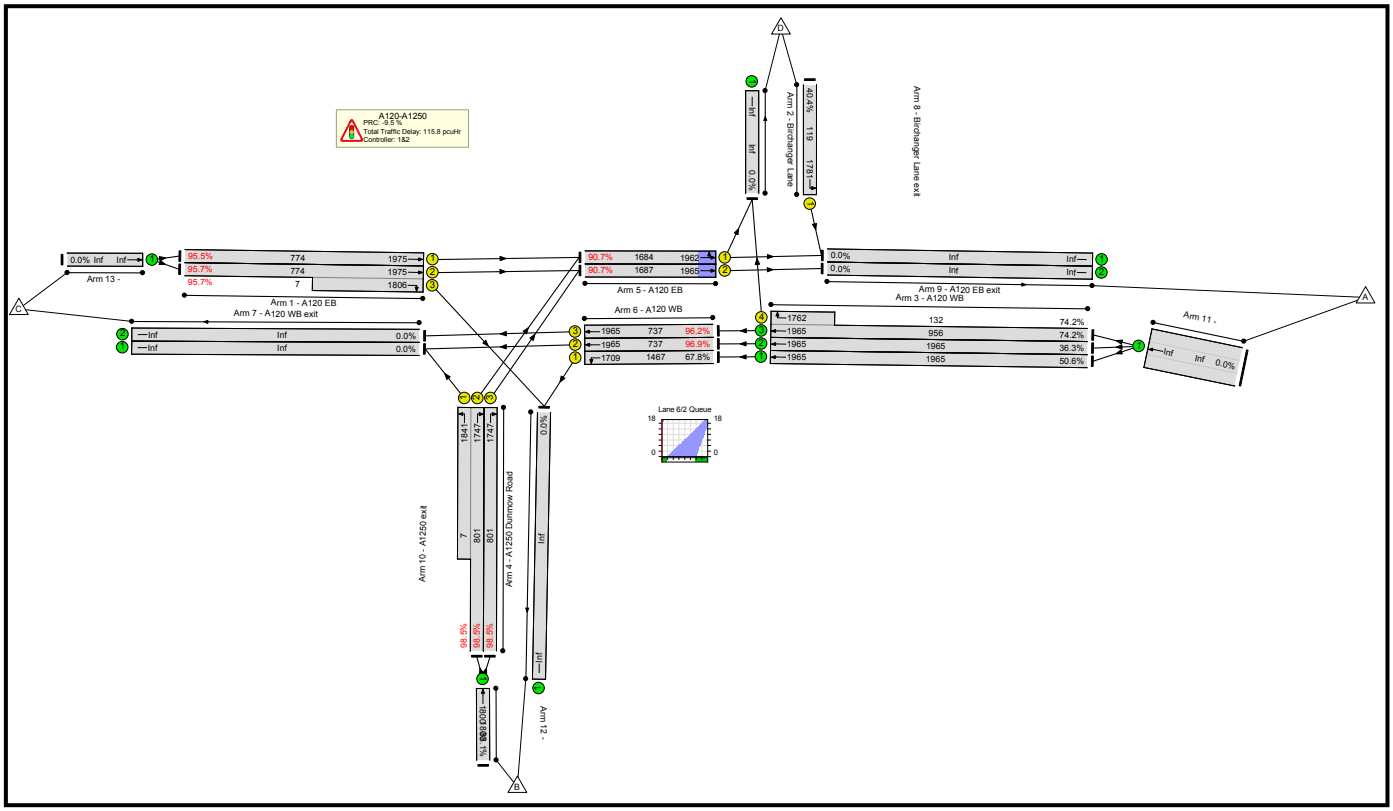
Scenario 2: 'pm 2014' (FG2: 'PM Base', Plan 1: 'Network Control Plan 1')



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**60.5%**	**0**	**0**	**0**	**20.1**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**60.5%**	**0**	**0**	**0**	**20.1**	-	-
1/1	A120 EB Ahead	U	C1:A		2	37	-	338	1975	856	39.5%	-	-	-	1.5	15.8	5.0
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	37:7	-	356	1975:1806	856+25	40.4 : 40.4%	-	-	-	1.6	16.6	5.1
2/1	Birchanger Lane Left	U	C2:C		1	7	-	55	1781	158	34.7%	-	-	-	0.9	55.9	1.5
3/1	A120 WB Ahead	U	-		-	-	-	435	1965	1965	22.1%	-	-	-	0.1	1.2	0.1
3/2	A120 WB Ahead	U	-		-	-	-	502	1965	1965	25.5%	-	-	-	0.2	1.2	0.2
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	525	1965:1762	1865+89	26.9 : 26.9%	-	-	-	0.4	2.9	0.7
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	31:40	-	394	1747:1841	621+40	59.6 : 59.6%	-	-	-	3.3	29.8	8.2
4/3	A1250 Dunmow Road Right	U	C1:E		1	31	-	360	1747	621	58.0%	-	-	-	3.0	30.4	8.0
5/1	A120 EB Left Ahead	U	C2:A		1	72	-	708	1962	1591	44.5%	-	-	-	0.5	2.8	1.4
5/2	A120 EB Ahead	U	C2:A		1	72	-	706	1965	1594	44.3%	-	-	-	0.5	2.8	1.5
6/1	A120 WB Left	U	C1:B	C1:F	1	72	35	435	1709	1386	31.4%	-	-	-	0.5	4.0	2.9
6/2	A120 WB Ahead	U	C1:B		1	37	-	502	1965	830	60.5%	-	-	-	3.6	25.6	10.4
6/3	A120 WB Ahead	U	C1:B		1	37	-	501	1965	830	60.4%	-	-	-	3.6	25.6	10.4
12/1	Ahead	U	-		-	-	-	754	1800	1800	41.9%	-	-	-	0.4	1.7	0.4

C1	PRC for Signalled Lanes (%):	48.7	Total Delay for Signalled Lanes (pcuHr):	17.06	Cycle Time (s): 90
C2	PRC for Signalled Lanes (%):	102.3	Total Delay for Signalled Lanes (pcuHr):	1.94	Cycle Time (s): 90
	PRC Over All Lanes (%):	48.7	Total Delay Over All Lanes(pcuHr):	20.10	

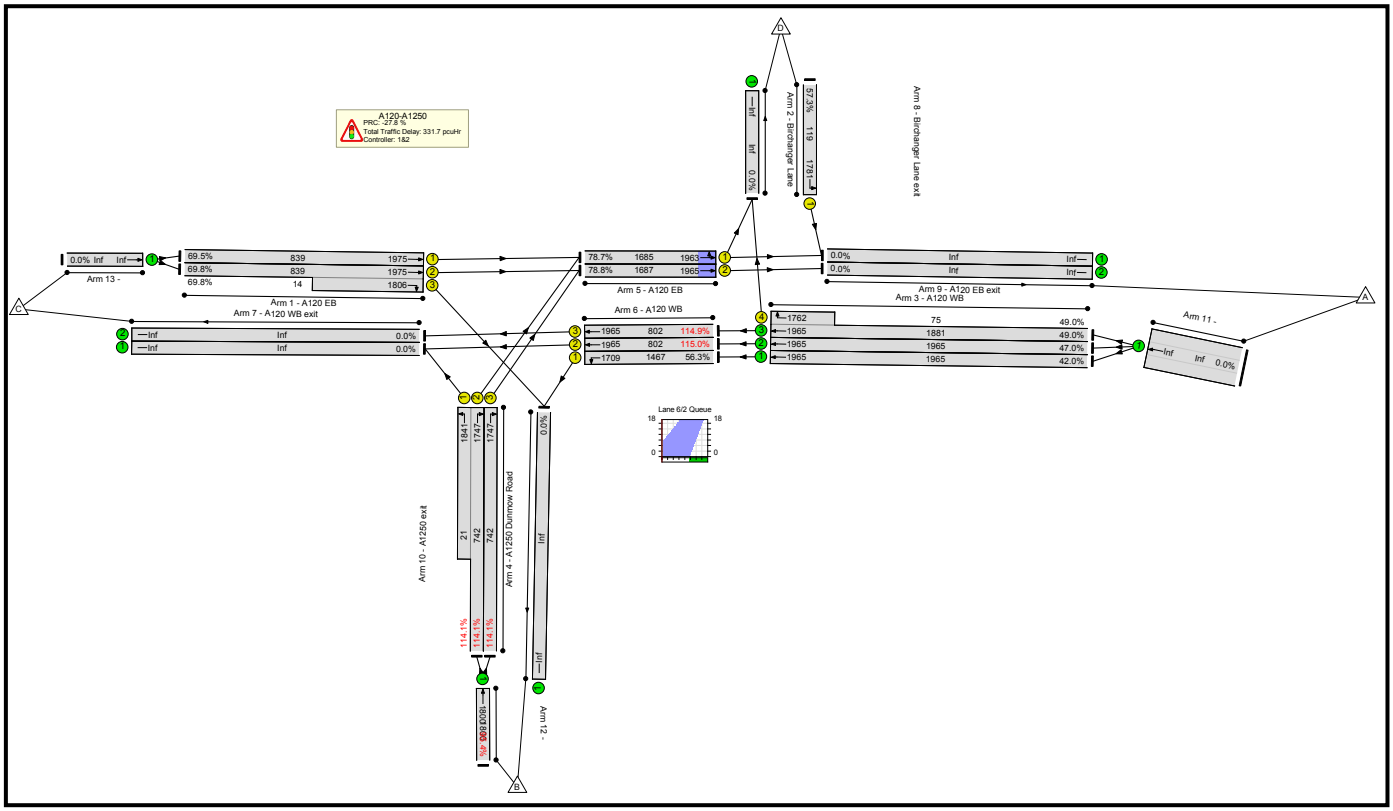
Scenario 3: 'AM 2033 Ref case' (FG3: 'AM 2033 Ref case', Plan 1: 'Network Control Plan 1')



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**98.5%**	**0**	**0**	**0**	**115.8**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**98.5%**	**0**	**0**	**0**	**115.8**	-	-
1/1	A120 EB Ahead	U	C1:A		2	45	-	739	1975	774	95.5%	-	-	-	13.4	65.4	28.2
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	45:7	-	747	1975:1806	774+7	95.7 : 95.7%	-	-	-	13.7	66.0	28.9
2/1	Birchanger Lane Left	U	C2:C		1	7	-	48	1781	119	40.4%	-	-	-	1.1	78.9	1.9
3/1	A120 WB Ahead	U	-		-	-	-	994	1965	1965	50.6%	-	-	-	0.5	1.9	0.5
3/2	A120 WB Ahead	U	-		-	-	-	714	1965	1965	36.3%	-	-	-	0.3	1.4	0.3
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	807	1965:1762	956+132	74.2 : 74.2%	-	-	-	2.9	12.9	4.6
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	54:63	-	796	1747:1841	801+7	98.5 : 98.5%	-	-	-	18.5	83.8	37.3
4/3	A1250 Dunmow Road Right	U	C1:E		1	54	-	789	1747	801	98.5%	-	-	-	18.5	84.2	37.3
5/1	A120 EB Left Ahead	U	C2:A		1	102	-	1528	1962	1684	90.7%	-	-	-	5.1	12.0	11.4
5/2	A120 EB Ahead	U	C2:A		1	102	-	1529	1965	1687	90.7%	-	-	-	5.1	11.9	11.4
6/1	A120 WB Left	U	C1:B	C1:F	1	102	58	994	1709	1467	67.8%	-	-	-	1.8	6.7	12.1
6/2	A120 WB Ahead	U	C1:B		1	44	-	714	1965	737	96.9%	-	-	-	16.1	81.3	32.0
6/3	A120 WB Ahead	U	C1:B		1	44	-	709	1965	737	96.2%	-	-	-	15.3	77.6	31.1
12/1	Ahead	U	-		-	-	-	1585	1800	1800	88.1%	-	-	-	3.6	8.1	3.6

C1	PRC for Signalled Lanes (%):	-9.5	Total Delay for Signalled Lanes (pcuHr):	97.35	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-0.8	Total Delay for Signalled Lanes (pcuHr):	11.23	Cycle Time (s): 120
	PRC Over All Lanes (%):	-9.5	Total Delay Over All Lanes(pcuHr):	115.84	

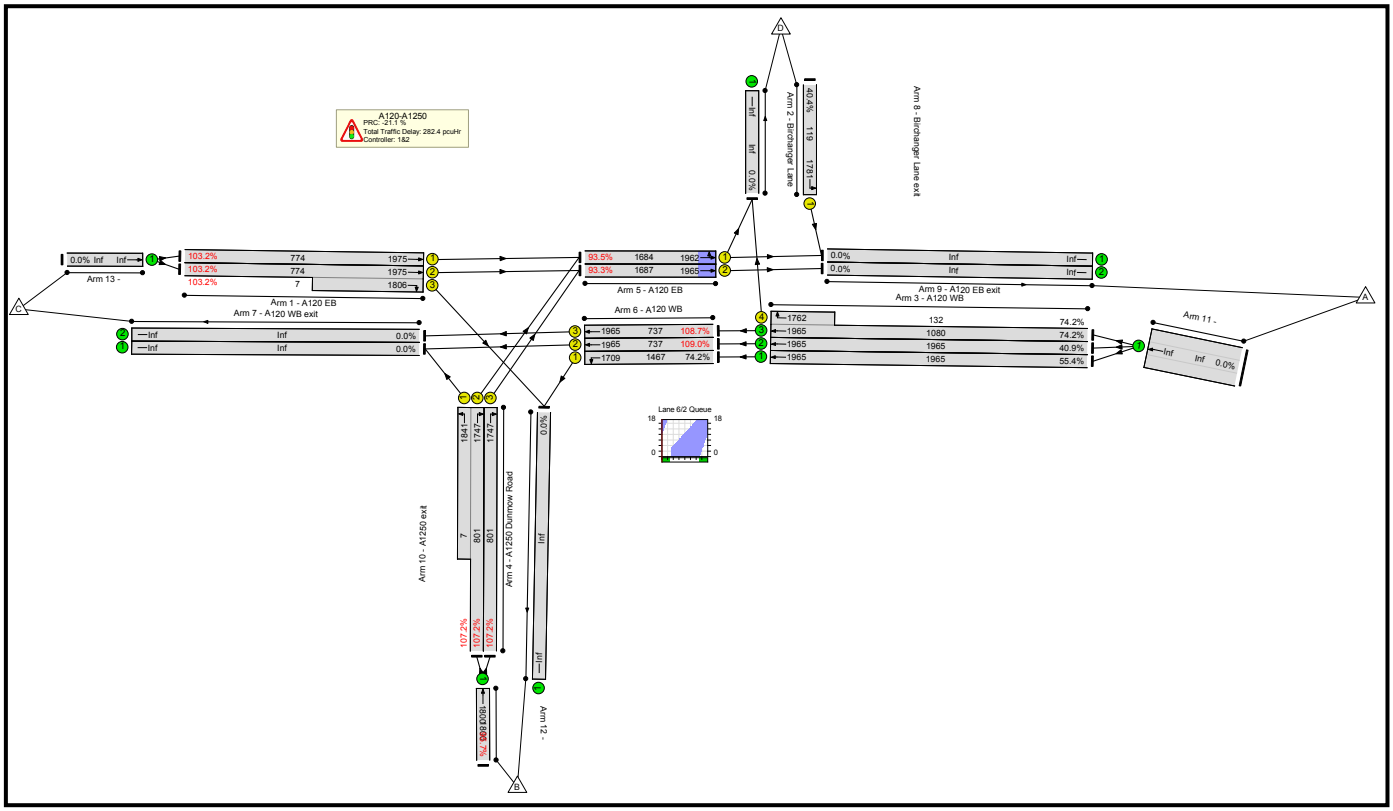
Scenario 4: 'PM 2033 Ref case' (FG4: 'PM 2033 Ref case', Plan 1: 'Network Control Plan 1')



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**115.0%**	**0**	**0**	**0**	**331.7**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**115.0%**	**0**	**0**	**0**	**331.7**	-	-
1/1	A120 EB Ahead	U	C1:A		2	49	-	583	1975	839	69.5%	-	-	-	4.8	29.3	15.1
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	49:7	-	596	1975:1806	839+14	69.8 : 69.8%	-	-	-	4.9	29.9	15.2
2/1	Birchanger Lane Left	U	C2:C		1	7	-	68	1781	119	57.3%	-	-	-	1.7	89.0	2.8
3/1	A120 WB Ahead	U	-		-	-	-	826	1965	1965	42.0%	-	-	-	0.4	1.6	0.4
3/2	A120 WB Ahead	U	-		-	-	-	923	1965	1965	47.0%	-	-	-	0.4	1.7	0.4
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	959	1965:1762	1881+75	49.0 : 49.0%	-	-	-	1.0	3.8	1.6
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	50:59	-	871	1747:1841	742+21	114.1 : 114.1%	-	-	-	71.6	296.0	94.0
4/3	A1250 Dunmow Road Right	U	C1:E		1	50	-	847	1747	742	114.1%	-	-	-	69.8	296.9	87.8
5/1	A120 EB Left Ahead	U	C2:A		1	102	-	1430	1963	1685	78.7%	-	-	-	2.1	5.7	4.3
5/2	A120 EB Ahead	U	C2:A		1	102	-	1433	1965	1687	78.8%	-	-	-	2.1	5.7	4.6
6/1	A120 WB Left	U	C1:B	C1:F	1	102	54	826	1709	1467	56.3%	-	-	-	1.2	5.1	8.0
6/2	A120 WB Ahead	U	C1:B		1	48	-	923	1965	802	115.0%	-	-	-	81.8	319.1	102.0
6/3	A120 WB Ahead	U	C1:B		1	48	-	922	1965	802	114.9%	-	-	-	81.2	317.2	101.4
12/1	Ahead	U	-		-	-	-	1718	1800	1800	95.4%	-	-	-	8.7	18.1	8.7

C1	PRC for Signalled Lanes (%):	-27.8	Total Delay for Signalled Lanes (pcuHr):	315.38	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	14.3	Total Delay for Signalled Lanes (pcuHr):	5.86	Cycle Time (s): 120
	PRC Over All Lanes (%):	-27.8	Total Delay Over All Lanes(pcuHr):	331.72	

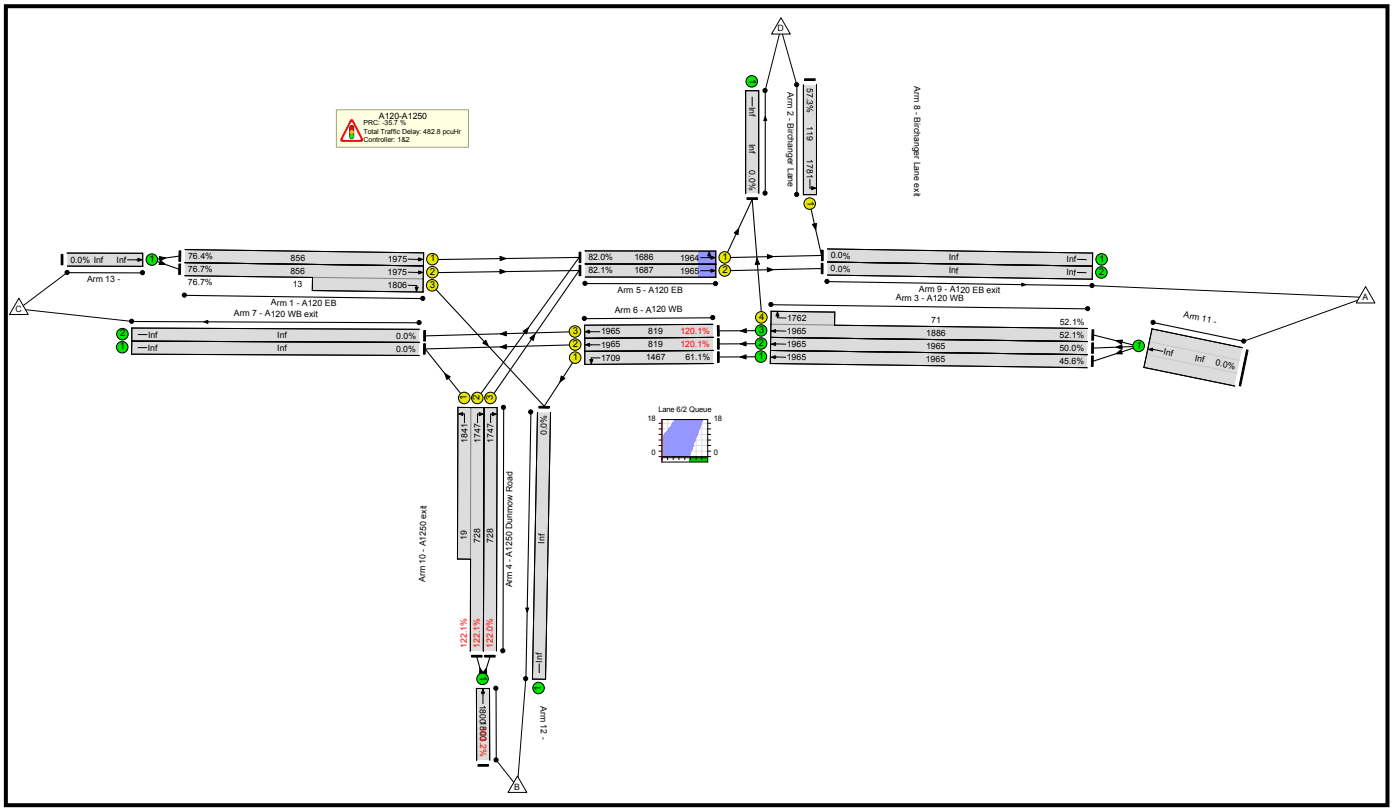
Scenario 5: 'AM 2033 Scenario 10' (FG5: 'AM 2033 Scenario 10', Plan 1: 'Network Control Plan 1')



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**109.0%**	**0**	**0**	**0**	**282.4**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**109.0%**	**0**	**0**	**0**	**282.4**	-	-
1/1	A120 EB Ahead	U	C1:A		2	45	-	798	1975	774	103.2%	-	-	-	29.8	134.6	44.7
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	45:7	-	805	1975:1806	774+7	103.2 : 103.2%	-	-	-	30.1	134.4	47.2
2/1	Birchanger Lane Left	U	C2:C		1	7	-	48	1781	119	40.4%	-	-	-	1.1	78.9	1.9
3/1	A120 WB Ahead	U	-		-	-	-	1089	1965	1965	55.4%	-	-	-	0.6	2.1	0.6
3/2	A120 WB Ahead	U	-		-	-	-	803	1965	1965	40.9%	-	-	-	0.3	1.5	0.3
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	899	1965:1762	1080+132	74.2 : 74.2%	-	-	-	2.9	11.6	4.6
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	54:63	-	865	1747:1841	801+7	107.2 : 107.2%	-	-	-	45.6	189.8	69.3
4/3	A1250 Dunmow Road Right	U	C1:E		1	54	-	858	1747	801	107.2%	-	-	-	45.3	190.1	65.3
5/1	A120 EB Left Ahead	U	C2:A		1	102	-	1656	1962	1684	93.5%	-	-	-	7.1	16.3	21.0
5/2	A120 EB Ahead	U	C2:A		1	102	-	1656	1965	1687	93.3%	-	-	-	7.0	16.0	20.9
6/1	A120 WB Left	U	C1:B	C1:F	1	102	58	1089	1709	1467	74.2%	-	-	-	2.4	8.0	15.3
6/2	A120 WB Ahead	U	C1:B		1	44	-	803	1965	737	109.0%	-	-	-	51.1	228.9	67.3
6/3	A120 WB Ahead	U	C1:B		1	44	-	801	1965	737	108.7%	-	-	-	50.0	224.8	66.3
12/1	Ahead	U	-		-	-	-	1723	1800	1800	95.7%	-	-	-	9.1	18.9	9.1

C1	PRC for Signalled Lanes (%):	-21.1	Total Delay for Signalled Lanes (pcuHr):	254.31	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-3.9	Total Delay for Signalled Lanes (pcuHr):	15.16	Cycle Time (s): 120
	PRC Over All Lanes (%):	-21.1	Total Delay Over All Lanes(pcuHr):	282.39	

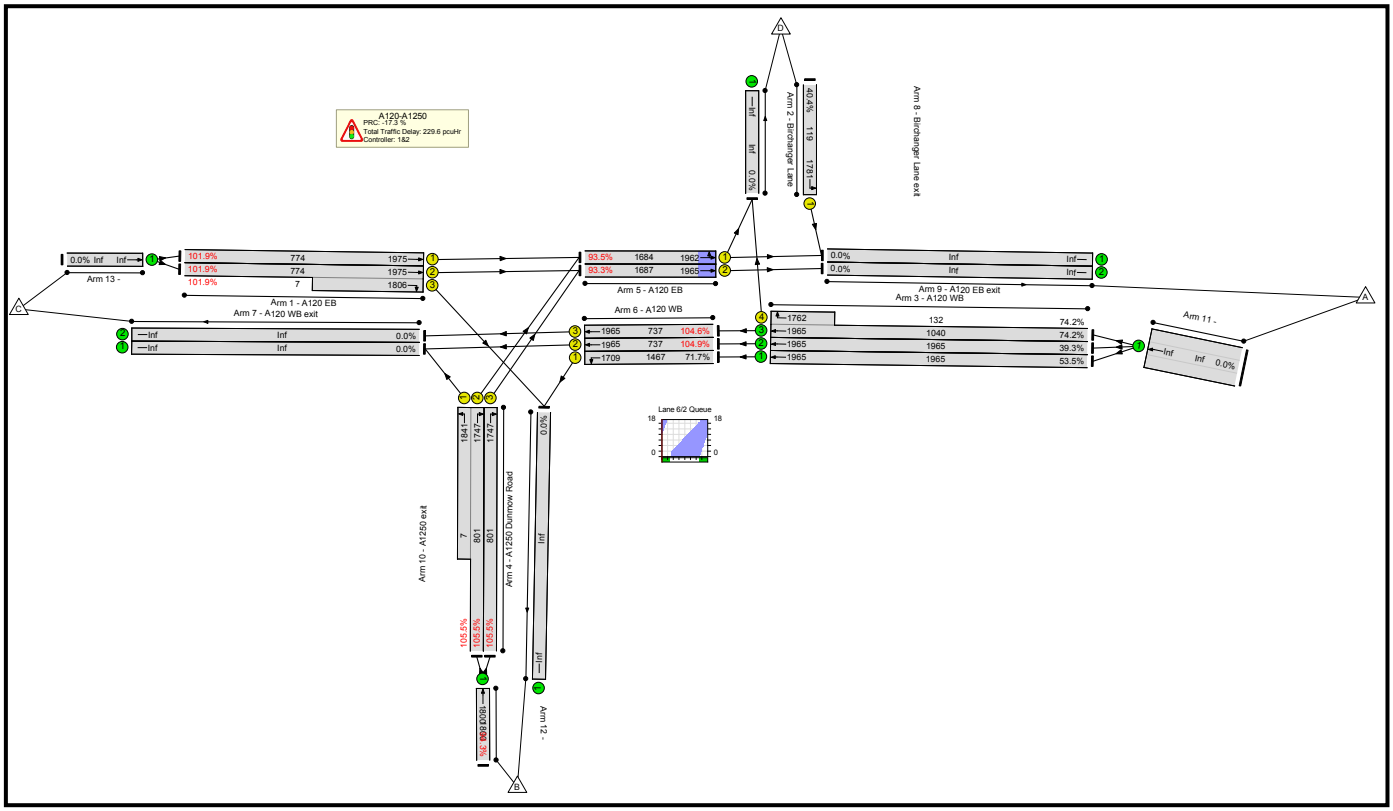
Scenario 6: 'PM 2033 Scenario 10' (FG6: 'PM 2033 Scenario 10', Plan 1: 'Network Control Plan 1')



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**122.1%**	**0**	**0**	**0**	**482.8**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**122.1%**	**0**	**0**	**0**	**482.8**	-	-
1/1	A120 EB Ahead	U	C1:A		2	50	-	654	1975	856	76.4%	-	-	-	5.7	31.6	17.8
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	50:7	-	666	1975:1806	856+13	76.7 : 76.7%	-	-	-	5.9	32.0	17.9
2/1	Birchanger Lane Left	U	C2:C		1	7	-	68	1781	119	57.3%	-	-	-	1.7	89.0	2.8
3/1	A120 WB Ahead	U	-		-	-	-	897	1965	1965	45.6%	-	-	-	0.4	1.7	0.4
3/2	A120 WB Ahead	U	-		-	-	-	983	1965	1965	50.0%	-	-	-	0.5	1.8	0.5
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	1020	1965:1762	1886+71	52.1 : 52.1%	-	-	-	1.1	3.8	1.7
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	49:58	-	941	1747:1841	728+19	122.1 : 122.1%	-	-	-	103.0	406.6	125.3
4/3	A1250 Dunmow Road Right	U	C1:E		1	49	-	916	1747	728	122.0%	-	-	-	100.0	405.6	117.6
5/1	A120 EB Left Ahead	U	C2:A		1	102	-	1571	1964	1686	82.0%	-	-	-	2.5	6.5	5.9
5/2	A120 EB Ahead	U	C2:A		1	102	-	1572	1965	1687	82.1%	-	-	-	2.5	6.5	5.9
6/1	A120 WB Left	U	C1:B	C1:F	1	102	53	897	1709	1467	61.1%	-	-	-	1.4	5.7	9.5
6/2	A120 WB Ahead	U	C1:B		1	49	-	983	1965	819	120.1%	-	-	-	106.5	390.2	127.9
6/3	A120 WB Ahead	U	C1:B		1	49	-	983	1965	819	120.1%	-	-	-	106.5	390.2	127.9
12/1	Ahead	U	-		-	-	-	1857	1800	1800	103.2%	-	-	-	44.8	86.9	225.8

C1	PRC for Signalled Lanes (%):	-35.7	Total Delay for Signalled Lanes (pcuHr):	429.24	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	9.7	Total Delay for Signalled Lanes (pcuHr):	6.67	Cycle Time (s): 120
	PRC Over All Lanes (%):	-35.7	Total Delay Over All Lanes(pcuHr):	482.75	

Scenario 7: 'AM 2033 Scenario 11' (FG7: 'AM 2033 Scenario 11', Plan 1: 'Network Control Plan 1')



A120_A1250 signalised

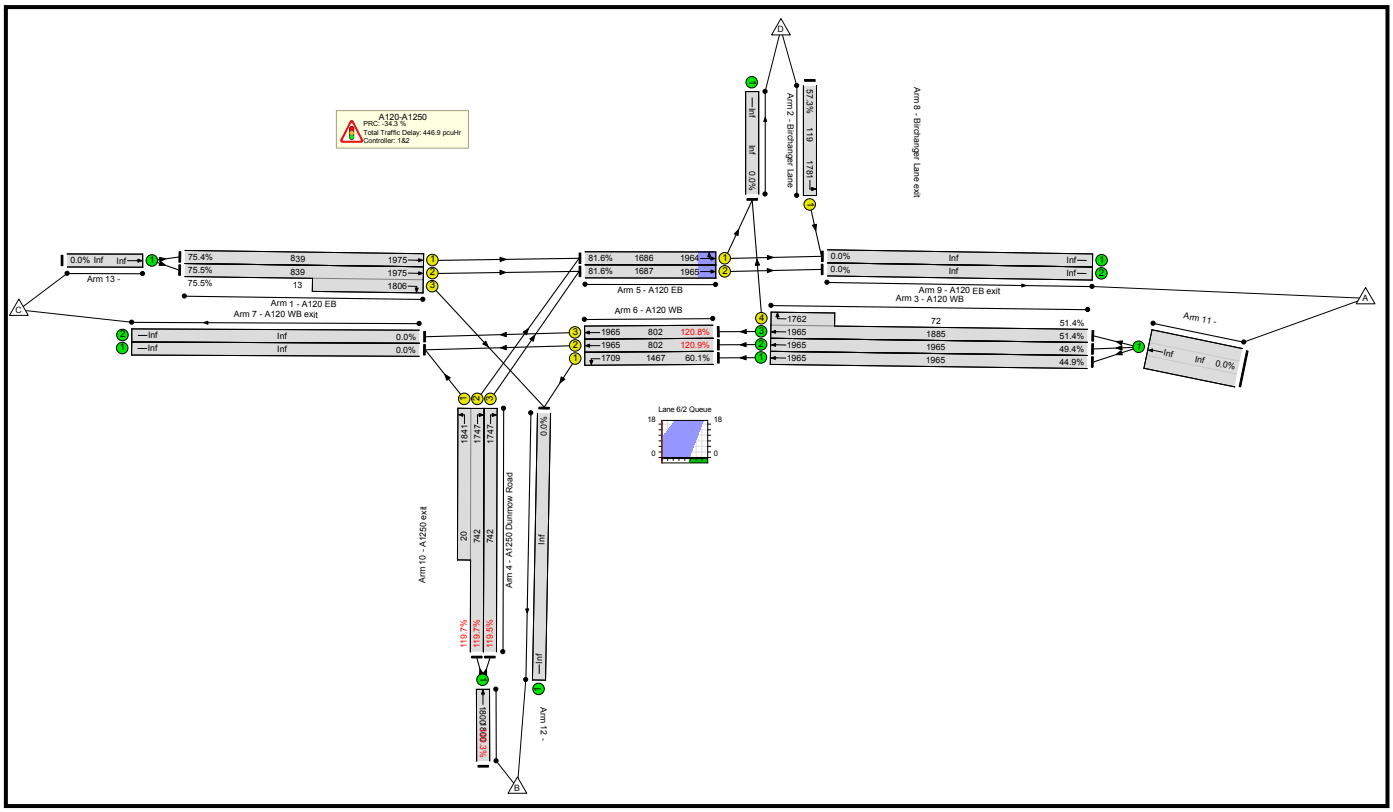
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**105.5%**	**0**	**0**	**0**	**229.6**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**105.5%**	**0**	**0**	**0**	**229.6**	-	-
1/1	A120 EB Ahead	U	C1:A		2	45	-	788	1975	774	101.9%	-	-	-	25.7	117.4	40.7
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	45:7	-	795	1975:1806	774+7	101.9 : 101.9%	-	-	-	25.9	117.3	42.7
2/1	Birchanger Lane Left	U	C2:C		1	7	-	48	1781	119	40.4%	-	-	-	1.1	78.9	1.9
3/1	A120 WB Ahead	U	-		-	-	-	1052	1965	1965	53.5%	-	-	-	0.6	2.0	0.6
3/2	A120 WB Ahead	U	-		-	-	-	773	1965	1965	39.3%	-	-	-	0.3	1.5	0.3
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	869	1965:1762	1040+132	74.2 : 74.2%	-	-	-	2.9	12.0	4.6
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	54:63	-	852	1747:1841	801+7	105.5 : 105.5%	-	-	-	39.3	166.2	61.9
4/3	A1250 Dunmow Road Right	U	C1:E		1	54	-	845	1747	801	105.5%	-	-	-	39.1	166.6	59.0
5/1	A120 EB Left Ahead	U	C2:A		1	102	-	1633	1962	1684	93.5%	-	-	-	7.1	16.3	21.0
5/2	A120 EB Ahead	U	C2:A		1	102	-	1633	1965	1687	93.3%	-	-	-	7.0	16.0	20.9
6/1	A120 WB Left	U	C1:B	C1:F	1	102	58	1052	1709	1467	71.7%	-	-	-	2.2	7.4	14.1
6/2	A120 WB Ahead	U	C1:B		1	44	-	773	1965	737	104.9%	-	-	-	36.1	167.9	52.6
6/3	A120 WB Ahead	U	C1:B		1	44	-	771	1965	737	104.6%	-	-	-	35.1	164.0	51.7
12/1	Ahead	U	-		-	-	-	1697	1800	1800	94.3%	-	-	-	7.2	15.3	7.2

A120_A1250 signalised

C1	PRC for Signalled Lanes (%):	-17.3	Total Delay for Signalled Lanes (pcuHr):	203.40	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	-3.9	Total Delay for Signalled Lanes (pcuHr):	15.16	Cycle Time (s): 120
	PRC Over All Lanes (%):	-17.3	Total Delay Over All Lanes(pcuHr):	229.58	

A120_A1250 signalised

Scenario 8: 'PM 2033 Scenario 11' (FG8: 'PM 2033 Scenario 11', Plan 1: 'Network Control Plan 1')



Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**120.9%**	**0**	**0**	**0**	**446.9**	-	-
A120-A1250	-	-	-		-	-	-	-	-	-	**120.9%**	**0**	**0**	**0**	**446.9**	-	-
1/1	A120 EB Ahead	U	C1:A		2	49	-	633	1975	839	75.4%	-	-	-	5.6	31.8	17.2
1/2+1/3	A120 EB Ahead Right	U	C1:A C1:C		2:1	49:7	-	644	1975:1806	839+13	75.5 : 75.5%	-	-	-	5.8	32.2	17.3
2/1	Birchanger Lane Left	U	C2:C		1	7	-	68	1781	119	57.3%	-	-	-	1.7	89.0	2.8
3/1	A120 WB Ahead	U	-		-	-	-	882	1965	1965	44.9%	-	-	-	0.4	1.7	0.4
3/2	A120 WB Ahead	U	-		-	-	-	970	1965	1965	49.4%	-	-	-	0.5	1.8	0.5
3/3+3/4	A120 WB Ahead Right	U	- C2:B		-	-	-	1006	1965:1762	1885+72	51.4 : 51.4%	-	-	-	1.1	3.8	1.7
4/2+4/1	A1250 Dunmow Road Right Left	U	C1:E C1:D		1	50:59	-	915	1747:1841	742+20	119.7 : 119.7%	-	-	-	94.7	373.7	117.4
4/3	A1250 Dunmow Road Right	U	C1:E		1	50	-	890	1747	742	119.5%	-	-	-	91.9	372.7	109.9
5/1	A120 EB Left Ahead	U	C2:A		1	102	-	1524	1964	1686	81.6%	-	-	-	2.4	6.3	5.7
5/2	A120 EB Ahead	U	C2:A		1	102	-	1524	1965	1687	81.6%	-	-	-	2.4	6.3	5.7
6/1	A120 WB Left	U	C1:B	C1:F	1	102	54	882	1709	1467	60.1%	-	-	-	1.4	5.6	9.3
6/2	A120 WB Ahead	U	C1:B		1	48	-	970	1965	802	120.9%	-	-	-	108.4	402.2	129.3
6/3	A120 WB Ahead	U	C1:B		1	48	-	969	1965	802	120.8%	-	-	-	107.8	400.5	128.7
12/1	Ahead	U	-		-	-	-	1805	1800	1800	100.3%	-	-	-	22.9	45.8	203.0

C1	PRC for Signalled Lanes (%):	-34.3	Total Delay for Signalled Lanes (pcuHr):	415.50	Cycle Time (s): 120
C2	PRC for Signalled Lanes (%):	10.3	Total Delay for Signalled Lanes (pcuHr):	6.53	Cycle Time (s): 120
	PRC Over All Lanes (%):	-34.3	Total Delay Over All Lanes(pcuHr):	446.93	

A120/A1383 Existing Layout

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.0.1.4646 [] © Copyright TRL Limited, 2016
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Filename: A120-B1383 Base layout 2016 V2_AWYG.j9
Path: C:\Users\Andrew.Thurston\Desktop\WYG modelling\A120_B1389 Arcady Models
Report generation date: 17/08/2016 09:25:27

A120-B1383 Rbt, AM_2014
A120-B1383 Rbt, AM_2033 Ref case
A120-B1383 Rbt, PM_2033 Ref case
A120-B1383 Rbt, AM_2033 Scenario 10
A120-B1383 Rbt, PM_2033 Scenario 10
A120-B1383 Rbt, AM_2033 Scenario 11
A120-B1383 Rbt, PM_2033 Scenario 11

Summary of junction performance

	AM_2014				PM_2014				AM_2033 Ref case				PM_2033 Ref case			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - A120 East	1.7	6.55	0.61	A	2.1	6.68	0.66	A	83.7	175.20	1.10	F	328.2	707.82	1.36	F
B - B1383 South	0.4	4.04	0.27	A	0.5	4.35	0.32	A	1.4	7.62	0.56	A	4.8	20.92	0.82	C
C - A120 West	2.0	8.25	0.65	A	2.5	10.10	0.70	B	99.5	253.61	1.15	F	89.0	251.12	1.15	F
D - B1383 North	2.0	6.83	0.65	A	0.9	4.07	0.45	A	268.2	604.57	1.30	F	6.7	17.92	0.87	C

	AM_2033 Scenario 10				PM_2033 Scenario 10				AM_2033 Scenario 11				PM_2033 Scenario 11			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - A120 East	198.7	495.76	1.24	F	537.7	1201.53	1.53	F	154.9	384.40	1.19	F	512.8	1151.04	1.51	F
B - B1383 South	2.5	11.21	0.70	B	8.7	34.70	0.90	D	2.5	11.10	0.70	B	7.8	31.53	0.89	D
C - A120 West	228.5	677.10	1.35	F	152.9	498.51	1.27	F	223.1	664.80	1.34	F	132.6	419.02	1.23	F
D - B1383 North	383.5	841.45	1.37	F	47.1	96.29	1.04	F	375.8	817.99	1.37	F	42.9	88.52	1.03	F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	A120-B1383 Roundabout
Location	Bishop's Stortford, Herts CM23 5PS

Site number	
Date	17/08/2016
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	ATUM\Andrew.Thurston
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	A120-B1383 Rbt	AM_2014	ONE HOUR	07:45	09:15	15	
D2	A120-B1383 Rbt	PM_2014	ONE HOUR	16:45	18:15	15	
D3	A120-B1383 Rbt	AM_2033 Ref case	ONE HOUR	07:45	09:15	15	
D4	A120-B1383 Rbt	PM_2033 Ref case	ONE HOUR	16:45	18:15	15	
D5	A120-B1383 Rbt	AM_2033 Scenario 10	ONE HOUR	07:45	09:15	15	
D6	A120-B1383 Rbt	PM_2033 Scenario 10	ONE HOUR	16:45	18:15	15	
D7	A120-B1383 Rbt	AM_2033 Scenario 11	ONE HOUR	07:45	09:15	15	
D8	A120-B1383 Rbt	PM_2033 Scenario 11	ONE HOUR	16:45	18:15	15	

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1		100.000	100.000

A120-B1383 Rbt, AM_2014

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.61	6.55	1.7	A	789	1184
B - B1383 South	0.27	4.04	0.4	A	309	464
C - A120 West	0.65	8.25	2.0	A	744	1116
D - B1383 North	0.65	6.83	2.0	A	906	1359

A120-B1383 Rbt, PM_2014

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.66	6.68	2.1	A	941	1412
B - B1383 South	0.32	4.35	0.5	A	356	534
C - A120 West	0.70	10.10	2.5	B	760	1140
D - B1383 North	0.45	4.07	0.9	A	663	994

A120-B1383 Rbt, AM_2033 Ref case

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.10	175.20	83.7	F	1320	1979
B - B1383 South	0.56	7.62	1.4	A	541	812
C - A120 West	1.15	253.61	99.5	F	1134	1701
D - B1383 North	1.30	604.57	268.2	F	1648	2472

A120-B1383 Rbt, PM_2033 Ref case

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.36	707.82	328.2	F	1714	2571
B - B1383 South	0.82	20.92	4.8	C	726	1089
C - A120 West	1.15	251.12	89.0	F	1018	1528
D - B1383 North	0.87	17.92	6.7	C	1173	1760

A120-B1383 Rbt, AM_2033 Scenario 10

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.24	495.76	198.7	F	1488	2232
B - B1383 South	0.70	11.21	2.5	B	687	1030
C - A120 West	1.35	677.10	228.5	F	1246	1870
D - B1383 North	1.37	841.45	383.5	F	1769	2654

A120-B1383 Rbt, PM_2033 Scenario 10

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South -	Effective flare length is over 30m, which is outside the normal range. Treat capacities with

		Roundabout Geometry	increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.53	1201.53	537.7	F	1824	2737
B - B1383 South	0.90	34.70	8.7	D	807	1211
C - A120 West	1.27	498.51	152.9	F	1090	1636
D - B1383 North	1.04	96.29	47.1	F	1374	2061

A120-B1383 Rbt, AM_2033 Scenario 11

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.19	384.40	154.9	F	1431	2147
B - B1383 South	0.70	11.10	2.5	B	681	1022
C - A120 West	1.34	664.80	223.1	F	1239	1858
D - B1383 North	1.37	817.99	375.8	F	1769	2654

A120-B1383 Rbt, PM_2033 Scenario 11

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	D - B1383 North - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.51	1151.04	512.8	F	1800	2701
B - B1383 South	0.89	31.53	7.8	D	791	1186
C - A120 West	1.23	419.02	132.6	F	1066	1599
D - B1383 North	1.03	88.52	42.9	F	1377	2065

A120/A1383 Bishops Stortford North Proposed Layout

Junctions 9
ARCADY 9 - Roundabout Module
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Filename: A120-B1383 WSP layout 2016 V2_WYG.j9
Path: C:\Users\Andrew.Thurston\Desktop\WYG modelling\A120_B1389 Arcady Models
Report generation date: 17/08/2016 09:39:49

Summary of junction performance

	AM_2014				PM_2014				AM_2033 Ref case				PM_2033 Ref case			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - A120 East	1.5	5.66	0.58	A	1.8	5.72	0.62	A	24.7	57.66	0.99	F	244.1	518.29	1.28	F
B - B1383 South	0.3	3.40	0.24	A	0.4	3.62	0.28	A	1.0	5.66	0.48	A	2.8	11.89	0.72	B
C - A120 West	1.4	5.52	0.55	A	1.6	6.36	0.59	A	21.3	57.93	0.98	F	18.2	55.87	0.97	F
D - B1383 North	2.8	9.58	0.72	A	1.1	4.97	0.50	A	432.4	1036.75	1.49	F	21.5	56.53	0.98	F

	AM_2033 Scenario 10				PM_2033 Scenario 10				AM_2033 Scenario 11				PM_2033 Scenario 11			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - A120 East	102.0	196.73	1.11	F	402.4	921.20	1.38	F	71.1	135.46	1.07	F	383.1	876.87	1.36	F
B - B1383 South	1.7	7.63	0.61	A	3.9	14.90	0.79	B	1.7	7.56	0.61	A	3.6	14.23	0.77	B
C - A120 West	105.5	233.40	1.15	F	60.3	150.97	1.08	F	102.6	225.30	1.14	F	45.0	117.77	1.05	F
D - B1383 North	595.4	1515.72	1.58	F	136.3	323.66	1.18	F	584.4	1479.88	1.57	F	129.6	294.50	1.17	F

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	A120-B1383 Roundabout
Location	Bishop's Stortford, Herts CM23 5PS

Site number	
Date	17/08/2016
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	ATUM\Andrew.Thurston
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	A120-B1383 Rbt WSP	AM_2014	ONE HOUR	07:45	09:15	15	
D2	A120-B1383 Rbt WSP	PM_2014	ONE HOUR	16:45	18:15	15	
D3	A120-B1383 Rbt WSP	AM_2033 Ref case	ONE HOUR	07:45	09:15	15	
D4	A120-B1383 Rbt WSP	PM_2033 Ref case	ONE HOUR	16:45	18:15	15	
D5	A120-B1383 Rbt WSP	AM_2033 Scenario 10	ONE HOUR	07:45	09:15	15	
D6	A120-B1383 Rbt WSP	PM_2033 Scenario 10	ONE HOUR	16:45	18:15	15	
D7	A120-B1383 Rbt WSP	AM_2033 Scenario 11	ONE HOUR	07:45	09:15	15	
D8	A120-B1383 Rbt WSP	PM_2033 Scenario 11	ONE HOUR	16:45	18:15	15	

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1		100.000	100.000

A120-B1383 Rbt WSP, AM_2014

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.58	5.66	1.5	A	789	1184
B - B1383 South	0.24	3.40	0.3	A	309	464
C - A120 West	0.55	5.52	1.4	A	744	1116
D - B1383 North	0.72	9.58	2.8	A	906	1359

A120-B1383 Rbt WSP, PM_2014

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.62	5.72	1.8	A	941	1412
B - B1383 South	0.28	3.62	0.4	A	356	534
C - A120 West	0.59	6.36	1.6	A	760	1140
D - B1383 North	0.50	4.97	1.1	A	663	994

A120-B1383 Rbt WSP, AM_2033 Ref case

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.99	57.66	24.7	F	1320	1979
B - B1383 South	0.48	5.66	1.0	A	541	812
C - A120 West	0.98	57.93	21.3	F	1134	1701
D - B1383 North	1.49	1036.75	432.4	F	1648	2472

A120-B1383 Rbt WSP, PM_2033 Ref case

Data Errors and Warnings

Severity	Area	Item	Description

Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.28	518.29	244.1	F	1714	2571
B - B1383 South	0.72	11.89	2.8	B	726	1089
C - A120 West	0.97	55.87	18.2	F	1018	1528
D - B1383 North	0.98	56.53	21.5	F	1173	1760

A120-B1383 Rbt WSP, AM_2033 Scenario 10

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.11	196.73	102.0	F	1488	2232
B - B1383 South	0.61	7.63	1.7	A	687	1030
C - A120 West	1.15	233.40	105.5	F	1246	1870
D - B1383 North	1.58	1515.72	595.4	F	1769	2654

A120-B1383 Rbt WSP, PM_2033 Scenario 10

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.38	921.20	402.4	F	1824	2737
B - B1383 South	0.79	14.90	3.9	B	807	1211
C - A120 West	1.08	150.97	60.3	F	1090	1636
D - B1383 North	1.18	323.66	136.3	F	1374	2061

A120-B1383 Rbt WSP, AM_2033 Scenario 11

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.07	135.46	71.1	F	1431	2147
B - B1383 South	0.61	7.56	1.7	A	681	1022
C - A120 West	1.14	225.30	102.6	F	1239	1858
D - B1383 North	1.57	1479.88	584.4	F	1769	2654

A120-B1383 Rbt WSP, PM_2033 Scenario 11

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	B - B1383 South - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.36	876.87	383.1	F	1800	2701
B - B1383 South	0.77	14.23	3.6	B	791	1186
C - A120 West	1.05	117.77	45.0	F	1066	1599
D - B1383 North	1.17	294.50	129.6	F	1377	2065

A120/A1383 ECC Proposed Layout with Left-turns

Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.0.1.4646 [] © Copyright TRL Limited, 2016
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Filename: A120-B1383_Jacobs_LT slip on arms ACD 2016 V2_WYG.j9
Path: C:\Users\Andrew.Thurston\Desktop\WYG modelling\A120_B1389 Arcady Models
Report generation date: 17/08/2016 09:46:00

Summary of junction performance

	AM_2014				PM_2014				AM_2033 Ref case				PM_2033 Ref case			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - A120 East	0.6	3.72	0.35	A	0.9	3.88	0.44	A	3.5	11.96	0.77	B	22.6	53.40	0.98	F
B - B1383 South	0.4	3.91	0.27	A	0.5	4.20	0.31	A	1.6	8.81	0.59	A	13.4	57.77	0.96	F
C - A120 West	0.5	3.61	0.32	A	0.3	3.19	0.19	A	1.4	6.52	0.56	A	0.8	5.67	0.42	A
D - B1383 North	1.5	6.39	0.59	A	0.6	3.91	0.36	A	62.1	142.34	1.07	F	2.5	9.16	0.70	A

	AM_2033 Scenario 10				PM_2033 Scenario 10				AM_2033 Scenario 11				PM_2033 Scenario 11			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
A - A120 East	6.1	18.83	0.86	C	90.3	174.70	1.11	F	5.1	16.25	0.83	C	89.2	173.12	1.11	F
B - B1383 South	3.8	17.14	0.78	C	43.3	149.74	1.07	F	3.4	15.63	0.76	C	35.4	127.16	1.05	F
C - A120 West	1.9	8.52	0.64	A	1.0	6.45	0.48	A	1.8	8.26	0.63	A	0.9	6.13	0.46	A
D - B1383 North	118.5	260.95	1.17	F	6.4	20.23	0.86	C	113.8	246.35	1.16	F	6.0	18.83	0.85	C

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	A120-B1383 Roundabout
Location	Bishop's Stortford, Herts CM23 5PS
Site number	

Date	17/08/2016
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	ATUM\Andrew.Thurston
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Q Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	A120-B1383 Rbt left slip ACD	AM_2014	ONE HOUR	07:45	09:15	15	
D2	A120-B1383 Rbt left slip ACD	PM_2014	ONE HOUR	16:45	18:15	15	
D3	A120-B1383 Rbt left slip ACD	AM_2033 Ref case	ONE HOUR	07:45	09:15	15	
D4	A120-B1383 Rbt left slip ACD	PM_2033 Ref case	ONE HOUR	16:45	18:15	15	
D5	A120-B1383 Rbt left slip ACD	AM_2033 Scenario 10	ONE HOUR	07:45	09:15	15	
D6	A120-B1383 Rbt left slip ACD	PM_2033 Scenario 10	ONE HOUR	16:45	18:15	15	
D7	A120-B1383 Rbt left slip ACD	AM_2033 Scenario 11	ONE HOUR	07:45	09:15	15	
D8	A120-B1383 Rbt left slip ACD	PM_2033 Scenario 11	ONE HOUR	16:45	18:15	15	

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1		100.000	100.000

A120-B1383 Rbt left slip ACD, AM_2014

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.35	3.72	0.6	A	789	728

B - B1383 South	0.27	3.91	0.4	A	309	464
C - A120 West	0.32	3.61	0.5	A	744	641
D - B1383 North	0.59	6.39	1.5	A	906	1100

A120-B1383 Rbt left slip ACD, PM_2014

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.44	3.88	0.9	A	941	1002
B - B1383 South	0.31	4.20	0.5	A	356	534
C - A120 West	0.19	3.19	0.3	A	760	366
D - B1383 North	0.36	3.91	0.6	A	663	724

A120-B1383 Rbt left slip ACD, AM_2033 Ref case

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.77	11.96	3.5	B	1320	1357
B - B1383 South	0.59	8.81	1.6	A	541	812
C - A120 West	0.56	6.52	1.4	A	1134	969
D - B1383 North	1.07	142.34	62.1	F	1648	1780

A120-B1383 Rbt left slip ACD, PM_2033 Ref case

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.98	53.40	22.6	F	1714	1963
B - B1383 South	0.96	57.77	13.4	F	726	1089
C - A120 West	0.42	5.67	0.8	A	1018	626
D - B1383 North	0.70	9.16	2.5	A	1173	1252

A120-B1383 Rbt left slip ACD, AM_2033 Scenario 10

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)

A - A120 East	0.86	18.83	6.1	C	1488	1529
B - B1383 South	0.78	17.14	3.8	C	687	1030
C - A120 West	0.64	8.52	1.9	A	1246	1021
D - B1383 North	1.17	260.95	118.5	F	1769	1890

A120-B1383 Rbt left slip ACD, PM_2033 Scenario 10

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.11	174.70	90.3	F	1824	2070
B - B1383 South	1.07	149.74	43.3	F	807	1211
C - A120 West	0.48	6.45	1.0	A	1090	714
D - B1383 North	0.86	20.23	6.4	C	1374	1503

A120-B1383 Rbt left slip ACD, AM_2033 Scenario 11

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	0.83	16.25	5.1	C	1431	1479
B - B1383 South	0.76	15.63	3.4	C	681	1022
C - A120 West	0.63	8.26	1.8	A	1239	1006
D - B1383 North	1.16	246.35	113.8	F	1769	1890

A120-B1383 Rbt left slip ACD, PM_2033 Scenario 11

Data Errors and Warnings

No errors or warnings

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS	Av. Demand (PCU/hr)	Total Junction Arrivals (PCU)
A - A120 East	1.11	173.12	89.2	F	1800	2065
B - B1383 South	1.05	127.16	35.4	F	791	1186
C - A120 West	0.46	6.13	0.9	A	1066	678
D - B1383 North	0.85	18.83	6.0	C	1377	1508