

# **Central Bedfordshire Council Local Plan (2015-2035)**

Transport Modelling Stage 1C & 1D  
(January 2018)

# Technical Note

## Central Bedfordshire Local Plan – Stages 1c-1d

<b>Document No.</b> 4	<b>Client name</b> Central Bedfordshire Council	<b>Client reference</b> CBC	<b>Discipline</b> Transportation
<b>Project name</b> Central Bedfordshire Local Plan – Stages 1c-1d	<b>Date</b> 10-Jan-18	<b>Project number</b> 60504775	
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### Revision History

Revision	Revision date	Details	Authorised by	Position
1	22-Dec-17	Draft report (S1c-S1d)	JKF	Principal Consultant
2	09-Jan-18	Revised version following client feedback	SK	Associate Director
3	10-Jan-18	Final version following client feedback	SK	Associate Director

## 1. Introduction

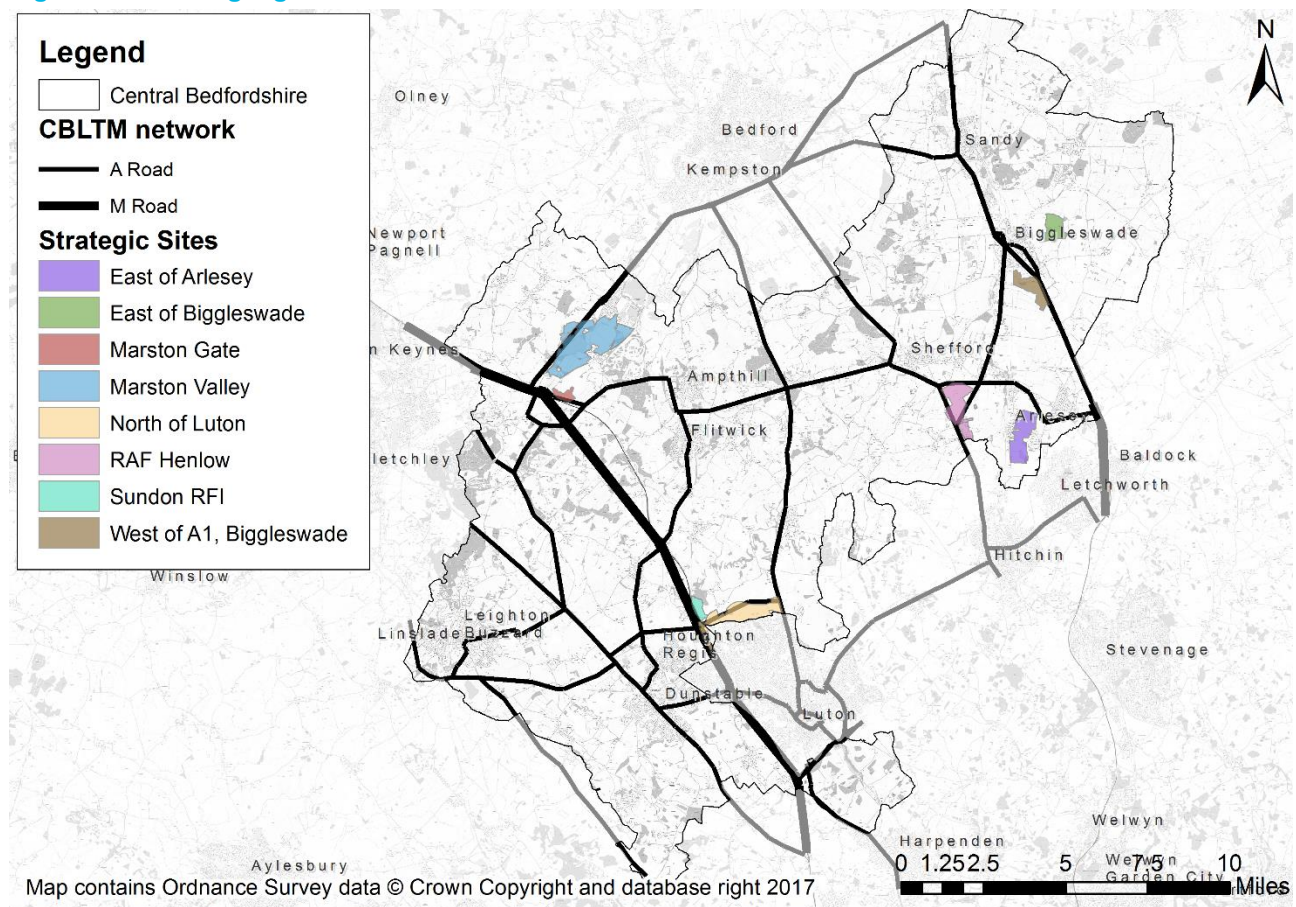
### 1.1 Context – Local Plan

1.1.1 Central Bedfordshire Council (CBC) are in the process of updating the transport evidence base required to support the production of their forthcoming Local Plan. CBC have published their Draft Local Plan as part of Regulation 18 and are planning to submit their Regulation 19 documents on 11-Jan-18.

1.1.2 In particular, CBC have identified eight strategic sites as part of their Local Plan growth allocation, as shown in **Figure 1.1**:

- Four housing sites:
  - North of Luton;
  - Marston Vale Growth;
  - East of Arlesey;
  - East of Biggleswade;
- Four employment sites:
  - Sundon Rail Freight Interchange (RFI);
  - Marston Gate;
  - RAF Henlow; and
  - Holme Green Farm (Biggleswade, west of A1).

**Figure 1.1: Strategic growth sites in Central Bedfordshire**



## 1.2 Context – Transport Evidence

- 1.2.1 To assess the cumulative impact of the Local Plan growth scenarios on the highway network, it is proposed that transport modelling is undertaken using the Central Bedfordshire and Luton Transport Model (CBLTM):
- The Regulation 18 submission relied on the previous version of the CBLTM, which had a Base Year of 2009; and
  - The CBLTM has since been enhanced and updated to a Base Year of 2016. CBC have requested<sup>1</sup> that the Base Year 2016 CBLTM be used to provide evidence for the Regulation 19 submission, and to aid the understanding of potential mitigation measures.
- 1.2.2 It should be noted that CBLTM is of a strategic nature. Whilst CBLTM may provide indicative results, further assessment of local schemes' impacts may be required at later stages, using additional tools (e.g. junction modelling or micro-simulation).
- 1.2.3 Similarly, there is very limited level of details in CBLTM regarding Non-Motorised Users (NMU).
- 1.2.4 Previous stages of work for CBC Local Plan comprised:
- Stage 1a: development of a transport evidence base for the purpose of the Regulation 18 submission; and
  - Stage 1b: confirmation of the evidence provided by the Base Year 2009 CBLTM using the updated Base Year 2016 CBLTM, and comparison between the two models.
- 1.2.5 As part of the Regulation 19 and up to the submission, it is proposed that the transport modelling be undertaken according to the following additional stages:
- Stage 1c: development of a transport evidence base without mitigation;
  - Stage 1d: analysis of the Local Plan strategic sites' users and their impacts;
  - Stage 2a: highway and public transport mitigation proposal; and
  - Stage 2b: development of a transport evidence base with mitigation.

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<sup>1</sup> Email from CBC (04-Jul-17)

### 1.3 Context – Air Quality Management Areas

1.3.1 It should be noted that three Air Quality Management Areas (AQMAs) are located<sup>2</sup> in Central Bedfordshire:

- South Bedfordshire AQMA (ref. 266, declared 17-Jan-05) includes:
  - Dunstable Town Centre;
  - The A505 from the town centre to the junction of Poynters Road / Dunstable Road;
  - The A5 from Union St to Borough Road;
  - The B489 West St from the town centre to St Marys Gate;
- AQMA No. 3 Ampthill (ref. 1589, declared 17-Aug-15) includes:
  - Part of Bedford St between Market Sq. and Brewers Lane;
  - Part of Church St between Market Sq. and St Andrews Close;
  - Part of Woburn St;
  - Part of Dunstable St from Market Sq.;
- AQMA No. 4 Sandy (ref. 1592, declared 17-Aug-15) includes ten meters:
  - From the kerbside of both sides of the A1 at the Georgetown exit; and
  - South along the A1 / London Road to the Bedford Road junction.

1.3.2 Within this document, AQMAs have been considered and appropriate commentaries have been made when analysing the hotspots and potential traffic impacts of the Local Plan growth.

### 1.4 Objectives / Structure of the note

1.4.1 The purpose of this note is to present the evidence for the following stages:

- Stage 1c: Transport evidence base without mitigation:
  - To identify the highway network constraints (i.e. 'hot spots'), with and without Local Plan growth, for Forecast Years 2025 and 2035 (i.e. the end of the Plan period); and
  - To identify potential cross-boundary impacts of the Local Plan growth.
- Stage 1d: Strategic site user analysis:
  - To identify the traffic to/from the strategic housing and employment sites and their potential cross-boundary impacts; and
  - To assess at high level the potential contribution of these strategic sites to the 'hot spots' identified in Stage 1c.

1.4.2 This note is structured as follows:

- Assumptions and methodology;
- 'Hot spot' analysis;
- Strategic site user analysis; and
- Summary and discussion.

1.4.3 This note also contains the following appendices:

- Appendix A – Modelling assumptions;
- Appendix B – Link stress and Junction delays (extended); and
- Appendix C – Traffic to/from the Local Plan strategic sites.

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<sup>2</sup> <https://uk-air.defra.gov.uk/aqma/maps>, last accessed 10-Nov-17

## 2. Assumptions and methodology

### 2.1 Assumptions – Forecasting

2.1.1 As requested by CBC, the transport evidence base without mitigation relies on three CBLTM scenarios, for both Forecast Years 2025 and 2035, as detailed in **Table 2.1**.

2.1.2 Each model scenario has been derived from:

- The Base Year 2016 CBLTM;
- Any change between 2016 and the relevant Forecast Year which could potentially impact the number of trips, trip patterns and/or travel behaviours e.g.:
  - Socio-demographic changes such as housing, population and employment;
  - Economic changes such as sensitivity to travel time and costs; and
  - Changes to the transport infrastructure, for both Highways and Public Transport.

**Table 2.1: Summary of CBLTM scenarios**

Model scenario	CBC	Luton	Outside CBC / LBC	Infrastructure
Reference Case	Committed growth	LBC Local Plan growth <sup>3</sup> until 2031	TEMPPro (NTEM v7.2) growth	Committed + Highly likely schemes in CBC and LBC
Local Plan – strategic sites	CBC Local Plan growth	TEMPPro (NTEM <sup>4</sup> v7.2) growth beyond 2031		Reference Case + M1-A6 link
Local Plan – strategic sites*				Local Plan – strategic sites + All other proposed

2.1.3 CBC and LBC (when applicable) have confirmed the detailed assumptions for each model scenario and Forecast Year regarding:

- Housing and employment growth<sup>5</sup> (in number of dwelling and jobs respectively):
  - The growth assumptions for the Reference Case model scenarios (Forecast Years 2025 / 2035) are detailed in Appendix A.1;
  - The additional growth assumptions for the Local Plan model scenarios (Forecast Years 2025 / 2035) are detailed in Appendix A.2; and
- Transport infrastructure schemes<sup>6</sup> and their indicative opening years<sup>7</sup>, as specified in **Table 2.2**:
  - It should be noted that CBC expects the delivery of the M1-A6 link and associated M1 J11a enhanced-capacity signalised junction to support the Local Plan growth (see schemes highlighted **green** in **Table 2.2**).

<sup>3</sup> Emails from LBC (08-Oct-15 and 21-Jan-16), assuming the housing growth includes all 'Committed' and 'Local Plan' sites

<sup>4</sup> The Department for Transport (DfT) has developed a National Trip End Model (NTEM), accessible via the TEMPPro software. See <https://data.gov.uk/dataset/national-trip-end-model-ntem>, last accessed 22-Dec-17

<sup>5</sup> Uncertainty Log (CBLTM\_Uncertainty\_Log\_20170202 - TC update Nov 17 V2.xlsx, email from CBC, 13-Nov-17), assuming committed growth in CBC includes all 'Complete', 'Site complete', 'Deliverable' and 'Developable' sites

Committed employment growth assumptions (email from CBC, 23-Feb-17)

Local Plan housing growth (v4 November 2017.xlsx, email from CBC, 21-Nov-17), including five allocated strategic sites, small / medium sites and windfall

Local Plan employment growth (email from CBC, 27-Nov-17)

<sup>6</sup> Leighton Buzzard scheme assumptions (email from CBC, 24-Nov-17)

<sup>7</sup> CBC scheme opening years (email from CBC, 15-Nov-17)

LBC scheme opening years (email from LBC, 21-Nov-17)

2.1.4 It should be noted that the purpose of the Local Plan\* scenario is for CBC to understand the high-level impacts of four potential strategic transport schemes for which there was limited information at time of planning (see schemes highlighted **blue** in **Table 2.2**):

- A428 Black Cat to Caxton Gibbet (outside CBC):
  - This scheme went through a public consultation between March and April 2017. It is noted that a planning application will be submitted in autumn 2018 and that construction is expected to start in 2020<sup>8</sup>;
  - There was no publically available information on the preferred route option and junction improvement scheme at time of model development. The modelling assumptions were coded consistently with the Pink Route<sup>9</sup> and Option B, with an indicative opening year of 2025 or earlier;
- A421 Oxford to Cambridge Expressway (outside CBC), coded in CBLTM as a grade-separated dual 2-lane route<sup>10</sup>;
- A1 East of England improvements:
  - The A1 was coded in CBLTM as a grade-separated 3-lane route within CBC boundaries;
  - Some of the existing local accesses were removed as part of the A1 route upgrade (see **Figure 2.1**);
- East West Rail – Central Section, with the introduction of two additional hourly services having a stop within CBC<sup>11</sup>:
  - Cambridge to Oxford (in 60 minutes); and
  - Cambridge to Bedford (in 24 minutes).

2.1.5 There was less certainty and information regarding the A421 Oxford to Cambridge Expressway, A1 East of England improvements and East West Rail – Central Section. It is assumed<sup>12</sup> these three schemes will open between 2026 and 2035.

2.1.6 These four potential strategic schemes were not included in the proposed mitigation (see Stage 2a Technical Note).

<sup>8</sup> <http://roads.highways.gov.uk/projects/a428-black-cat-to-caxton-gibbet/>, last accessed 26-Oct-17

<sup>9</sup> It should be noted that “there is no [significant] difference on the 3 [route] options for CBC” (email from CBC, 20-Mar-17)

<sup>10</sup> Email from CBC (Dave Buck, 13-Feb-17)

<sup>11</sup> [http://www.eastwestrail.org.uk/wp-content/uploads/2015/04/ewr-cs - cos - final\\_report\\_08-08-2014.pdf](http://www.eastwestrail.org.uk/wp-content/uploads/2015/04/ewr-cs - cos - final_report_08-08-2014.pdf) (accessed 17-Mar-17), p14 and p54

<sup>12</sup> Email from CBC (23-Nov-17)

**Table 2.2: Transport Infrastructure Assumptions**

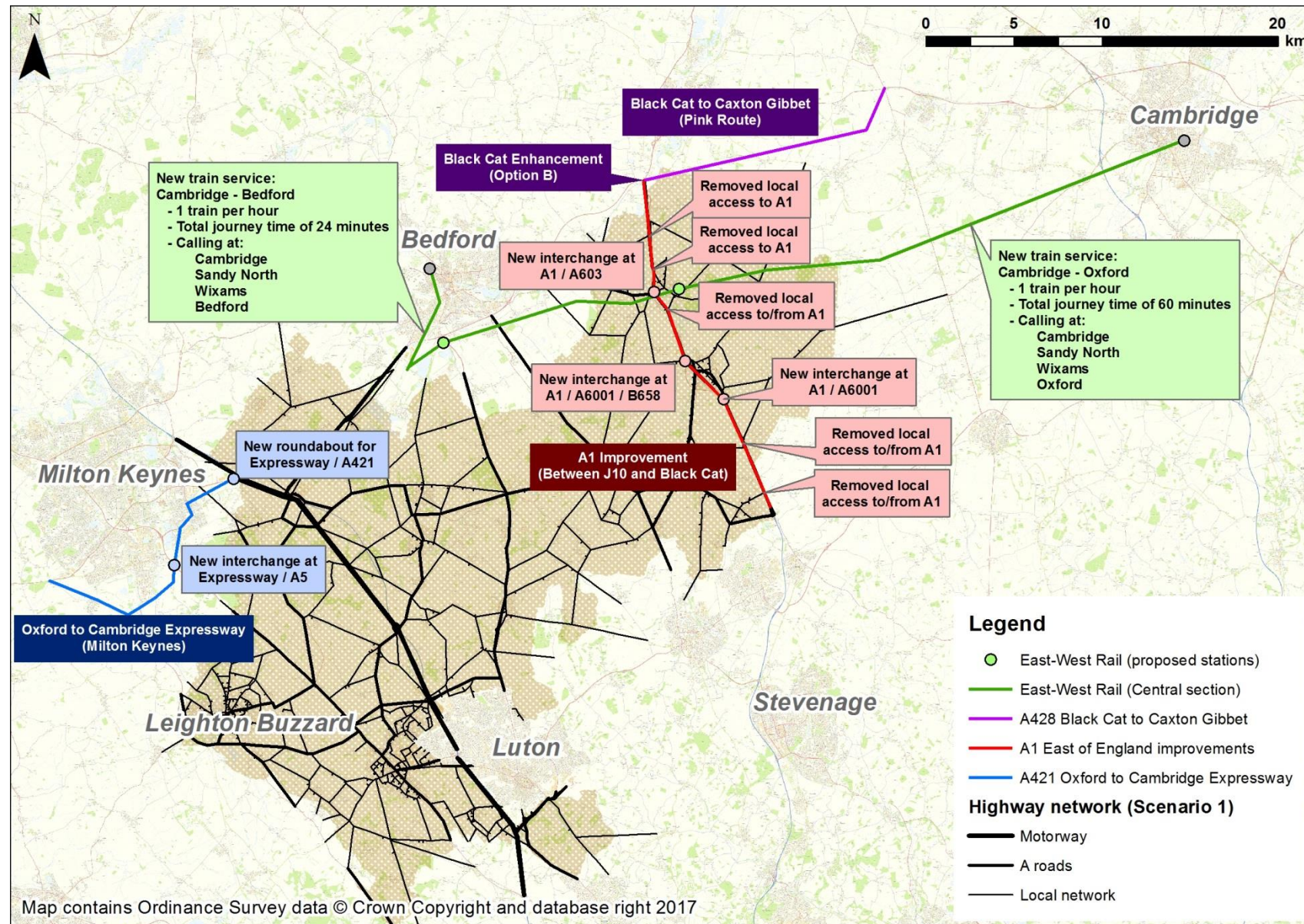
Source	Certainty	Scheme	Opening Year	Forecast Year 2025			Forecast Year 2035		
				Ref. Case	Local Plan	Local Plan*	Ref. Case	Local Plan	Local Plan*
Central Beds	Open	M1 – A5: - A5 – M1 Link - A5505 (Woodside Link) - Poynters Road Scheme - Connection to Woodside Link from Parkside Drive	2017	Y	Y	Y	Y	Y	Y
	Committed	A421 Dualling (including between Eagle Farm and M1)	2019	Y	Y	Y	Y	Y	Y
	H. likely	Houghton Regis (HR) North site 1 development access	2021	Y	Y	Y	Y	Y	Y
		Houghton Regis North Development 2: - Distributor Road	2025	Y	Y	Y	Y	Y	Y
		Leighton Buzzard improvements: - Billington Rd traffic calming (15 mph speed limit and restricted capacity) - A505 / Billington Rd / Stanbridge Rd roundabout - East Leighton Distributor Road	2025*	Y	Y	Y	Y	Y	Y
	Likely	M1-A6 link	2022*	N	Y	Y	N	Y	Y
Luton	Open	Dunstable Rd scheme: - Reallocation of 1 lane between NWB and SEB movements between Telford Way and Cardiff Rd	2017	Y	Y	Y	Y	Y	Y
	H. likely	Airport Link to Century Park	2020	Y	Y	Y	Y	Y	Y
		Power Court development access	2021	Y	Y	Y	Y	Y	Y
		Luton Airport – Mass Passenger Transit system: - Code the MPT and an assumed headway of 10 min (as per current shuttle bus services); - Cancel shuttle bus services on Luton Airport Parkway Bus-Loop - Re-phase signal at New Airport Way / B653 Gipsy Ln	2021	Y	Y	Y	Y	Y	Y



Source	Certainty	Scheme	Opening Year	Forecast Year 2025			Forecast Year 2035		
				Ref. Case	Local Plan	Local Plan*	Ref. Case	Local Plan	Local Plan*
Highways England	Open	M1 J11a Dumbbell Junction	2017	Y	N	N	Y	N	N
	Likely	M1 J11a Dumbbell Junction with capacity-increase measures and access to M1-A6 link	2022*	N	Y	Y	N	Y	Y
		A428 Black Cat to Caxton Gibbet (Pink Route / Option B)	2025*	N	N	Y	N	N	Y
		A421 Oxford to Cambridge Expressway (Milton Keynes)	2035*	N	N	N	N	N	Y
		A1 East of England improvements: - Upgrade to 3 lanes between J10 and Black Cat roundabout - All grade-separated junctions	2035*	N	N	N	N	N	Y
Rail	Committed	East West Rail – Western Section	2024	Y	Y	Y	Y	Y	Y
	Likely	East West Rail – Central Section	2035*	N	N	N	N	N	Y

\* Indicative opening years

Figure 2.1: Additional transport schemes specific to the Local Plan – strategic sites\* model scenario



## 2.2 Assumptions – Development access

- 2.2.1 It should be noted that Central Bedfordshire and Luton have been divided into small areas (i.e. zones) for modelling purposes<sup>13</sup>. The zoning system of a transport model is a fundamental building block which links spatial areas with levels of trip making. In particular, zones are instrumental in defining how trips will load onto the transport network.
- 2.2.2 As part of the Forecasting process, significant growth may need to be allocated to new zones (i.e. development zones) to better represent the change in land-use at a strategic level (see Appendix A.3). Specific access assumptions are then required when growth is allocated to a development zone.
- 2.2.3 The development access assumptions for the eight Local Plan strategic sites are summarised in **Table 2.3**:
- Five of these sites have been allocated to new development zones in the CBLTM, for which CBC have provided<sup>14</sup> specific access assumptions; and
  - The remaining three sites have been allocated to existing CBLTM zones, for which the existing access assumptions were retained.

**Table 2.3: CBLTM development access assumptions in Central Bedfordshire**

Development	CBLTM access assumption
North of Luton	Access to M1-A6 link via spine road (2 junctions)
Marston Vale Growth	Same access assumptions as in the Base Year CBLTM
East of Arlesey	Same access assumptions as in the Base Year CBLTM
East of Biggleswade	Same access assumptions as in the Base Year CBLTM
Sundon Rail Freight	Access to Sundon Rail (1 junction) and M1-A6 link (via North of Luton spine road)
Marston Gate	Access to A507 (1 junction)
RAF Henlow	Access to A659 Hitchin Rd (1 junction)
Holme Farm	Access to A1 (via existing A1 / London Rd junction)

## 2.3 Methodology – ‘hot spot’ identification

- 2.3.1 Identification of the ‘hot spots’ relied on two indicators:
- Link stress, measured in %; and
  - Average delays at junctions, measured in minutes (min).
- 2.3.2 Link stress, i.e. network congestion at road-level, is assessed by the Volume-over-Capacity (VoC) ratio. A ratio of 100% (or more) indicates a saturated highway network.
- 2.3.3 The analysis presented in this note may also refer to traffic flows i.e. number of vehicles, which is measured in Passenger Car Unit (PCU):
- A passenger car has a PCU of 1 by definition; and
  - A bus or Heavy Goods Vehicle (HGV) has a PCU of 2.2 in CBLTM.

<sup>13</sup> For more information on the zoning system, see: CBLTM\_TN03\_Local\_Model\_Validation\_Report\_v3, issued 25-Aug-17

<sup>14</sup> Strategic Site Masterplans (shared by CBC via CBC BOX, 16-Nov-17)  
Strategic employment site access (email from CBC, 21-Nov-17)

## 2.4 Methodology – ‘hot spot’ scale of impact

2.4.1 CBC wish to understand the scale of impact of each issue prior to any mitigation proposal (see Stage 2a Technical Note). A qualitative analysis framework has thus been developed incorporating the following dimensions:

- Users impacted by the issue i.e. how many vehicles are affected; and
- Level of congestion i.e. how much stress and / or junction delay is experienced by the users.

2.4.2 Three levels of ‘users’ and ‘congestion’ have been defined, as indicated in **Table 2.4**.

**Table 2.4: Definition of the levels of ‘Users’ and ‘Congestion’**

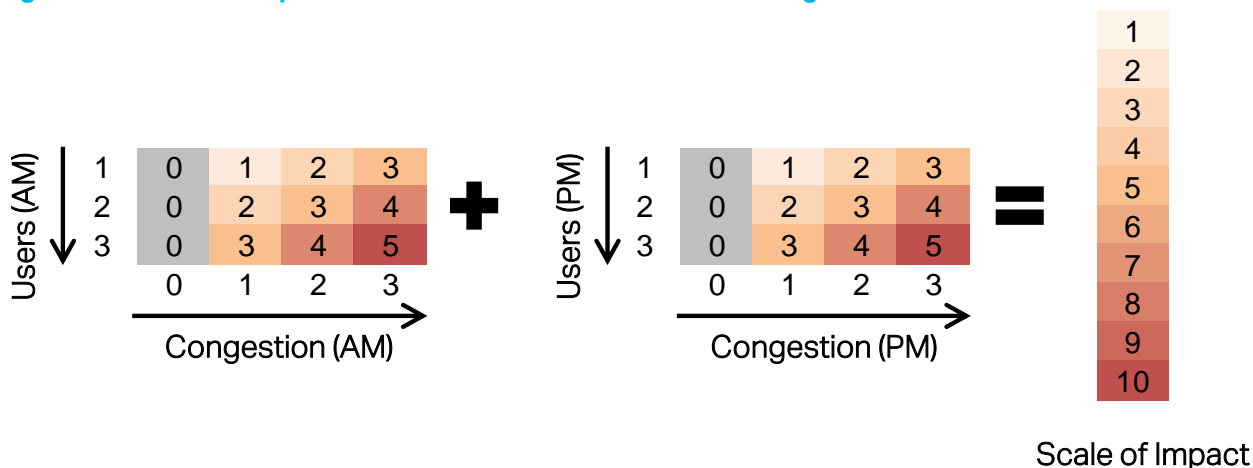
	Users	Congestion	
Level	Traffic flow	Link stress (VoC)	Junction delay
1	Below 1,500 PCU	75% to 90%	Below 2 min
2	1,500 to 3,000 PCU	90% to 100%	2 to 5 min
3	Above 3,000 PCU	Above 100%	Above 5 min

2.4.3 For each ‘hot spot’ and time period, both ‘Users’ and ‘Congestion’ levels are combined into a single score between 1 and 5 (see **Figure 2.2**):

- Should an issue cause both junction delays and link stress, a score is calculated separately for each indicator, and the higher value retained for the purpose of this analysis; and
- A score of 0 is assigned if a ‘Congestion’ level cannot be assigned.

2.4.4 For each ‘hot spot’, both AM and PM peak scores are then added together to provide the total score, which varies between 1 and 10 (see **Figure 2.2**). The scale of impact may be 0 when there is no significant network issue in both time periods.

**Figure 2.2: Scale of impact definition based on ‘Users’ and ‘Congestion’ levels**





## 2.5 Methodology – strategic site user analysis

- 2.5.1 The traffic flows generated by each of the eight Local Plan strategic sites have been identified based on the 2035 Local Plan CBLTM scenario. When required, a comparative approach with the 2035 Reference Case has been undertaken to isolate and understand the traffic flows which are specifically due to the additional Local Plan growth.
- 2.5.2 The user analysis for each site relies on the following steps:
1. Identify which 'hot spots' (see §3) are impacted by the traffic generated by the site;
  2. Assess whether there is a significant increase in traffic flows (i.e. > 50 PCU) at each of the 'hot spots' impacted; and
  3. Estimate the contribution of the site to this increase in traffic flows:
    - Low impact: the traffic generated by the site represents less than 40% of the total increase in traffic flows at the 'hot spot', and is higher than 20 PCU;
    - Medium impact: the traffic generated by the site represents 40% to 80% of the total increase in traffic flows at the 'hot spot'; and
    - High impact: the traffic generated by the site represents more than 80% of the total increase in traffic flows at the 'hot spot'.
- 2.5.3 This analysis will also indicate when users to/from a strategic site 'access' a particular 'hot spot' without causing significant delays and/or stress on the network.

### 3. 'Hot spot' analysis

#### 3.1 Link stress and Junction delays

##### 3.1.1 The following section presents:

- The CBLTM model results used to identify the network issues (i.e. 'hot spots') across Central Bedfordshire. These results include link stress (see §2.3) and junction delays;
- The scales of impacts associated with each 'hot spot', based on the methodology defined in §2.4:
  - By definition, an identical scale of impact may mask differences in the number of vehicles (i.e. 'users') impacted by the network issue and/or the level of link stress or junction delay (i.e. 'congestion') experienced; and
  - The scales of impact tend to be higher on the strategic road network, due to the number of vehicles potentially impacted by the network issue.

##### 3.1.2 Each significant issue on the Central Bedfordshire network will be discussed by location. For reference purposes, twenty-six 'hot spots' (HS) have been identified, as shown in **Figure 3.1**:

- All 'hot spots' are located on networks managed by CBC and/or Highways England (HE). Two of these 'hot spots' are located within AQMAs:
  - 4 (A1 – Sandy) in AQMA No. 4 Sandy; and
  - 12C (A505 – Dunstable) in South Bedfordshire AQMA;
- 3 (A1 / Black Cat) is the only 'hot spot' located outside Central Bedfordshire. Mitigation at this roundabout has already been identified by HE as part of the A428 Black Cat to Caxton Gibbet scheme; and
- It should be noted that these areas have not been listed in any specific order.

##### 3.1.3 The following analysis has been undertaken for the morning (AM) and evening (PM) peak hours, for both Forecast Years 2025 and 2035, and for the following model scenarios:

- Reference Case: see **Figure 3.2 – Figure 3.5** and **Table 3.1**;
- Local Plan: **Figure 3.6 – Figure 3.9** and **Table 3.2**; and
- Local Plan\*<sup>15</sup>: **Figure 3.10 – Figure 3.13** and **Table 3.3**.

<sup>15</sup> See §2.1.4 for the definition of the Local Plan\* scenario

**Figure 3.1: Central Bedfordshire's 'hot spots' and their location**

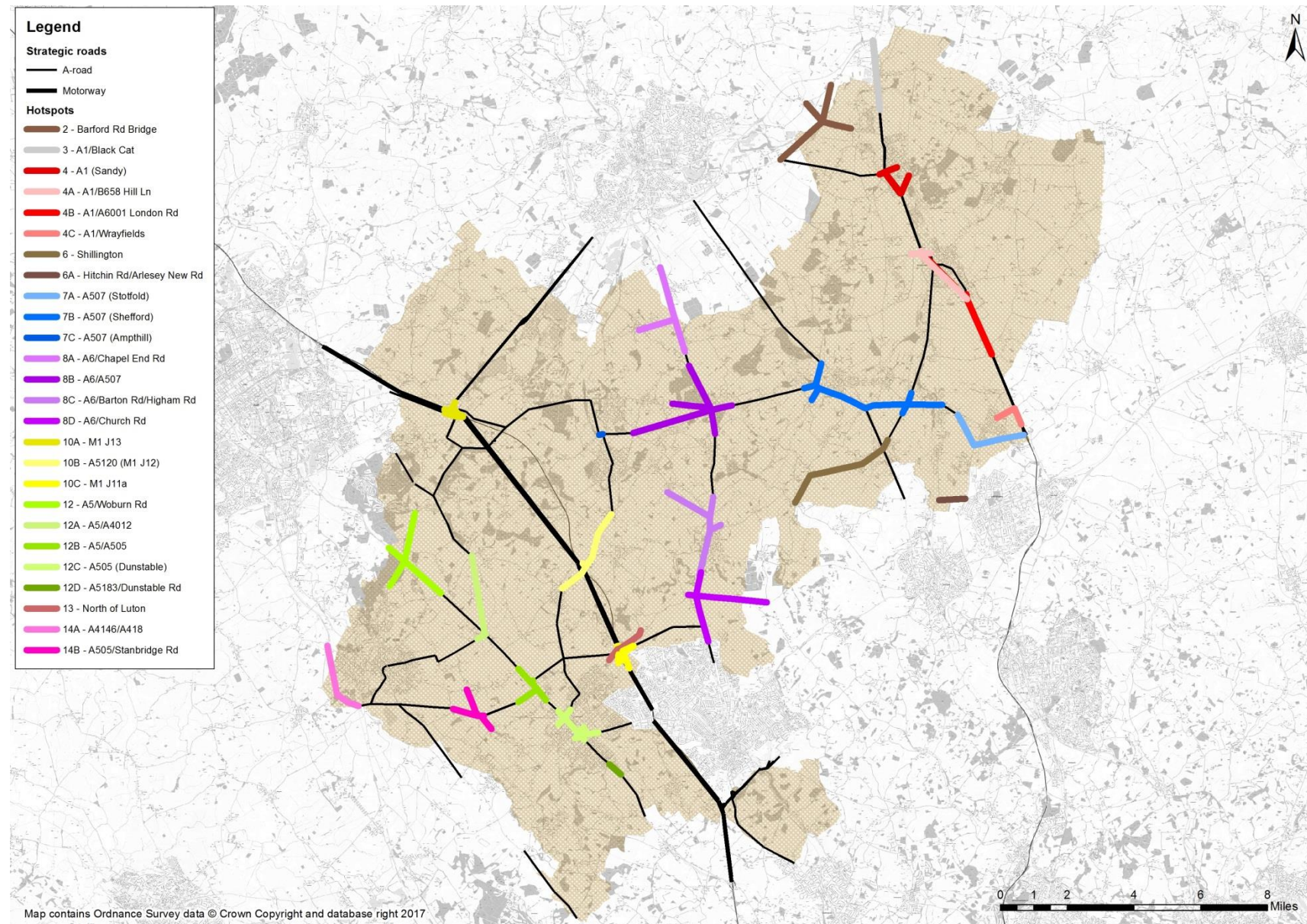




Figure 3.2: Link stress and Junction delays, 2025 Reference Case, AM

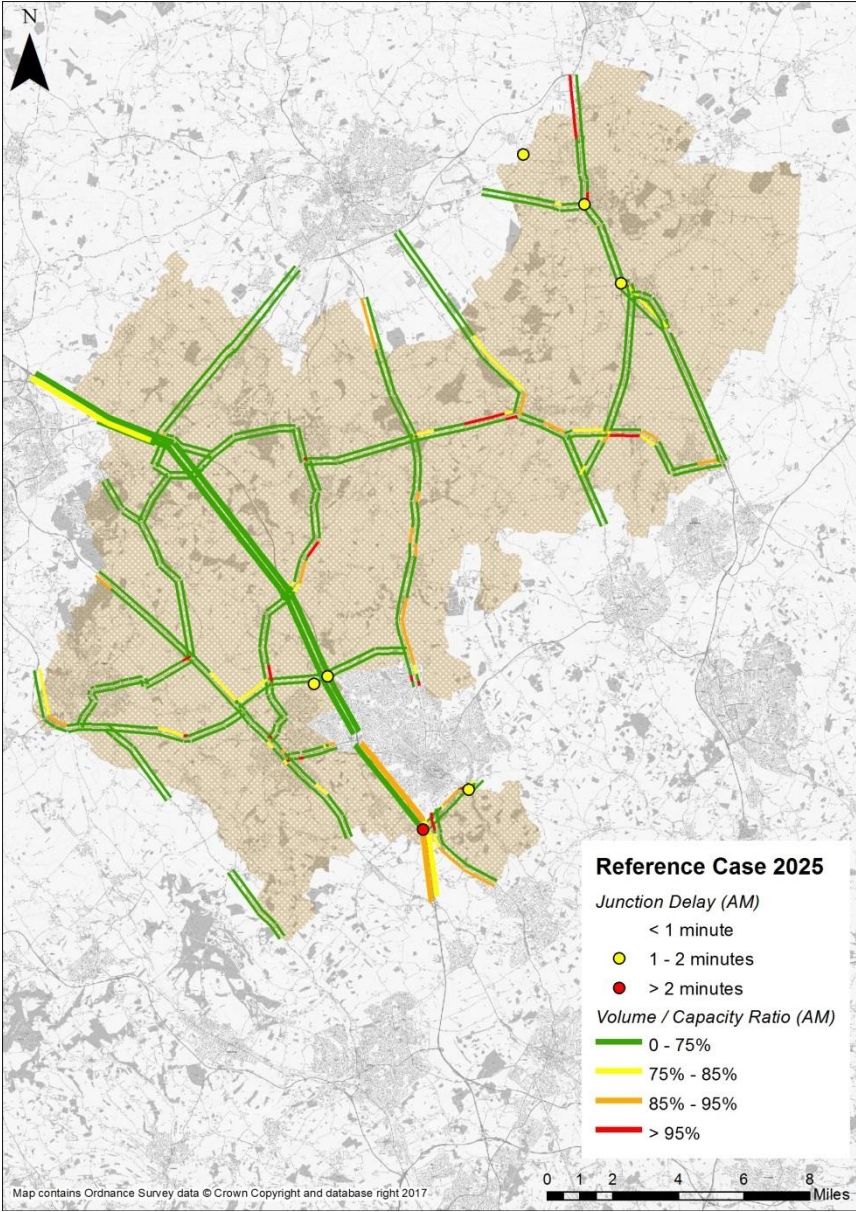
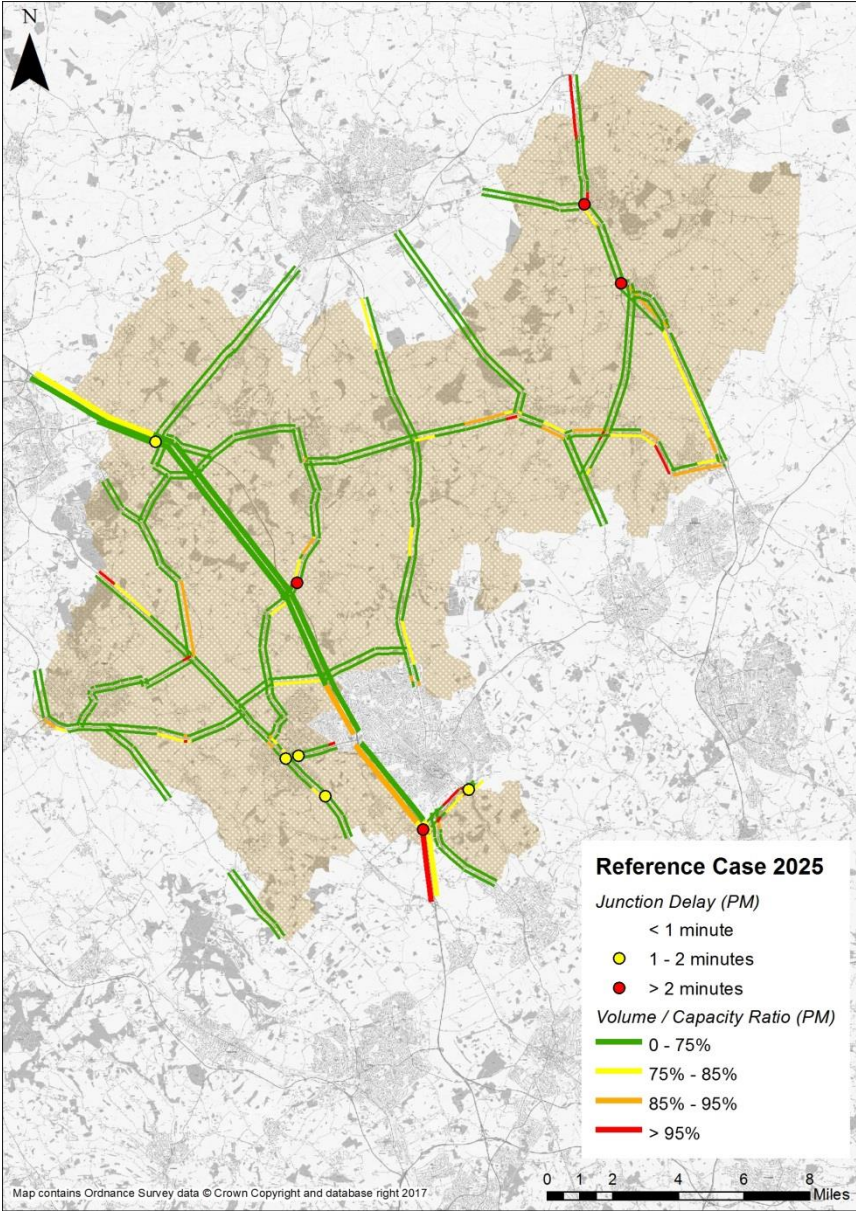
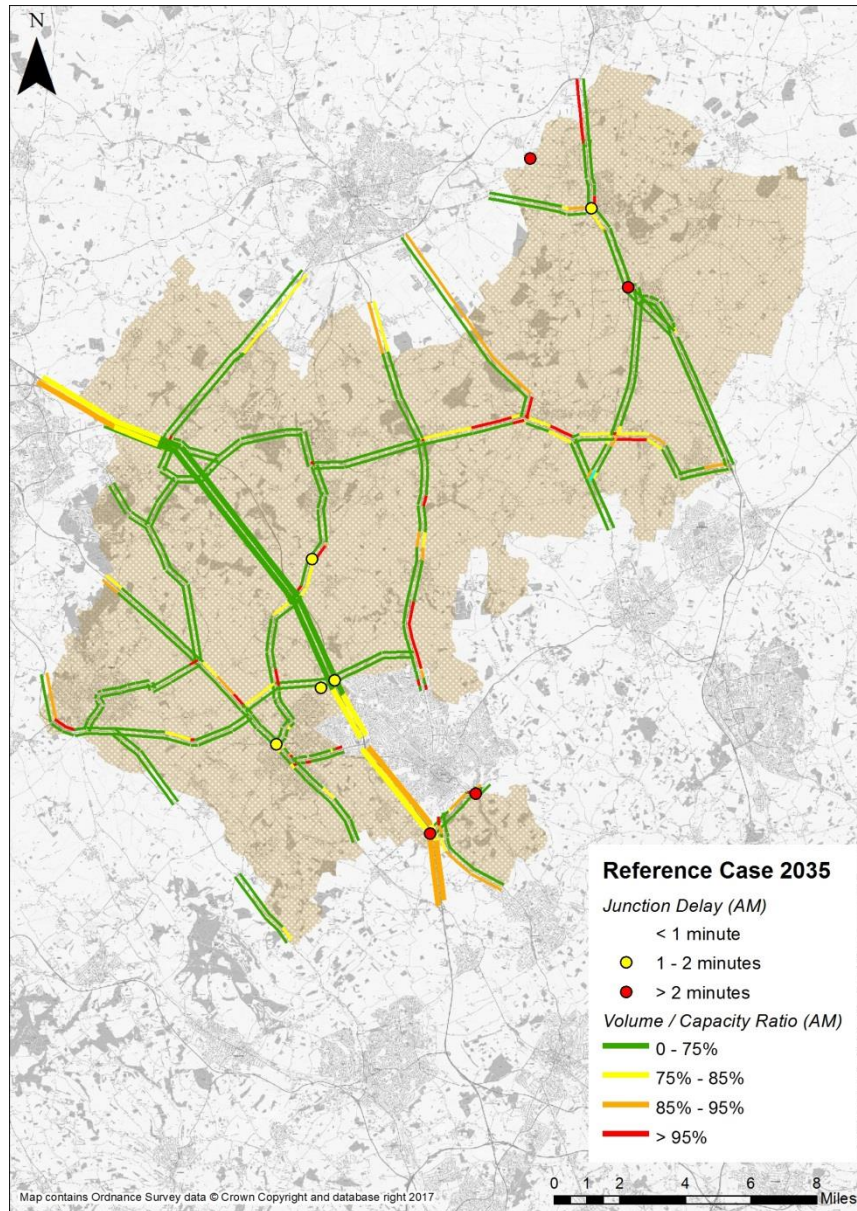


Figure 3.3: Link stress and Junction delays, 2025 Reference Case, PM

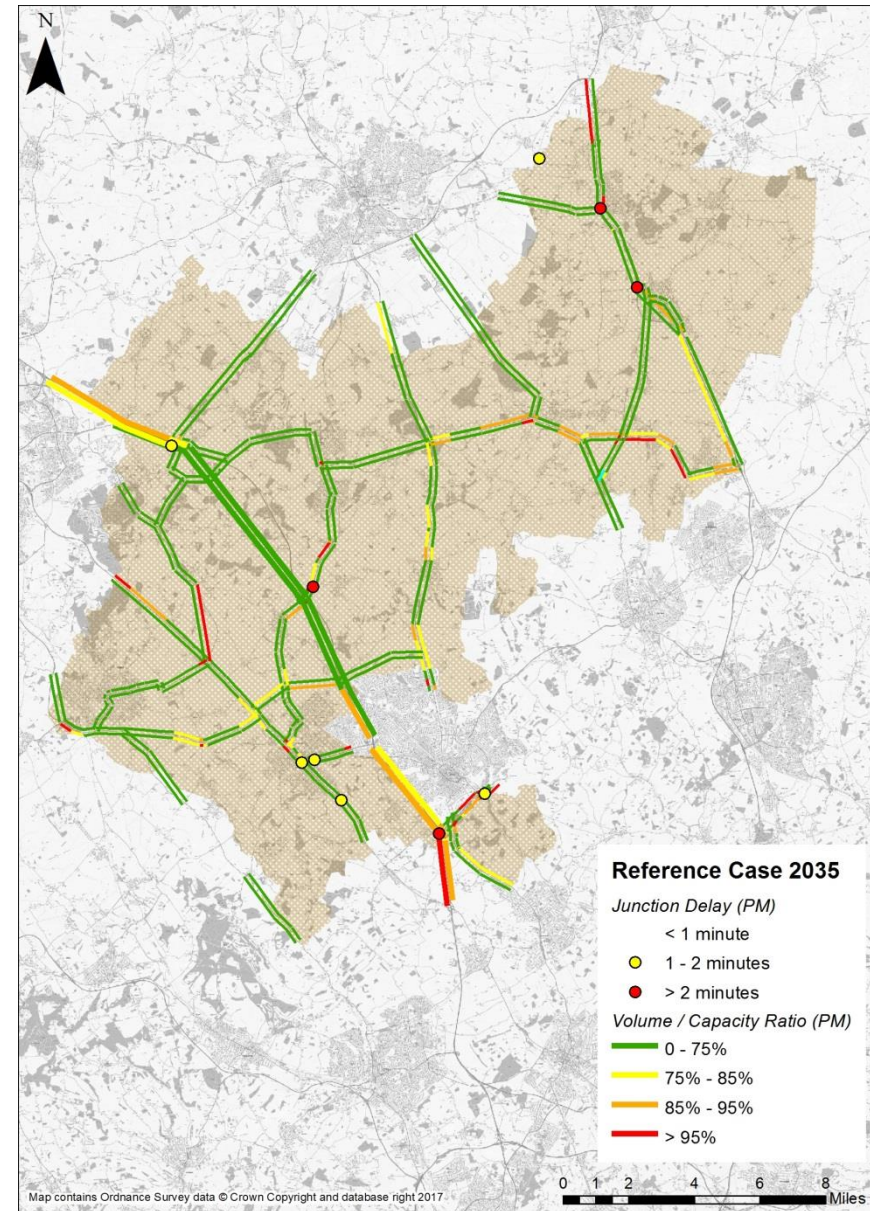




**Figure 3.4: Link stress and Junction delays, 2035 Reference Case, AM**



**Figure 3.5: Link stress and Junction delays, 2035 Reference Case, PM**



**Table 3.1: Description of issue and Scale of impact, Reference Case**

Hot Spot	2025 Reference Case		2035 Reference Case	
2 – Barford Rd Bridge	<p>In AM, traffic experiences delays at the Barford Rd / High St junction (1.5 min in average).</p> <p>In AM, Barford Rd northbound operates at capacity (100% VoC with 250 PCU).</p> <p>In PM, Barford Rd westbound operates at capacity (100% VoC with 300 PCU).</p>	6 / 10	<p>Traffic experiences delays at the Barford Rd / High St junction in both time periods (3.0 / 1.5 min in AM / PM).</p> <p>In AM, Barford Rd northbound is saturated (102% VoC with 250 PCU).</p> <p>In PM, Barford Rd westbound is saturated (106% VoC with 300 PCU).</p>	6 / 10
3 – A1 / Black Cat	The A1 northbound is saturated (up to 108% VoC with 1,450 PCU in the PM peak).	10 / 10	The A1 northbound is saturated (up to 108% VoC with 1,450 PCU in the PM peak).	10 / 10
4 – A1 (Sandy)	<p>Traffic at the A1 / B1042 roundabout experiences delays (1.5 / 2.0 min in AM / PM respectively).</p> <p>Most approaches to the A1 / B1042 roundabout operate at capacity and/or are saturated:</p> <ul style="list-style-type: none"> <li>A1 SB (within the Sandy AQMA): up to 106% VoC with 1,900 PCU in PM;</li> <li>B1042 WB: up to 104% VoC with 600 PCU in the PM peak; and</li> <li>A603 EB: up to 103% VoC with 1,000 PCU in the AM peak.</li> </ul> <p>The New Rd SB approach to the A1 junction (south of Sandy) is also saturated (up to 103% VoC with 250 PCU in the PM peak).</p>	10 / 10	<p>Traffic at the A1 / B1042 roundabout experiences delays (2.0 / 2.5 min in AM / PM respectively).</p> <p>Most approaches to the A1 / B1042 roundabout operate at capacity and/or are saturated:</p> <ul style="list-style-type: none"> <li>A1 SB (within the Sandy AQMA): up to 105% VoC with 1,850 PCU in PM;</li> <li>B1042 WB: up to 104% VoC with 600 PCU in the PM peak; and</li> <li>A603 EB: up to 104% VoC with 1,000 PCU in the AM peak.</li> </ul> <p>The New Rd SB approach to the A1 junction (south of Sandy) is also saturated (up to 104% VoC with 250 PCU in the PM peak).</p>	10 / 10
4A – A1 / B658 Hill Ln	<p>Traffic at the A1 / B658 roundabout experiences delays (1.5 / 2.5 min in AM / PM respectively).</p> <p>Both local approaches to this roundabout operate at saturation:</p> <ul style="list-style-type: none"> <li>B658 EB: up to 104% VoC with 700 PCU in the AM peak; and</li> <li>B658 WB: up to 106% VoC with 800 PCU in the PM peak.</li> </ul>	10 / 10	<p>Traffic at the A1 / B658 roundabout experiences delays (2.0 / 2.5 min in AM / PM respectively).</p> <p>Both local approaches to this roundabout operate at saturation:</p> <ul style="list-style-type: none"> <li>B658 EB: up to 105% VoC with 700 PCU in the AM peak; and</li> <li>B658 WB: up to 107% VoC with 800 PCU in the PM peak.</li> </ul>	10 / 10
4B – A1 / A6001 London Rd	There is congestion on the A1 SB approach (up to 90% VoC with 2,000 PCU in the PM peak).	5 / 10	There is congestion on the A1 SB approach (up to 89% VoC with 2,000 PCU in the PM peak).	4 / 10

Hot Spot	2025 Reference Case		2035 Reference Case	
4C – A1 / Wrayfields	Wrayfields operates at capacity in both time periods (up to 102% VoC in the PM peak).  This local access to the A1 causes congestion on the A1 mainline in the PM peak (92% VoC with 3,250 PCU).	7 / 10	Wrayfields operates at capacity in both time periods (up to 101% VoC in the PM peak).  This local access to the A1 causes congestion on the A1 mainline in the PM peak (94% VoC with 3,350 PCU).	7 / 10
6 – Shillington	There is local congestion on Hitchin Rd due to local access in Henlow Camp in both time periods (up to 81% VoC with 750 PCU).	2 / 10	There is local congestion on Hitchin Rd due to local access in Henlow Camp in both time periods (up to 90% VoC with 850 PCU).	4 / 10
6A – Hitchin Rd / Arlesey New Rd	In the AM peak, there is congestion on the Arlesey New Rd WB approach to this junction (85% VoC with 850 PCU).	1 / 10	In the AM peak, the Arlesey New Rd WB approach to this junction operates at capacity (98% VoC with 950 PCU).	2 / 10
7A – A507 (Stotfold)	In the AM peak, there is congestion on the A507 EB approach to the A1 J10 (88% VoC with 1,400 PCU).  In the PM peak, there is also congestion exiting the A1 J10 (92% VoC with 1,600 PCU).  In both time periods, the A507 approaches to the Stotfold Rd roundabout operate at capacity: <ul style="list-style-type: none"> <li>• SB: up to 90% VoC with 1,300 PCU in AM; and</li> <li>• NB: 99% VoC with 1,350 PCU in PM.</li> </ul>	3 / 10	In the AM peak, there is congestion on the A507 EB approach to the A1 J10 (91% VoC with 1,450 PCU).  In the PM peak, there is also congestion exiting the A1 J10 (86% VoC with 1,500 PCU).  In both time periods, the A507 approaches to the Stotfold Rd roundabout operate at capacity: <ul style="list-style-type: none"> <li>• SB: up to 92% VoC with 1,350 PCU in AM; and</li> <li>• NB: 98% VoC with 1,350 PCU in PM.</li> </ul>	4 / 10

Hot Spot	2025 Reference Case		2035 Reference Case	
7B – A507 (Shefford)	<p>Most approaches to the A507 / B659 roundabout operate at capacity and/or are saturated in both time periods:</p> <ul style="list-style-type: none"> <li>• A507 WB: up to 103% VoC with 1,350 PCU;</li> <li>• B659 NB: up to 101% VoC with 600 PCU; and</li> <li>• A507 EB: up to 86% VoC with 950 PCU.</li> </ul> <p>There is also congestion on the A507 between the A507 / A600 Hitchin Rd and the A507 / Shefford Rd junctions:</p> <ul style="list-style-type: none"> <li>• EB: up to 92% VoC with 1,300 PCU in the AM peak; and</li> <li>• WB: 87% VoC with 1,250 PCU in the PM peak.</li> </ul> <p>There is congestion in the vicinity of the A507 Ampthill Rd / A600 roundabout:</p> <ul style="list-style-type: none"> <li>• A600 SB: 88% VoC with 950 PCU in the AM peak; and</li> <li>• A507 WB: up to 97% VoC with 1,050 PCU in the PM peak.</li> </ul>	8 / 10	<p>Most approaches to the A507 / B659 roundabout operate at capacity and/or are saturated in both time periods:</p> <ul style="list-style-type: none"> <li>• A507 WB: up to 103% VoC with 1,350 PCU;</li> <li>• B659 NB: up to 102% VoC with 600 PCU;</li> <li>• A507 EB: up to 89% VoC with 1,000 PCU; and</li> <li>• B659 SB: 90% VoC with 850 PCU in the AM peak.</li> </ul> <p>There is also congestion on the A507 between the A507 / A600 Hitchin Rd and the A507 / Shefford Rd junctions:</p> <ul style="list-style-type: none"> <li>• EB: up to 98% VoC with 1,400 PCU in the AM peak; and</li> <li>• WB: 90% VoC with 1,300 PCU in the PM peak.</li> </ul> <p>There is congestion and/or saturation in the vicinity of the A507 Ampthill Rd / A600 roundabout:</p> <ul style="list-style-type: none"> <li>• A600 SB: 95% VoC with 1,050 PCU in the AM peak; and</li> <li>• A507 WB: up to 101% VoC with 1,100 PCU in the PM peak.</li> </ul>	8 / 10
7C – A507 (Ampthill)	<p>There is significant link stress on the A507 between the A507 / A5120 and the A507 / Froghall Rd roundabouts:</p> <ul style="list-style-type: none"> <li>• EB: up to 100% VoC with 500 PCU in the AM peak; and</li> <li>• WB: 96% VoC with 450 PCU in the PM peak.</li> </ul>	5 / 10	<p>There is significant link stress on the A507 between the A507 / A5120 and the A507 / Froghall Rd roundabouts:</p> <ul style="list-style-type: none"> <li>• EB: up to 102% VoC with 500 PCU in the AM peak; and</li> <li>• WB: up to 98% VoC with 450 PCU in the PM peak.</li> </ul>	5 / 10
8A – A6 / Chapel End Rd	<p>There is congestion on the A6 northbound exiting Central Bedfordshire in both time periods (up to 91% VoC with 700 PCU in the AM peak).</p>	3 / 10	<p>There is congestion on the A6 northbound exiting Central Bedfordshire in both time periods (up to 94% VoC with 750 PCU in the AM peak).</p> <p>In the PM peak, there is congestion on the Chapel End Rd EB approach to this junction (92% VoC with 700 PCU).</p>	3 / 10
8B – A6 / A507	<p>In the AM peak, the A6 SB approach to this junction operates at capacity (99% VoC with 1,150 PCU).</p>	3 / 10	<p>In the AM peak, the A6 SB approach to this junction operates at capacity (101% VoC with 1,150 PCU).</p> <p>In the PM peak, there is congestion on the A507 WB approach to this junction (87% with 1,100 PCU).</p>	5 / 10

Hot Spot	2025 Reference Case		2035 Reference Case	
8C – A6 / Barton Rd / Higham Rd	<p>The Barton Rd EB approach to the A6 operates at saturation in both time periods (up to 103% VoC with 200 PCU in the AM peak). Traffic from Barton Rd causes stress on the A6 northbound (up to 85% VoC with 750 PCU in the AM peak).</p> <p>There is congestion on the approaches to the A6 / Higham Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 SB: up to 87% VoC with 1,250 PCU in the AM peak; and</li> <li>Higham Rd WB: up to 75% VoC with 700 PCU in the PM peak.</li> </ul>	5 / 10	<p>The Barton Rd EB approach to the A6 operates at saturation in both time periods (up to 104% VoC with 200 PCU in the AM peak). Traffic from Barton Rd causes stress on the A6 northbound (up to 89% VoC with 800 PCU in the AM peak).</p> <p>There is congestion on the approaches to the A6 / Higham Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 SB: up to 89% VoC with 1,300 PCU in the AM peak; and</li> <li>Higham Rd WB: up to 81% VoC with 800 PCU in the PM peak.</li> </ul>	5 / 10
8D – A6 / Church Rd	<p>In the AM peak, the A6 southbound operates at capacity (93% VoC with 1,750 PCU).</p> <p>In the PM peak, the Church Rd EB approach to the A6 operates at capacity (96% VoC with 800 PCU).</p>	5 / 10	<p>There is congestion and/or saturation on most approaches to the A6 / Church Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 NB: 87% VoC with 1,000 PCU in the PM peak;</li> <li>Church Rd EB: up to 98% with 800 PCU in the PM peak; and</li> <li>A6 SB: 101% with 1,850 PCU in the AM peak.</li> </ul>	6 / 10
10A – M1 J13	<p>In the PM peak, there is congestion on the M1 J13 WB off-slip (86% VoC with 1,550 PCU).</p> <p>The Salford Rd SB approach to this junction operates at capacity in both time periods (up to 100% VoC with 950 PCU).</p> <p>There is congestion and/or saturation on most approaches to the A421 roundabout in both time periods:</p> <ul style="list-style-type: none"> <li>A421 EB: 100% VoC with 1,150 PCU in both peak hours;</li> <li>A421 SB: 94% VoC with 1,700 PCU in the AM peak; and</li> <li>WB approach: up to 84% VoC with 1,100 PCU in the PM peak.</li> </ul> <p>Northbound traffic at this roundabout also experiences delays in the PM peak (1.0 min in average).</p>	9 / 10	<p>There is congestion on the M1 J13 WB off-slip roundabout:</p> <ul style="list-style-type: none"> <li>Bedford Rd SB: up to 89% with 600 PCU in the AM peak; and</li> <li>WB off-slip: 97% VoC with 1,750 PCU in the PM peak.</li> </ul> <p>The Salford Rd SB approach to this junction operates at capacity in both time periods (up to 100% VoC with 950 PCU).</p> <p>There is congestion and/or saturation on most approaches to the A421 roundabout in both time periods:</p> <ul style="list-style-type: none"> <li>A421 EB: 101% VoC with 1,150 PCU in both peak hours;</li> <li>A421 SB: up to 99% VoC with 1,800 PCU in the AM peak; and</li> <li>WB approach: up to 92% VoC with 1,200 PCU in the PM peak.</li> </ul> <p>Northbound traffic at this roundabout also experiences delays in the PM peak (1.0 min in average).</p>	10 / 10

Hot Spot	2025 Reference Case		2035 Reference Case	
10B – A5120 (M1 J12)	<p>Congestion on the A5120 mainly follows a tidal pattern towards / from the M1 J12 in AM / PM respectively.</p> <p>In the AM peak, the A5120 SB approach to the Westoning Rd junction operates at capacity (101% VoC with 1,300 PCU).</p> <p>In the PM peak, the A5120 NB approach to the Toddington Rd roundabout is saturated (105% VoC with 1,300 PCU). Traffic at this junction experiences delays (2.5 min in average).</p> <p>In the PM peak, there is also congestion on the A5120 SB exiting the M1 J12 (94% VoC with 950 PCU).</p>	7 / 10	<p>Congestion on the A5120 mainly follows a tidal pattern towards / from the M1 J12 in AM / PM respectively.</p> <p>In the AM peak, the A5120 SB approach to the Westoning Rd junction operates at capacity (101% VoC with 1,300 PCU). Traffic at this junction experiences delays (1.0 min in average).</p> <p>In the PM peak, the A5120 NB approach to the Toddington Rd roundabout is saturated (105% VoC with 1,300 PCU). Traffic at this junction experiences delays (2.5 min in average).</p> <p>In the PM peak, the A5120 SB exiting the M1 J12 operates at capacity (99% VoC with 1,000 PCU).</p>	7 / 10
10C – M1 J11a	In the AM peak, southbound traffic at the M1-A5 junction experiences delays (1.5 min in average).	2 / 10	In the AM peak, southbound traffic at the M1-A5 junction experiences delays (2.0 min in average).	2 / 10
12 – A5 / Woburn Rd	<p>In the AM peak, there is congestion on the A5 northbound (91% VoC with 850 PCU).</p> <p>In the PM peak, the A5 SB approach to the A5 / Woburn Rd junction operates at capacity (101% VoC with 950 PCU).</p>	3 / 10	<p>In the AM peak, there is congestion on the A5 northbound (86% VoC with 800 PCU).</p> <p>In the PM peak, the A5 SB approach to the A5 / Woburn Rd junction operates at capacity (101% VoC with 950 PCU).</p>	4 / 10
12A – A5 / A4012	<p>There is congestion and/or saturation on both A4012 approaches to this junction:</p> <ul style="list-style-type: none"> <li>EB: up to 100% VoC with 350 PCU in the AM peak; and</li> <li>SB: 90% VoC with 200 PCU in the PM peak.</li> </ul>	5 / 10	<p>There is congestion and/or saturation on both A4012 approaches to this junction:</p> <ul style="list-style-type: none"> <li>EB: 100% VoC with 350 PCU in both peak hours; and</li> <li>SB: 101% VoC with 200 PCU in the PM peak.</li> </ul>	6 / 10
12B – A5 / A505	In the AM peak, there is very limited congestion on the A5 southbound and eastbound.	1 / 10	In the AM peak, the A5 SB approach to this junction operates at capacity (97% VoC with 1,200 PCU).	5 / 10

Hot Spot	2025 Reference Case		2035 Reference Case	
12C – A505 (Dunstable)	<p>There is congestion and/or saturation on both A505 approaches to the A505 / B5120 junction:</p> <ul style="list-style-type: none"> <li>A505 SB: up to 101% VoC with 650 PCU in the AM peak; and</li> <li>A505 NB: 93% VoC with 850 PCU in the PM peak.</li> </ul> <p>Most approaches to the A505 / B489 West St junction operate at capacity:</p> <ul style="list-style-type: none"> <li>A505 SB: 100% VoC with 700 PCU in the PM peak;</li> <li>Church St WB: up to 100% VoC with 850 PCU in the PM peak;</li> <li>A5183 NB: 91% VoC with 750 PCU in the PM peak; and</li> <li>B489 EB: 101% VoC with 450 PCU in both peak hours.</li> </ul> <p>Traffic at this junction also experiences delays (1.5 min) in the PM peak.</p> <p>Similarly, traffic at the Church St / Station Rd junction experiences delays (1.0 min) in the PM peak.</p> <p>It should be noted that the A505 / B489 and the Church St / Station Rd junctions fall within the South Bedfordshire AQMA.</p>	8 / 10	<p>There is congestion and/or saturation on both A505 approaches to the A505 / B5120 junction:</p> <ul style="list-style-type: none"> <li>A505 SB: up to 102% VoC with 650 PCU in the AM peak; and</li> <li>A505 NB: 100% VoC with 850 PCU in the PM peak.</li> </ul> <p>Traffic at this junction also experiences delays (1.0 min) in the AM peak.</p> <p>Most approaches to the A505 / B489 West St junction operate at capacity:</p> <ul style="list-style-type: none"> <li>A505 SB: 101% VoC with 700 PCU in the PM peak;</li> <li>Church St WB: 100% VoC with 850 PCU in both peak hours;</li> <li>A5183 NB: 92% VoC with 800 PCU in the PM peak; and</li> <li>B489 EB: 101% VoC with 450 PCU in both peak hours.</li> </ul> <p>Traffic at this junction also experiences delays (1.5 min) in the PM peak.</p> <p>Similarly, traffic at the Church St / Station Rd junction experiences delays (1.5 min) in the PM peak.</p> <p>It should be noted that the A505 / B489 and the Church St / Station Rd junctions fall within the South Bedfordshire AQMA.</p>	8 / 10
12D – A5183 / Dunstable Rd	In the PM peak, traffic at the A5183 / Dunstable Rd junction experiences delays (1.0 min in average).	3 / 10	In the PM peak, traffic at the A5183 / Dunstable Rd junction experiences delays (1.5 min in average).	3 / 10
13 – North of Luton	<p>Sundon Rd operates at capacity between Manor Rd and Sundon Park Rd:</p> <ul style="list-style-type: none"> <li>SB in the AM peak: 96% VoC with 900 PCU; and</li> <li>NB in the PM peak: 101% VoC with 950 PCU.</li> </ul> <p>There is congestion (up to 105% VoC with 1,000 PCU in the AM peak) and delays (up to 1.5 min in the AM peak) on the Sundon Rd access to Houghton Regis.</p>	7 / 10	<p>Sundon Rd is saturated between Manor Rd and Sundon Park Rd:</p> <ul style="list-style-type: none"> <li>SB in the AM peak: 101% VoC with 950 PCU; and</li> <li>NB in the PM peak: 102% VoC with 1,000 PCU.</li> </ul> <p>There is congestion (up to 105% VoC with 1,000 PCU in the AM peak) and delays (up to 1.5 min in the AM peak) on the Sundon Rd access to Houghton Regis.</p>	7 / 10

Hot Spot	2025 Reference Case		2035 Reference Case	
14A – A4146 / A418	<p>In the AM peak, there is congestion on the A4146 eastbound (86% VoC with 1,350 PCU).</p> <p>In the PM peak, there is congestion on the A4146 westbound (93% VoC with 1,250 PCU).</p>	3 / 10	<p>In the AM peak, the A4146 eastbound operates at capacity (100% VoC with 1,550 PCU).</p> <p>In the PM peak, the A4146 westbound operates at capacity (101% VoC with 1,300 PCU).</p>	7 / 10
14B – A505 / Stanbridge Rd	There is congestion and/or saturation on the A505 between Station Rd and Stanbridge Rd in both directions and time periods (up to 101% VoC with 1,300 PCU in the AM peak).	5 / 10	There is congestion and/or saturation on the A505 between Station Rd and Stanbridge Rd in both directions and time periods (up to 102% VoC with 1,300 PCU in the AM peak).	7 / 10



Figure 3.6: Link stress and Junction delays, 2025 Local Plan, AM

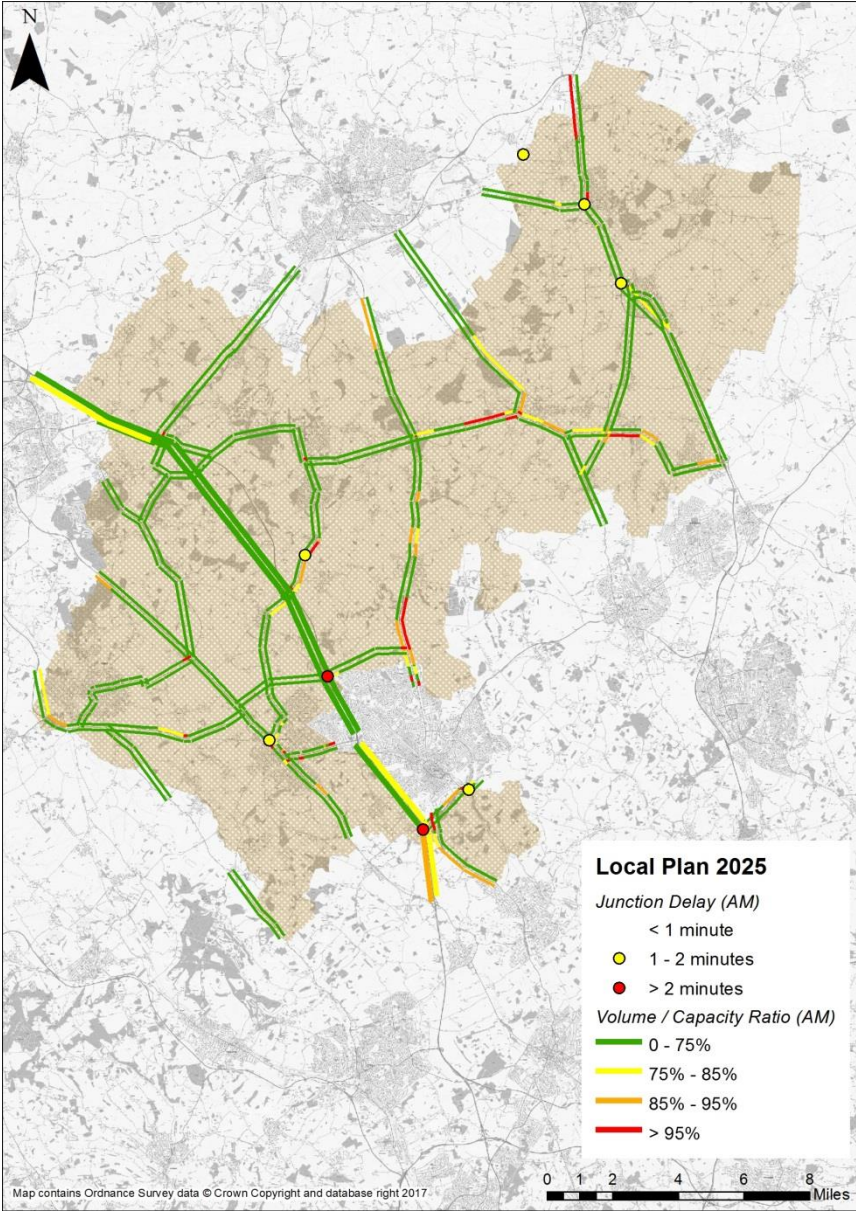
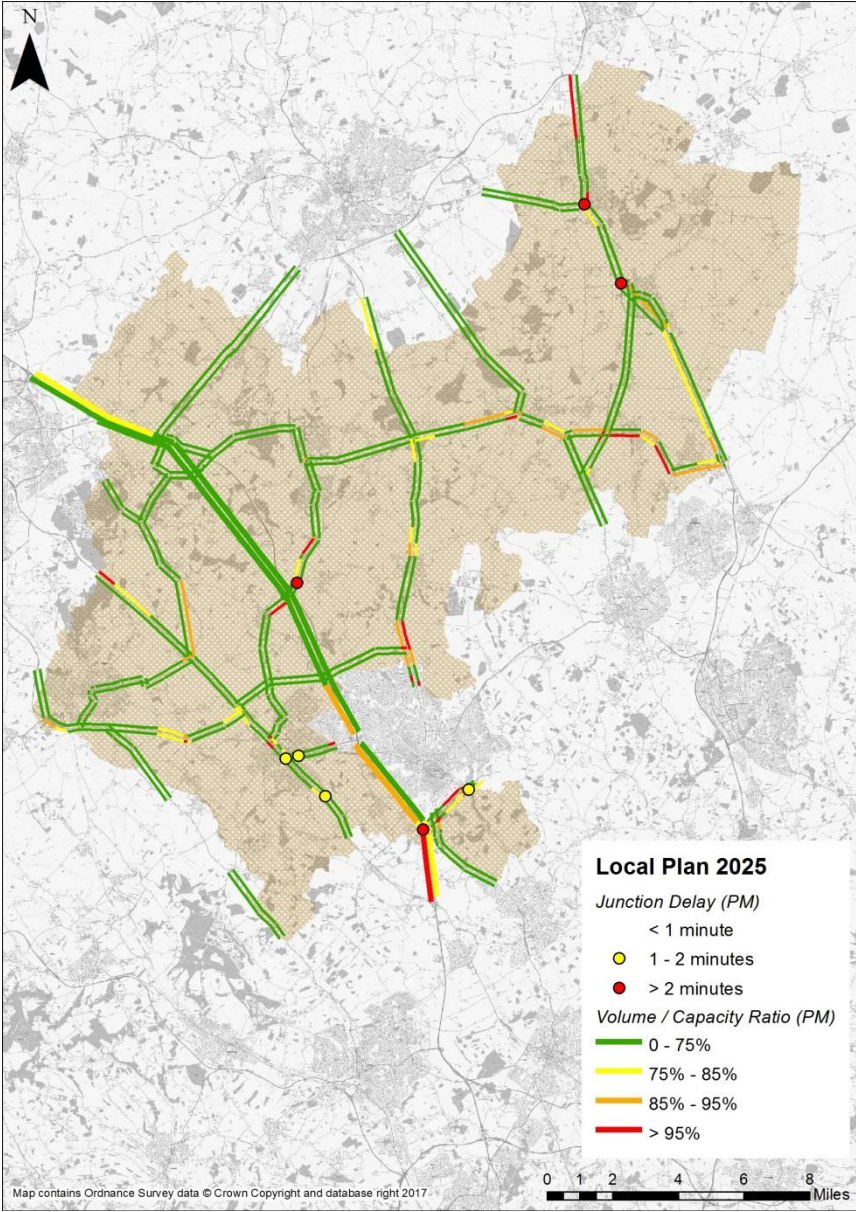
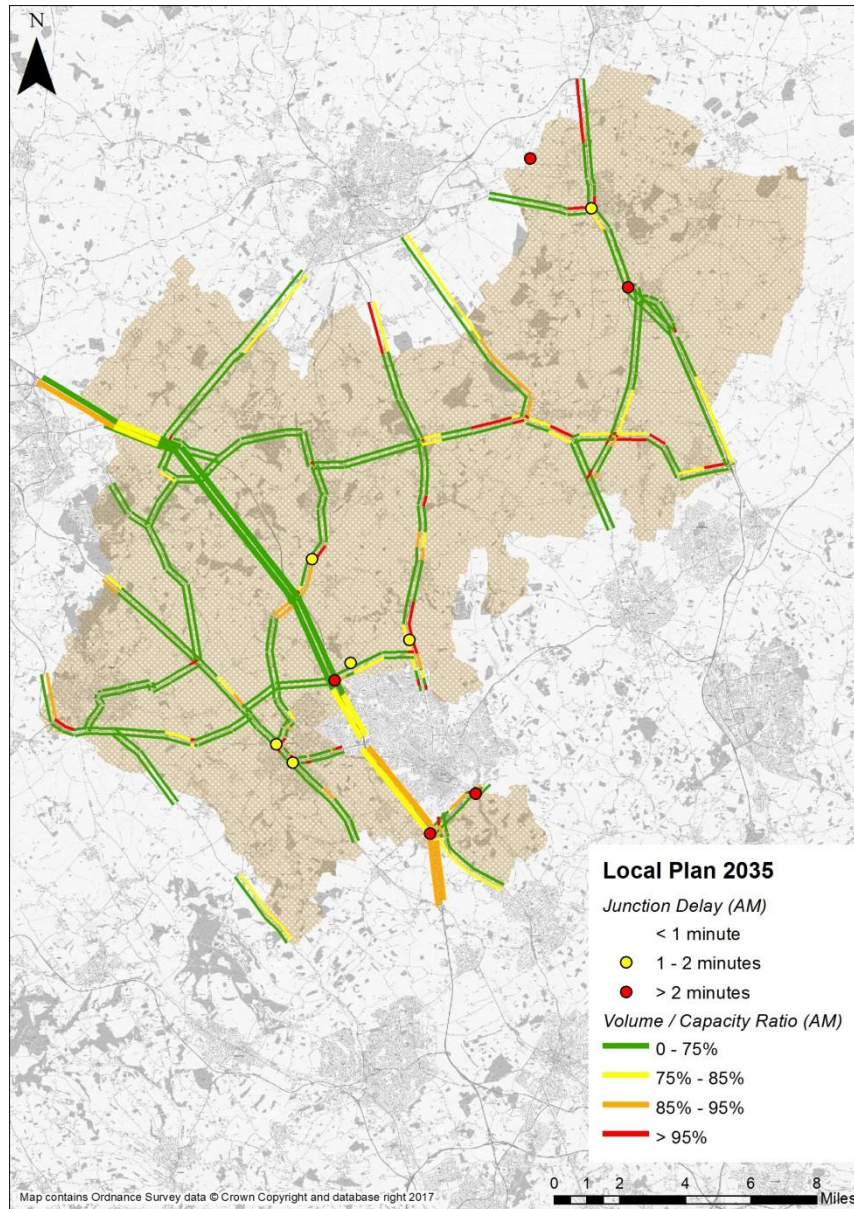


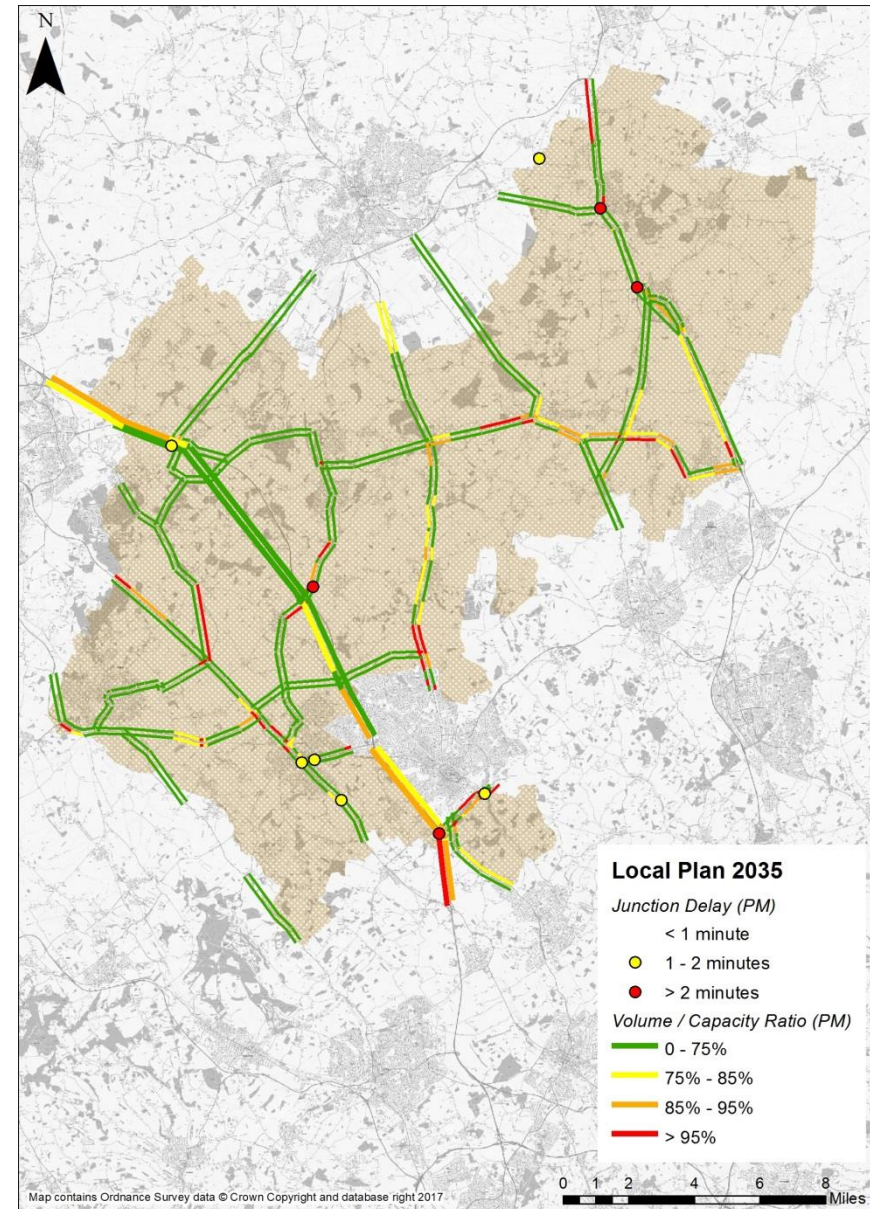
Figure 3.7: Link stress and Junction delays, 2025 Local Plan, PM



**Figure 3.8: Link stress and Junction delays, 2035 Local Plan, AM**



**Figure 3.9: Link stress and Junction delays, 2035 Local Plan, PM**



**Table 3.2: Description of issue and Scale of impact, Local Plan**

Hot Spot	2025 Local Plan		2035 Local Plan	
2 – Barford Rd Bridge	<p>In AM, traffic experiences delays at the Barford Rd / High St junction (1.5 min in average).</p> <p>In AM, Barford Rd northbound operates at capacity (101% VoC with 250 PCU).</p> <p>In PM, Barford Rd westbound operates at capacity (102% VoC with 300 PCU).</p>	6 / 10	<p>Traffic experiences delays at the Barford Rd / High St junction in both time periods (3.0 / 1.5 min in AM / PM).</p> <p>In AM, Barford Rd northbound is saturated (103% VoC with 250 PCU).</p> <p>In PM, Barford Rd westbound is saturated (106% VoC with 300 PCU).</p>	6 / 10
3 – A1 / Black Cat	The A1 northbound is saturated (up to 108% VoC with 1,450 PCU in the PM peak).	10 / 10	The A1 northbound is saturated (up to 108% VoC with 1,450 PCU in the PM peak).	10 / 10
4 – A1 (Sandy)	<p>Traffic at the A1 / B1042 roundabout experiences delays (1.5 / 2.5 min in AM / PM respectively).</p> <p>Most approaches to the A1 / B1042 roundabout operate at capacity and/or are saturated:</p> <ul style="list-style-type: none"> <li>A1 SB (within the Sandy AQMA): up to 107% VoC with 1,900 PCU in PM;</li> <li>B1042 WB: up to 104% VoC with 600 PCU in the PM peak; and</li> <li>A603 EB: up to 103% VoC with 1,000 PCU in the AM peak.</li> </ul> <p>The New Rd SB approach to the A1 junction (south of Sandy) is also saturated (up to 103% VoC with 250 PCU in the PM peak).</p>	10 / 10	<p>Traffic at the A1 / B1042 roundabout experiences delays (2.0 / 2.5 min in AM / PM respectively).</p> <p>Most approaches to the A1 / B1042 roundabout operate at capacity and/or are saturated:</p> <ul style="list-style-type: none"> <li>A1 SB (within the Sandy AQMA): up to 105% VoC with 1,850 PCU in PM;</li> <li>B1042 WB: up to 105% VoC with 600 PCU in the PM peak; and</li> <li>A603 EB: up to 104% VoC with 1,000 PCU in the AM peak.</li> </ul> <p>The New Rd SB approach to the A1 junction (south of Sandy) is also saturated (up to 105% VoC with 250 PCU in the PM peak).</p>	10 / 10
4A – A1 / B658 Hill Ln	<p>Traffic at the A1 / B658 roundabout experiences delays (2.0 / 2.5 min in AM / PM respectively).</p> <p>Both local approaches to this roundabout operate at saturation:</p> <ul style="list-style-type: none"> <li>B658 EB: up to 104% VoC with 700 PCU in the AM peak; and</li> <li>B658 WB: up to 107% VoC with 800 PCU in the PM peak.</li> </ul>	10 / 10	<p>Traffic at the A1 / B658 roundabout experiences delays (2.5 / 3.0 min in AM / PM respectively).</p> <p>Both local approaches to this roundabout operate at saturation:</p> <ul style="list-style-type: none"> <li>B658 EB: up to 104% VoC with 700 PCU in the AM peak; and</li> <li>B658 WB: up to 106% VoC with 800 PCU in the PM peak.</li> </ul>	10 / 10



Hot Spot	2025 Local Plan		2035 Local Plan	
4B – A1 / A6001 London Rd	There is congestion on the A1 SB approach (up to 92% VoC with 2,000 PCU in the PM peak).	6 / 10	There is congestion on the A1 SB approach (up to 95% VoC with 2,000 PCU in the PM peak).  In the AM peak, there is congestion on the A6001 London Rd approach to this junction (100% VoC with 1,150 PCU).	7 / 10
4C – A1 / Wrayfields	Wrayfields operates at capacity in both time periods (up to 101% VoC in the PM peak).  This local access to the A1 causes congestion on the A1 mainline in the PM peak (93% VoC with 3,300 PCU).	7 / 10	Wrayfields operates at capacity in both time periods (up to 100% VoC in the PM peak).  This local access to the A1 causes congestion on the A1 mainline in the PM peak (96% VoC with 3,400 PCU).	7 / 10
6 – Shillington	There is local congestion on Hitchin Rd due to local access in Henlow Camp in both time periods (up to 83% VoC with 800 PCU).	2 / 10	There is local congestion and/or saturation on Hitchin Rd due to local access in Henlow Camp in both time periods (up to 100% VoC with 950 PCU in the AM peak).	6 / 10
6A – Hitchin Rd / Arlesey New Rd	In the AM peak, there is congestion on the Arlesey New Rd WB approach to this junction (87% VoC with 850 PCU).	2 / 10	In the AM peak, the Arlesey New Rd WB approach to this junction operates at capacity (99% VoC with 900 PCU).	4 / 10
7A – A507 (Stotfold)	In the AM peak, there is congestion on the A507 EB approach to the A1 J10 (91% VoC with 1,450 PCU).  In the PM peak, there is also congestion exiting the A1 J10 (92% VoC with 1,650 PCU).  In both time periods, the A507 approaches to the Stotfold Rd roundabout operate at capacity: <ul style="list-style-type: none"> <li>• SB: up to 92% VoC with 1,300 PCU in AM; and</li> <li>• NB: 100% VoC with 1,350 PCU in PM.</li> </ul>	5 / 10	In the AM peak, the A507 EB approach to the A1 J10 operates at capacity (100% VoC with 1,600 PCU).  In the PM peak, there is also congestion exiting the A1 J10 (91% VoC with 1,600 PCU).  In both time periods, the A507 approaches to the Stotfold Rd roundabout operate at capacity: <ul style="list-style-type: none"> <li>• SB: up to 99% VoC with 1,400 PCU in AM; and</li> <li>• NB: 101% VoC with 1,350 PCU in PM.</li> </ul>	7 / 10

Hot Spot	2025 Local Plan		2035 Local Plan	
7B – A507 (Shefford)	<p>Most approaches to the A507 / B659 roundabout operate at capacity and/or are saturated in both time periods:</p> <ul style="list-style-type: none"> <li>• A507 WB: up to 103% VoC with 1,350 PCU;</li> <li>• B659 NB: up to 102% VoC with 600 PCU;</li> <li>• A507 EB: up to 86% VoC with 950 PCU; and</li> <li>• B659 SB: 80% VoC with 800 PCU in the AM peak.</li> </ul> <p>There is also congestion on the A507 between the A507 / A600 Hitchin Rd and the A507 / Shefford Rd junctions:</p> <ul style="list-style-type: none"> <li>• EB: up to 94% VoC with 1,350 PCU in the AM peak; and</li> <li>• WB: 87% VoC with 1,250 PCU in the PM peak.</li> </ul> <p>There is congestion and/or saturation in the vicinity of the A507 Ampthill Rd / A600 roundabout:</p> <ul style="list-style-type: none"> <li>• A600 SB: 87% VoC with 950 PCU in the AM peak; and</li> <li>• A507 WB: up to 98% VoC with 1,050 PCU in the PM peak.</li> </ul>	8 / 10	<p>Most approaches to the A507 / B659 roundabout operate at capacity and/or are saturated in both time periods:</p> <ul style="list-style-type: none"> <li>• A507 WB: up to 103% VoC with 1,350 PCU;</li> <li>• B659 NB: up to 102% VoC with 600 PCU;</li> <li>• A507 EB: up to 92% VoC with 1,050 PCU; and</li> <li>• B659 SB: 100% VoC with 900 PCU in the AM peak.</li> </ul> <p>There is also congestion on the A507 between the A507 / A600 Hitchin Rd and the A507 / Shefford Rd junctions:</p> <ul style="list-style-type: none"> <li>• EB: up to 98% VoC with 1,400 PCU in the AM peak; and</li> <li>• WB: 90% VoC with 1,300 PCU in the PM peak.</li> </ul> <p>There is congestion and/or saturation in the vicinity of the A507 Ampthill Rd / A600 roundabout:</p> <ul style="list-style-type: none"> <li>• A600 SB: 94% VoC with 1,050 PCU in the AM peak; and</li> <li>• A507 WB: up to 102% VoC with 1,100 PCU in the PM peak.</li> </ul>	8 / 10
7C – A507 (Ampthill)	<p>There is significant link stress on the A507 between the A507 / A5120 and the A507 / Froghall Rd roundabouts:</p> <ul style="list-style-type: none"> <li>• EB: up to 100% VoC with 500 PCU in the AM peak; and</li> <li>• WB: 97% VoC with 450 PCU in the PM peak.</li> </ul>	5 / 10	<p>There is significant link stress on the A507 between the A507 / A5120 and the A507 / Froghall Rd roundabouts:</p> <ul style="list-style-type: none"> <li>• EB: up to 100% VoC with 500 PCU in the AM peak; and</li> <li>• WB: 99% VoC with 450 PCU in the PM peak.</li> </ul>	5 / 10
8A – A6 / Chapel End Rd	<p>There is congestion on the A6 northbound exiting Central Bedfordshire in both time periods (up to 91% VoC with 700 PCU in the AM peak).</p>	3 / 10	<p>There is congestion on the A6 northbound exiting Central Bedfordshire in both time periods (up to 97% VoC with 800 PCU in the AM peak).</p> <p>In the PM peak, there is congestion on the Chapel End Rd EB approach to this junction (91% VoC with 700 PCU).</p>	3 / 10
8B – A6 / A507	<p>In the AM peak, the A6 SB approach to this junction operates at capacity (98% VoC with 1,150 PCU).</p>	4 / 10	<p>In the AM peak, the A6 SB approach to this junction operates at capacity (101% VoC with 1,150 PCU).</p> <p>In the PM peak, there is congestion on most approaches to this junction:</p> <ul style="list-style-type: none"> <li>• A6 SB: 86% with 950 PCU;</li> <li>• A507 WB: 86% with 1,050 PCU; and</li> <li>• A6 NB: 85% with 900 PCU.</li> </ul>	5 / 10

Hot Spot	2025 Local Plan		2035 Local Plan	
8C – A6 / Barton Rd / Higham Rd	<p>The Barton Rd EB approach to the A6 operates at saturation in both time periods (up to 103% VoC with 200 PCU in the AM peak). Traffic from Barton Rd causes stress on the A6 northbound (up to 90% VoC with 800 PCU in the AM peak).</p> <p>There is congestion on the approaches to the A6 / Higham Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 SB: up to 89% VoC with 1,250 PCU in the AM peak; and</li> <li>Higham Rd WB: 81% VoC with 750 PCU in both peak hours.</li> </ul>	5 / 10	<p>The Barton Rd EB approach to the A6 operates at saturation in both time periods (up to 104% VoC with 200 PCU in the AM peak). Traffic from Barton Rd causes stress on the A6 northbound (up to 89% VoC with 800 PCU in the AM peak).</p> <p>There is congestion on the approaches to the A6 / Higham Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 SB: up to 90% VoC with 1,300 PCU in the AM peak; and</li> <li>Higham Rd WB: up to 95% VoC with 900 PCU in the AM peak.</li> </ul>	6 / 10
8D – A6 / Church Rd	<p>There is congestion and/or saturation on most approaches to the A6 / Church Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 NB: 87% VoC with 1,100 PCU in both peak hours;</li> <li>Church Rd EB: 90% with 650 PCU in the PM peak; and</li> <li>A6 SB: 98% with 1,900 PCU in the AM peak.</li> </ul>	8 / 10	<p>There is congestion and/or saturation on most approaches to the A6 / Church Rd roundabout:</p> <ul style="list-style-type: none"> <li>A6 NB: up to 102% VoC with 1,250 PCU in the PM peak;</li> <li>Church Rd EB: 98% with 650 PCU in the PM peak; and</li> <li>A6 SB: 101% with 1,950 PCU in the AM peak.</li> </ul>	9 / 10
10A – M1 J13	<p>In the PM peak, there is congestion on the M1 J13 WB off-slip (89% VoC with 1,600 PCU).</p> <p>The Salford Rd SB approach to this junction operates at capacity in both time periods (up to 100% VoC with 950 PCU).</p> <p>There is congestion and/or saturation on most approaches to the A421 roundabout in both time periods:</p> <ul style="list-style-type: none"> <li>A421 EB: 100% VoC with 1,150 PCU in both peak hours;</li> <li>A421 SB: 95% VoC with 1,700 PCU in the AM peak; and</li> </ul> <p>WB approach: up to 86% VoC with 1,150 PCU in the PM peak.</p>	9 / 10	<p>There is saturation on the M1 J13 WB off-slip roundabout:</p> <ul style="list-style-type: none"> <li>Bedford Rd SB: up to 100% with 650 PCU in the AM peak; and</li> <li>WB off-slip: 101% VoC with 1,800 PCU in the PM peak.</li> </ul> <p>The Salford Rd SB approach to this junction operates at capacity in both time periods (up to 101% VoC with 950 PCU).</p> <p>There is congestion and/or saturation on most approaches to the A421 roundabout in both time periods:</p> <ul style="list-style-type: none"> <li>A421 EB: 101% VoC with 1,150 PCU in both peak hours;</li> <li>A421 SB: up to 100% VoC with 1,800 PCU in the AM peak; and</li> <li>WB approach: up to 92% VoC with 1,200 PCU in the PM peak.</li> </ul> <p>Northbound traffic at this roundabout also experiences delays in the PM peak (1.5 min in average).</p>	10 / 10

Hot Spot	2025 Local Plan		2035 Local Plan	
10B – A5120 (M1 J12)	<p>Congestion on the A5120 mainly follows a tidal pattern towards / from the M1 J12 in AM / PM respectively.</p> <p>In the AM peak, the A5120 SB approach to the Westoning Rd junction is saturated (104% VoC with 1,300 PCU). Traffic at this junction experiences delays (1.0 min in average).</p> <p>In the PM peak, the A5120 NB approach to the Toddington Rd roundabout is saturated (104% VoC with 1,300 PCU). Traffic at this junction experiences delays (2.5 min in average).</p> <p>In the PM peak, the A5120 SB exiting the M1 J12 operates at capacity (98% VoC with 950 PCU).</p>	8 / 10	<p>Congestion on the A5120 mainly follows a tidal pattern towards / from the M1 J12 in AM / PM respectively.</p> <p>In the AM peak, the A5120 SB approach to the Westoning Rd junction is saturated (105% VoC with 1,300 PCU). Traffic at this junction experiences delays (2.0 min in average).</p> <p>In the PM peak, the A5120 NB approach to the Toddington Rd roundabout is saturated (106% VoC with 1,300 PCU). Traffic at this junction experiences delays (3.0 min in average).</p> <p>In the PM peak, the A5120 SB exiting the M1 J12 operates at capacity (99% VoC with 1,000 PCU).</p>	8 / 10
10C – M1 J11a	<p>In the AM peak, southbound traffic at the M1-A5 junction experiences delays (2.5 min in average).</p> <p>In the PM peak, there is congestion on the A5 / A5505 roundabout (92% VoC with 2,400 PCU).</p>	6 / 10	<p>In the AM peak, southbound traffic at the M1-A5 junction experiences delays (3.0 min in average).</p> <p>In the PM peak, the A5 / A5505 roundabout operates at capacity (98% VoC with 2,600 PCU).</p>	6 / 10
12 – A5 / Woburn Rd	<p>In the AM peak, there is congestion on the A5 northbound (95% VoC with 900 PCU).</p> <p>In the PM peak, the A5 SB approach to the A5 / Woburn Rd junction operates at capacity (101% VoC with 950 PCU).</p>	3 / 10	<p>In the AM peak, there is congestion on the A5 northbound (92% VoC with 900 PCU).</p> <p>In the PM peak, the A5 SB approach to the A5 / Woburn Rd junction operates at capacity (101% VoC with 950 PCU).</p>	4 / 10
12A – A5 / A4012	<p>There is congestion and/or saturation on both A4012 approaches to this junction:</p> <ul style="list-style-type: none"> <li>EB: up to 98% VoC with 350 PCU in the AM peak; and</li> <li>SB: 90% VoC with 200 PCU in the PM peak.</li> </ul>	4 / 10	<p>There is congestion and/or saturation on both A4012 approaches to this junction:</p> <ul style="list-style-type: none"> <li>EB: 101% VoC with 350 PCU in both peak hours; and</li> <li>SB: 101% VoC with 200 PCU in the PM peak.</li> </ul>	6 / 10
12B – A5 / A505	<p>In the PM peak, there is limited congestion on the A505 eastbound and northbound.</p>	3 / 10	<p>In the AM peak, there is congestion on the A5 SB approach to this junction (86% VoC with 1,050 PCU).</p> <p>In the PM peak, the A505 NB approach to this junction operates at capacity (96% VoC with 1,700 PCU).</p>	4 / 10

Hot Spot	2025 Local Plan		2035 Local Plan	
12C – A505 (Dunstable)	<p>There is congestion and/or saturation on both A505 approaches to the A505 / B5120 junction:</p> <ul style="list-style-type: none"> <li>A505 SB: up to 102% VoC with 650 PCU in the AM peak; and</li> <li>A505 NB: up to 100% VoC with 850 PCU in the PM peak.</li> </ul> <p>Traffic at this junction also experiences delays (1.0 min) in the AM peak.</p> <p>Most approaches to the A505 / B489 West St junction operate at capacity:</p> <ul style="list-style-type: none"> <li>A505 SB: 101% VoC with 700 PCU in the PM peak;</li> <li>Church St WB: up to 100% VoC with 900 PCU in the PM peak;</li> <li>A5183 NB: up to 89% VoC with 750 PCU in the PM peak; and</li> <li>B489 EB: 101% VoC with 450 PCU in both peak hours.</li> </ul> <p>Traffic at this junction also experiences delays (1.0 min) in the PM peak.</p> <p>Similarly, traffic at the Church St / Station Rd junction experiences delays (1.0 min) in the PM peak.</p> <p>It should be noted that the A505 / B489 and the Church St / Station Rd junctions fall within the South Bedfordshire AQMA.</p>	8 / 10	<p>There is congestion and/or saturation on most approaches to the A505 / B5120 junction:</p> <ul style="list-style-type: none"> <li>A505 SB: up to 103% VoC with 650 PCU in the AM peak;</li> <li>B5120 WB: 102% VoC with 700 PCU in the AM peak; and</li> <li>A505 NB: up to 101% VoC with 850 PCU in the PM peak.</li> </ul> <p>Traffic at this junction also experiences delays (1.5 min) in the AM peak.</p> <p>Most approaches to the A505 / B489 West St junction operate at capacity:</p> <ul style="list-style-type: none"> <li>A505 SB: 101% VoC with 700 PCU in the PM peak;</li> <li>Church St WB: up to 102% VoC with 850 PCU in the AM peak;</li> <li>A5183 NB: up to 94% VoC with 800 PCU in the PM peak; and</li> <li>B489 EB: 101% VoC with 450 PCU in both peak hours.</li> </ul> <p>Traffic at this junction also experiences delays (1.0 min) in the PM peak.</p> <p>Similarly, traffic at the Church St / Station Rd junction experiences delays (1.0 min) in the PM peak.</p> <p>It should be noted that the A505 / B489 and the Church St / Station Rd junctions fall within the South Bedfordshire AQMA.</p>	8 / 10
12D – A5183 / Dunstable Rd	<p>In the AM peak, there is congestion on the A5183 SB approach to this junction (86% VoC with 1,100 PCU).</p> <p>In the PM peak, traffic at the A5183 / Dunstable Rd junction experiences delays (1.0 min in average).</p>	3 / 10	<p>In the AM peak, there is congestion on the A5183 SB approach to this junction (93% VoC with 1,200 PCU).</p> <p>In the PM peak, traffic at the A5183 / Dunstable Rd junction experiences delays (1.5 min in average).</p>	4 / 10



Hot Spot	2025 Local Plan		2035 Local Plan	
13 – North of Luton	<p>Sundon Rd operates at capacity between Manor Rd and Sundon Park Rd:</p> <ul style="list-style-type: none"> <li>• SB in the AM peak: 100% VoC with 950 PCU; and</li> <li>• NB in the PM peak: 97% VoC with 950 PCU.</li> </ul>	5 / 10	<p>Sundon Rd is saturated between Manor Rd and Sundon Park Rd:</p> <ul style="list-style-type: none"> <li>• SB in the AM peak: 104% VoC with 950 PCU; and</li> <li>• NB in the PM peak: 104% VoC with 1,000 PCU.</li> </ul> <p>The SB traffic also causes delays (1.5 min) at the Sundon Park Rd junction in the AM peak.</p>	6 / 10
14A – A4146 / A418	<p>In the AM peak, there is congestion on the A4146 eastbound (87% VoC with 1,350 PCU).</p> <p>In the PM peak, there is congestion on the A4146 westbound (95% VoC with 1,250 PCU).</p>	3 / 10	<p>In the AM peak, the A4146 eastbound operates at capacity (100% VoC with 1,550 PCU).</p> <p>In the PM peak, the A4146 westbound operates at capacity (102% VoC with 1,300 PCU).</p>	7 / 10
14B – A505 / Stanbridge Rd	<p>There is congestion and/or saturation on the A505 between Station Rd and Stanbridge Rd in both directions and time periods (up to 101% VoC with 1,300 PCU in the AM peak).</p>	6 / 10	<p>There is congestion and/or saturation on the A505 between Station Rd and Stanbridge Rd in both directions and time periods (up to 102% VoC with 1,350 PCU in the PM peak).</p>	7 / 10

Figure 3.10: Link stress and Junction delays, 2025 Local Plan\*, AM

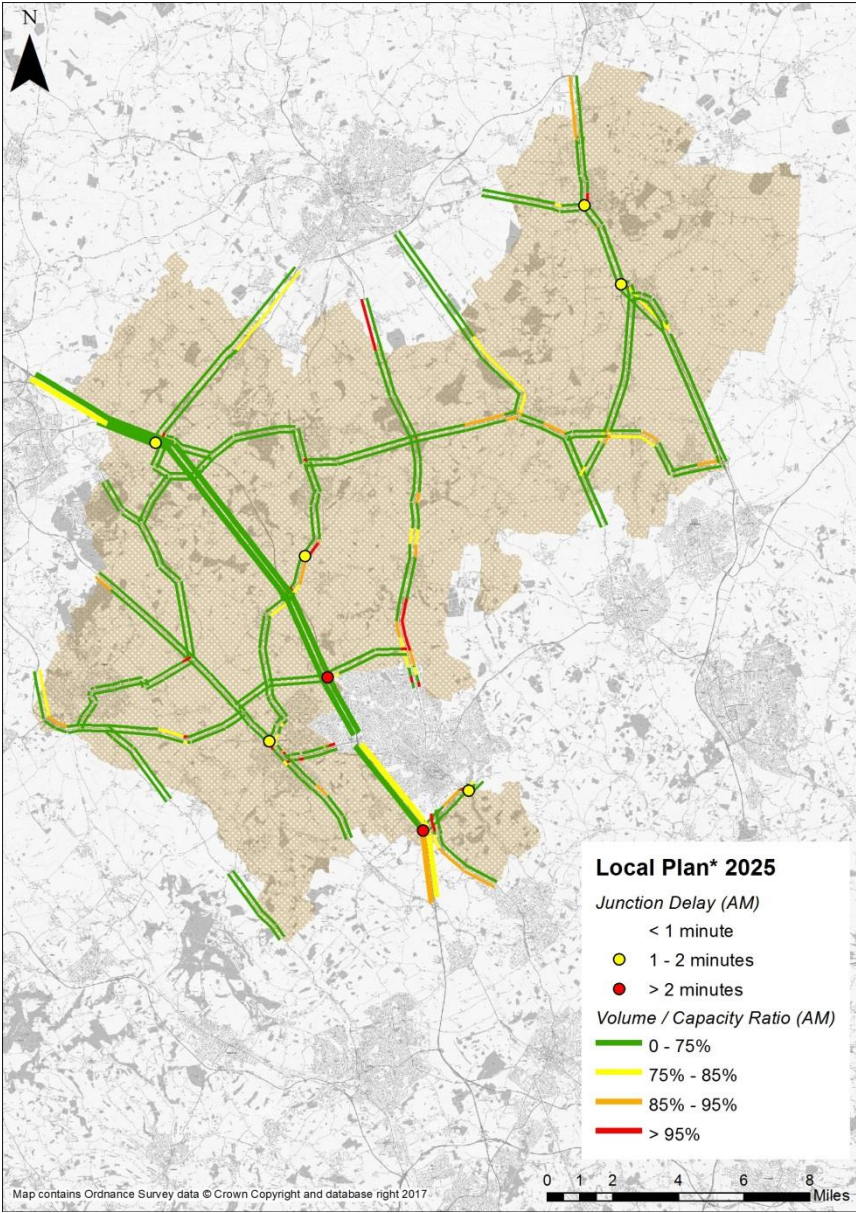
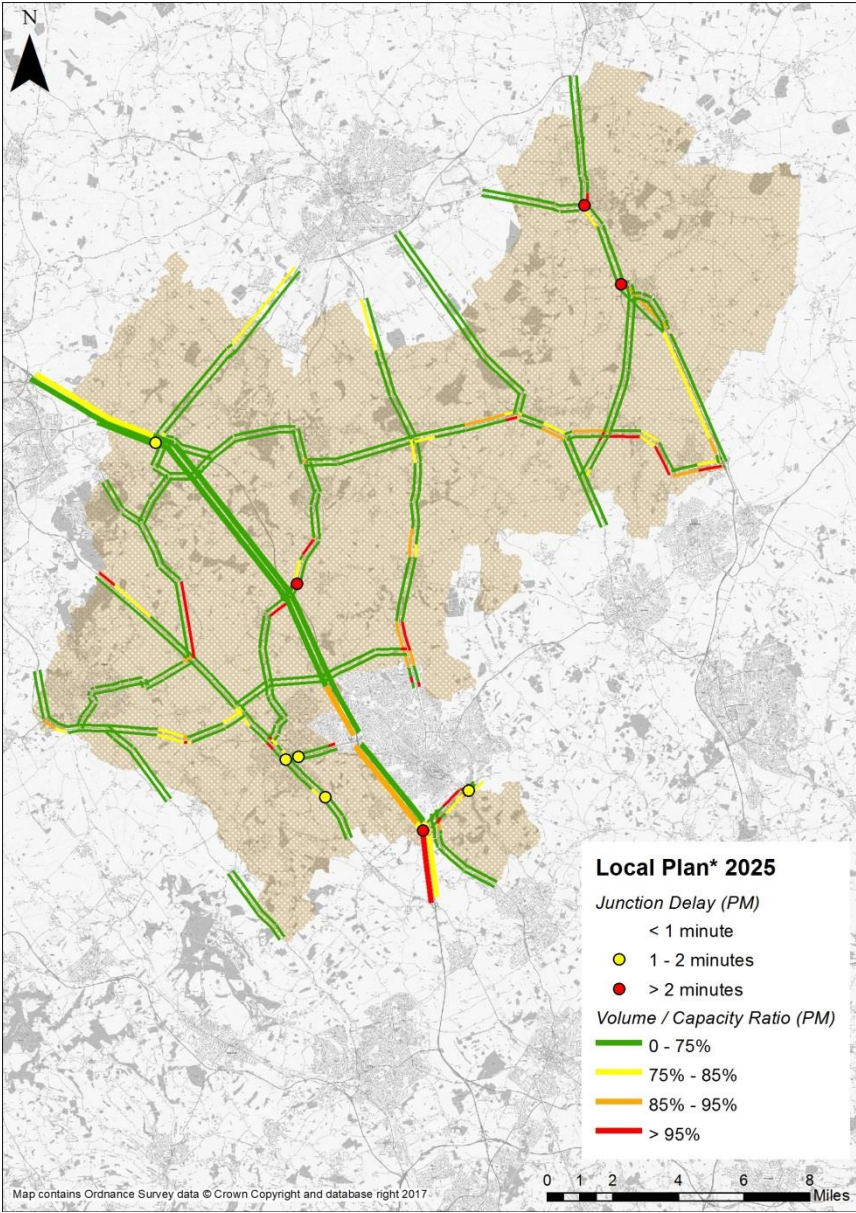
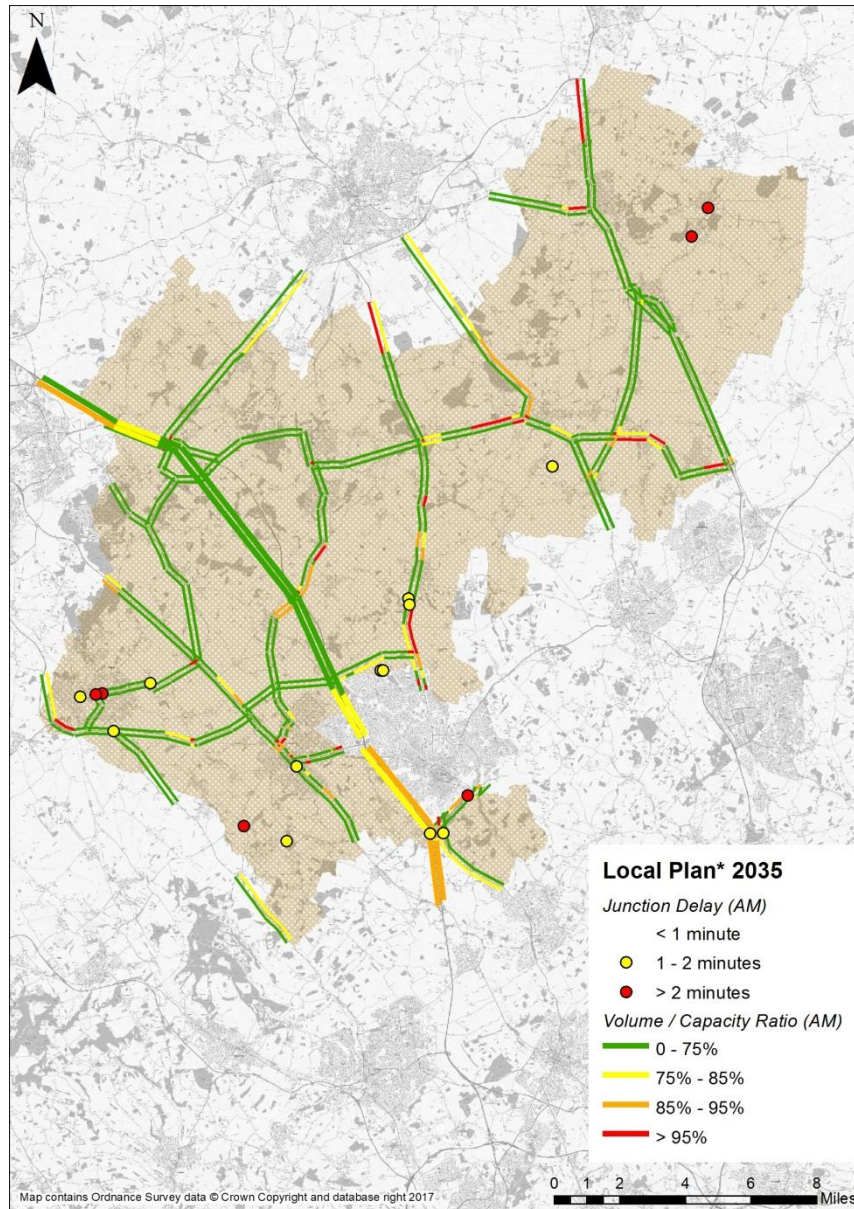


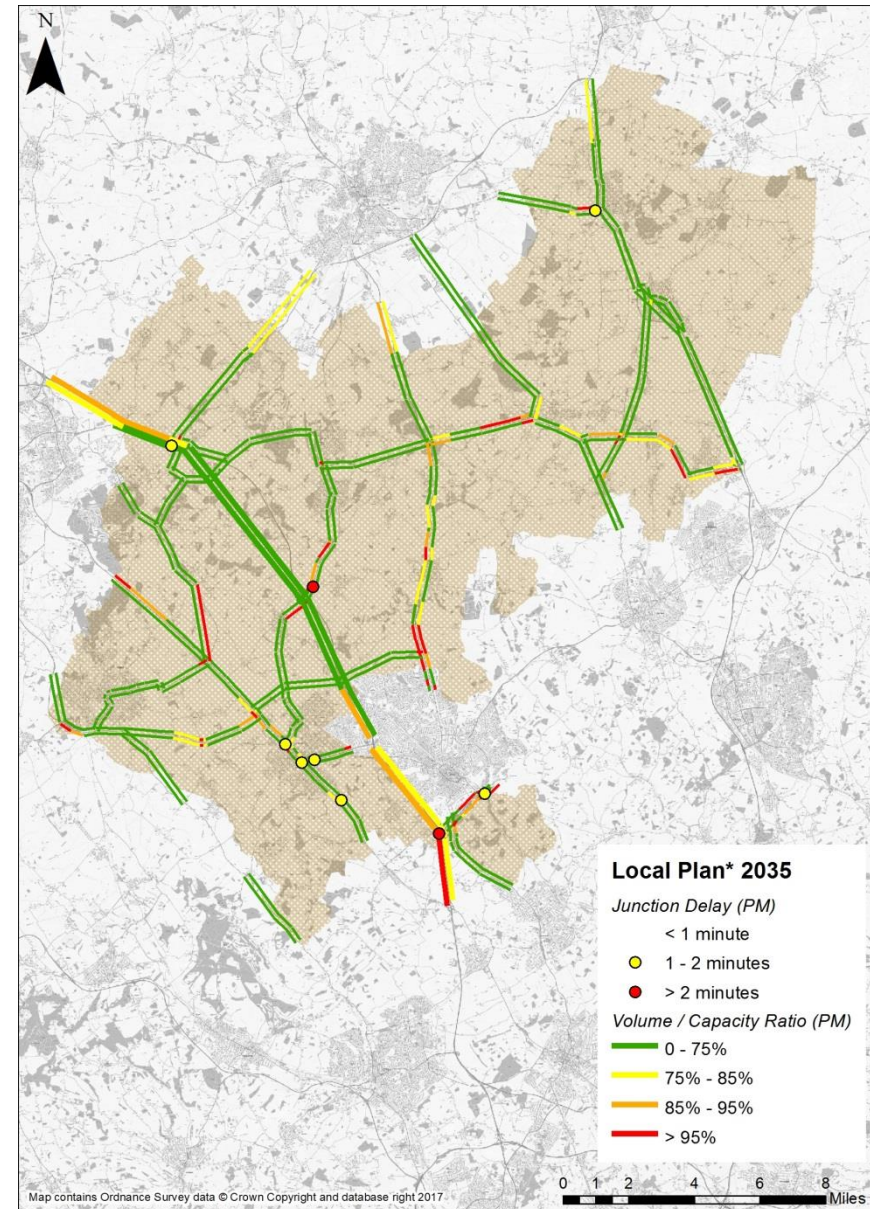
Figure 3.11: Link stress and Junction delays, 2025 Local Plan\*, PM



**Figure 3.12: Link stress and Junction delays, 2035 Local Plan\*, AM**



**Figure 3.13: Link stress and Junction delays, 2035 Local Plan\*, PM**



**Table 3.3: Description of issue and Scale of impact, Local Plan\***

Hot Spot	2025 Local Plan*		2035 Local Plan*	
2 – Barford Rd Bridge	In AM, Barford Rd northbound operates at capacity (92% VoC with 200 PCU).	3 / 10	In AM, Barford Rd northbound operates at capacity (101% VoC with 250 PCU).	6 / 10
3 – A1 / Black Cat	In the AM peak, there is congestion on the A1 northbound (89% VoC with 1,400 PCU).	1 / 10	In the AM peak, there is saturation on the A1 northbound (108% VoC with 1,650 PCU).	6 / 10
4 – A1 (Sandy)	<p>Traffic at the A1 / B1042 roundabout experiences delays (1.5 / 2.5 min in AM / PM respectively).</p> <p>Most approaches to the A1 / B1042 roundabout operate at capacity and/or are saturated:</p> <ul style="list-style-type: none"> <li>A1 SB (within the Sandy AQMA): up to 107% VoC with 2,050 PCU in PM;</li> <li>B1042 WB: up to 104% VoC with 600 PCU in the PM peak; and</li> <li>A603 EB: up to 103% VoC with 950 PCU in the AM peak.</li> </ul> <p>The New Rd SB approach to the A1 junction (south of Sandy) is also saturated (up to 104% VoC with 250 PCU in the PM peak).</p>	10 / 10	<p>The A603 approach to the Vinegar Hill junction operates at capacity in both time periods (up to 100% VoC with 900 PCU in the AM peak).</p> <p>Traffic at this junction also experiences delays (1 min) in the PM peak.</p>	8 / 10
4A – A1 / B658 Hill Ln	<p>Traffic at the A1 / B658 roundabout experiences delays (2.0 / 3.0 min in AM / PM respectively).</p> <p>Both local approaches to this roundabout operate at saturation:</p> <ul style="list-style-type: none"> <li>B658 EB: up to 104% VoC with 700 PCU in the AM peak; and</li> <li>B658 WB: up to 108% VoC with 800 PCU in the PM peak.</li> </ul>	10 / 10	There is limited congestion on Hill Ln WB exiting the A1 junction in both time periods (up to 83% VoC with 1,100 PCU in the PM peak).	3 / 10
4B – A1 / A6001 London Rd	There is congestion on the A1 SB approach (up to 92% VoC with 2,000 PCU in the PM peak).	6 / 10	No significant evidence of congestion	0 / 10
4C – A1 / Wrayfields	<p>Wrayfields operates at capacity in both time periods (up to 101% VoC in the PM peak).</p> <p>This local access to the A1 causes congestion on the A1 mainline in the PM peak (92% VoC with 3,300 PCU).</p>	7 / 10	No significant evidence of congestion	0 / 10



Hot Spot	2025 Local Plan*		2035 Local Plan*	
6 – Shillington	There is local congestion on Hitchin Rd due to local access in Henlow Camp in both time periods (up to 83% VoC with 800 PCU).	2 / 10	There is local congestion on Hitchin Rd due to local access in Henlow Camp in both time periods (up to 90% VoC with 850 PCU).	3 / 10
6A – Hitchin Rd / Arlesey New Rd	In the AM peak, there is congestion on the Arlesey New Rd WB approach to this junction (84% VoC with 800 PCU).	2 / 10	In the AM peak, the Arlesey New Rd WB approach to this junction operates at capacity (97% VoC with 900 PCU).	3 / 10
7A – A507 (Stotfold)	<p>In the AM peak, there is congestion on the A507 EB approach to the A1 J10 (89% VoC with 1,400 PCU).</p> <p>In the PM peak, there is also saturation exiting the A1 J10 (95% VoC with 1,700 PCU).</p> <p>In both time periods, the A507 approaches to the Stotfold Rd roundabout operate at capacity:</p> <ul style="list-style-type: none"> <li>• SB: up to 90% VoC with 1,300 PCU in AM; and</li> <li>• NB: 100% VoC with 1,350 PCU in PM.</li> </ul>	4 / 10	<p>In the AM peak, the A507 EB approach to the A1 J10 operates at capacity (102% VoC with 1,650 PCU).</p> <p>In the PM peak, there is also saturation exiting the A1 J10 (102% VoC with 1,800 PCU).</p> <p>In both time periods, the A507 approaches to the Stotfold Rd roundabout operate at capacity:</p> <ul style="list-style-type: none"> <li>• SB: up to 97% VoC with 1,400 PCU in AM; and</li> <li>• NB: 101% VoC with 1,350 PCU in PM.</li> </ul>	8 / 10
7B – A507 (Shefford)	<p>Most approaches to the A507 / B659 roundabout operate at capacity and/or are saturated in both time periods:</p> <ul style="list-style-type: none"> <li>• A507 WB: up to 103% VoC with 1,400 PCU;</li> <li>• B659 NB: up to 101% VoC with 600 PCU;</li> <li>• A507 EB: up to 85% VoC with 950 PCU; and</li> <li>• B659 SB: 79% VoC with 750 PCU in the AM peak.</li> </ul> <p>There is also congestion on the A507 between the A507 / A600 Hitchin Rd and the A507 / Shefford Rd junctions:</p> <ul style="list-style-type: none"> <li>• EB: up to 91% VoC with 1,300 PCU in the AM peak; and</li> <li>• WB: 88% VoC with 1,250 PCU in the PM peak.</li> </ul> <p>There is congestion and/or saturation in the vicinity of the A507 Ampthill Rd / A600 roundabout:</p> <ul style="list-style-type: none"> <li>• A600 SB: 84% VoC with 950 PCU in the AM peak; and</li> <li>• A507 WB: up to 95% VoC with 1,000 PCU in the PM peak.</li> </ul>	8 / 10	<p>Most approaches to the A507 / B659 roundabout operate at capacity and/or are saturated in both time periods:</p> <ul style="list-style-type: none"> <li>• A507 WB: up to 103% VoC with 1,400 PCU;</li> <li>• B659 NB: up to 101% VoC with 600 PCU;</li> <li>• A507 EB: up to 89% VoC with 950 PCU; and</li> <li>• B659 SB: 94% VoC with 900 PCU in the AM peak.</li> </ul> <p>There is also congestion on the A507 EB approach to the A507 / A600 Hitchin Rd junction (up to 74% VoC with 1,050 PCU in the AM peak).</p> <p>There is congestion and/or saturation in the vicinity of the A507 Ampthill Rd / A600 roundabout:</p> <ul style="list-style-type: none"> <li>• A600 SB: 93% VoC with 1,050 PCU in the AM peak; and</li> <li>• A507 WB: up to 102% VoC with 1,100 PCU in the PM peak.</li> </ul>	8 / 10

Hot Spot	2025 Local Plan*		2035 Local Plan*	
7C – A507 (Amphill)	There is significant link stress on the A507 between the A507 / A5120 and the A507 / Froghall Rd roundabouts: <ul style="list-style-type: none"> <li>EB: up to 100% VoC with 500 PCU in the AM peak; and</li> <li>WB: 96% VoC with 450 PCU in the PM peak.</li> </ul>	5 / 10	There is significant link stress on the A507 between the A507 / A5120 and the A507 / Froghall Rd roundabouts: <ul style="list-style-type: none"> <li>EB: up to 100% VoC with 500 PCU in the AM peak; and</li> <li>WB: 98% VoC with 450 PCU in the PM peak.</li> </ul>	5 / 10
8A – A6 / Chapel End Rd	There is congestion on the A6 northbound exiting Central Bedfordshire in both time periods (up to 98% VoC with 800 PCU in the AM peak).  In the PM peak, there is congestion on the Chapel End Rd EB approach to this junction (82% VoC with 600 PCU).	3 / 10	There is congestion and/or saturation on the A6 northbound exiting Central Bedfordshire in both time periods (up to 101% VoC with 850 PCU in the AM peak).  In the PM peak, there is congestion on the Chapel End Rd EB approach to this junction (95% VoC with 700 PCU).	3 / 10
8B – A6 / A507	In the AM peak, the A6 SB approach to this junction operates at capacity (97% VoC with 1,150 PCU).	4 / 10	In the AM peak, the A6 SB approach to this junction operates at capacity (101% VoC with 1,150 PCU).  In the PM peak, there is congestion on most approaches to this junction: <ul style="list-style-type: none"> <li>A6 SB: 88% with 950 PCU;</li> <li>A507 WB: 87% with 1,050 PCU; and</li> <li>A6 NB: 85% with 900 PCU.</li> </ul>	5 / 10
8C – A6 / Barton Rd / Higham Rd	The Barton Rd EB approach to the A6 operates at saturation in both time periods (up to 103% VoC with 200 PCU in the AM peak). Traffic from Barton Rd causes stress on the A6 northbound (up to 85% VoC with 950 PCU in the PM peak).  There is congestion on the approaches to the A6 / Higham Rd roundabout: <ul style="list-style-type: none"> <li>A6 SB: up to 89% VoC with 1,250 PCU in the AM peak; and</li> <li>Higham Rd WB: up to 79% VoC with 750 PCU in the AM peak.</li> </ul>	5 / 10	The Barton Rd EB approach to the A6 operates at saturation in both time periods (up to 103% VoC with 200 PCU in the AM peak). Traffic from Barton Rd causes stress on the A6 northbound (up to 91% VoC with 1,000 PCU in the PM peak).  There is congestion on the approaches to the A6 / Higham Rd roundabout: <ul style="list-style-type: none"> <li>A6 SB: up to 92% VoC with 1,300 PCU in the AM peak; and</li> <li>Higham Rd WB: up to 89% VoC with 850 PCU in the AM peak.</li> </ul>	7 / 10
8D – A6 / Church Rd	There is congestion and/or saturation on most approaches to the A6 / Church Rd roundabout: <ul style="list-style-type: none"> <li>A6 NB: 87% VoC with 1,100 PCU in both peak hours;</li> <li>Church Rd EB: 90% with 650 PCU in the PM peak; and</li> <li>A6 SB: 97% with 1,900 PCU in the AM peak.</li> </ul>	8 / 10	There is congestion and/or saturation on most approaches to the A6 / Church Rd roundabout: <ul style="list-style-type: none"> <li>A6 NB: up to 102% VoC with 1,250 PCU in the PM peak;</li> <li>Church Rd EB: 99% with 650 PCU in the PM peak; and</li> <li>A6 SB: 101% with 1,950 PCU in the AM peak.</li> </ul>	8 / 10

Hot Spot	2025 Local Plan*		2035 Local Plan*	
10A – M1 J13	<p>In the PM peak, there is congestion on the M1 J13 WB off-slip (95% VoC with 1,700 PCU).</p> <p>The Salford Rd SB approach to this junction operates at capacity in both time periods (up to 100% VoC with 950 PCU).</p> <p>There is congestion and/or saturation on most approaches to the A421 roundabout in both time periods:</p> <ul style="list-style-type: none"> <li>A421 EB: 103% VoC with 1,150 PCU in both peak hours;</li> <li>A421 SB: up to 99% VoC with 1,800 PCU in the AM peak; and</li> <li>WB approach: 91% VoC with 1,200 PCU in the AM peak.</li> </ul> <p>Northbound traffic at this roundabout also experiences delays in both time periods (up to 1.5 min in the PM peak).</p>	10 / 10	<p>There is saturation on the M1 J13 WB off-slip roundabout:</p> <ul style="list-style-type: none"> <li>Bedford Rd SB: up to 92% with 600 PCU in the AM peak; and</li> <li>WB off-slip: 100% VoC with 1,800 PCU in the PM peak.</li> </ul> <p>The Salford Rd SB approach to this junction operates at capacity in both time periods (up to 101% VoC with 950 PCU).</p> <p>There is congestion and/or saturation on most approaches to the A421 roundabout in both time periods:</p> <ul style="list-style-type: none"> <li>A421 EB: 103% VoC with 1,150 PCU in both peak hours;</li> <li>A421 SB: 100% VoC with 1,800 PCU in both peak hours; and</li> <li>WB approach: up to 98% VoC with 1,300 PCU in the AM peak.</li> </ul> <p>Northbound traffic at this roundabout also experiences delays in the PM peak (1.5 min in average).</p>	10 / 10
10B – A5120 (M1 J12)	<p>Congestion on the A5120 mainly follows a tidal pattern towards / from the M1 J12 in AM / PM respectively.</p> <p>In the AM peak, the A5120 SB approach to the Westoning Rd junction is saturated (104% VoC with 1,350 PCU). Traffic at this junction experiences delays (1.0 min in average).</p> <p>In the PM peak, the A5120 NB approach to the Toddington Rd roundabout is saturated (104% VoC with 1,300 PCU). Traffic at this junction experiences delays (2.5 min in average).</p> <p>In the PM peak, the A5120 SB exiting the M1 J12 operates at capacity (98% VoC with 950 PCU).</p>	8 / 10	<p>Congestion on the A5120 mainly follows a tidal pattern towards / from the M1 J12 in AM / PM respectively.</p> <p>In the AM peak, the A5120 SB approach to the Westoning Rd junction is saturated (104% VoC with 1,300 PCU).</p> <p>In the PM peak, the A5120 NB approach to the Toddington Rd roundabout is saturated (106% VoC with 1,300 PCU). Traffic at this junction experiences delays (3.0 min in average).</p> <p>In the PM peak, the A5120 SB exiting the M1 J12 operates at capacity (99% VoC with 1,000 PCU).</p>	8 / 10

Hot Spot	2025 Local Plan*		2035 Local Plan*	
10C – M1 J11a	<p>In the AM peak, southbound traffic at the M1-A5 junction experiences delays (2.5 min in average).</p> <p>In the PM peak, there is congestion on the A5 / A5505 roundabout (92% VoC with 2,400 PCU).</p>	6 / 10	In the PM peak, the A5 / A5505 roundabout operates at capacity (100% VoC with 2,650 PCU).	7 / 10
12 – A5 / Woburn Rd	<p>In the AM peak, there is congestion on the A5 northbound (94% VoC with 900 PCU).</p> <p>In the PM peak, the A5 SB approach to the A5 / Woburn Rd junction operates at capacity (102% VoC with 950 PCU).</p>	3 / 10	<p>In the AM peak, there is congestion on the A5 northbound (94% VoC with 900 PCU).</p> <p>In the PM peak, the A5 SB approach to the A5 / Woburn Rd junction operates at capacity (102% VoC with 950 PCU).</p>	4 / 10
12A – A5 / A4012	<p>There is congestion and/or saturation on both A4012 approaches to this junction:</p> <ul style="list-style-type: none"> <li>EB: up to 98% VoC with 350 PCU in the AM peak; and</li> <li>SB: 96% VoC with 200 PCU in the PM peak.</li> </ul>	4 / 10	<p>There is congestion and/or saturation on both A4012 approaches to this junction:</p> <ul style="list-style-type: none"> <li>EB: 101% VoC with 350 PCU in both peak hours; and</li> <li>SB: 102% VoC with 200 PCU in the PM peak.</li> </ul>	6 / 10
12B – A5 / A505	In the PM peak, there is limited congestion on the A505 eastbound and northbound.	3 / 10	<p>In the AM peak, there is congestion on the A5 SB approach to this junction (86% VoC with 1,050 PCU).</p> <p>In the PM peak, the A505 NB approach to this junction operates at capacity (96% VoC with 1,700 PCU).</p>	4 / 10



Hot Spot	2025 Local Plan*		2035 Local Plan*	
12C – A505 (Dunstable)	<p>There is congestion and/or saturation on both A505 approaches to the A505 / B5120 junction:</p> <ul style="list-style-type: none"> <li>A505 SB: up to 102% VoC with 650 PCU in the AM peak; and</li> <li>A505 NB: up to 100% VoC with 850 PCU in the PM peak.</li> </ul> <p>Traffic at this junction also experiences delays (1.0 min) in the AM peak.</p> <p>Most approaches to the A505 / B489 West St junction operate at capacity:</p> <ul style="list-style-type: none"> <li>A505 SB: 101% VoC with 700 PCU in the PM peak;</li> <li>Church St WB: up to 100% VoC with 850 PCU in the PM peak;</li> <li>A5183 NB: up to 89% VoC with 750 PCU in the PM peak; and</li> <li>B489 EB: 101% VoC with 450 PCU in both peak hours.</li> </ul> <p>Traffic at this junction also experiences delays (1.5 min) in the PM peak.</p> <p>Similarly, traffic at the Church St / Station Rd junction experiences delays (1.0 min) in the PM peak.</p> <p>It should be noted that the A505 / B489 and the Church St / Station Rd junctions fall within the South Bedfordshire AQMA.</p>	8 / 10	<p>There is congestion and/or saturation on most approaches to the A505 / B5120 junction:</p> <ul style="list-style-type: none"> <li>A505 SB: up to 103% VoC with 650 PCU in the AM peak;</li> <li>B5120 WB: 102% VoC with 700 PCU in the AM peak;</li> <li>A505 NB: up to 101% VoC with 850 PCU in the PM peak; and</li> <li>Brewers Hill Rd EB: 103% VoC with 550 PCU in the PM peak.</li> </ul> <p>Traffic at this junction also experiences delays (1.5 min) in the AM peak.</p> <p>Most approaches to the A505 / B489 West St junction operate at capacity:</p> <ul style="list-style-type: none"> <li>A505 SB: 101% VoC with 700 PCU in the PM peak;</li> <li>Church St WB: up to 101% VoC with 850 PCU in the AM peak;</li> <li>A5183 NB: up to 93% VoC with 800 PCU in the PM peak; and</li> <li>B489 EB: 101% VoC with 450 PCU in both peak hours.</li> </ul> <p>Traffic at this junction also experiences delays (1.5 min) in the PM peak.</p> <p>Similarly, traffic at the Church St / Station Rd junction experiences delays (1.0 min) in the PM peak.</p> <p>It should be noted that the A505 / B489 and the Church St / Station Rd junctions fall within the South Bedfordshire AQMA.</p>	8 / 10
12D – A5183 / Dunstable Rd	<p>In the AM peak, there is congestion on the A5183 SB approach to this junction (86% VoC with 1,100 PCU).</p> <p>In the PM peak, traffic at the A5183 / Dunstable Rd junction experiences delays (1.0 min in average).</p>	3 / 10	<p>In the AM peak, there is congestion on the A5183 SB approach to this junction (94% VoC with 1,250 PCU).</p> <p>In the PM peak, traffic at the A5183 / Dunstable Rd junction experiences delays (1.5 min in average).</p>	4 / 10

Hot Spot	2025 Local Plan*		2035 Local Plan*	
13 – North of Luton	Sundon Rd operates at capacity between Manor Rd and Sundon Park Rd: <ul style="list-style-type: none"> <li>SB in the AM peak: 98% VoC with 950 PCU; and</li> <li>NB in the PM peak: 96% VoC with 900 PCU.</li> </ul>	5 / 10	Sundon Rd is saturated between Manor Rd and Sundon Park Rd: <ul style="list-style-type: none"> <li>SB in the AM peak: 103% VoC with 950 PCU; and</li> <li>NB in the PM peak: 104% VoC with 1,000 PCU.</li> </ul>	6 / 10
14A – A4146 / A418	In the AM peak, there is congestion on the A4146 eastbound (87% VoC with 1,350 PCU).  In the PM peak, there is congestion on the A4146 westbound (95% VoC with 1,250 PCU).	3 / 10	In the AM peak, the A4146 eastbound operates at capacity (98% VoC with 1,550 PCU).  In the PM peak, the A4146 westbound operates at capacity (100% VoC with 1,350 PCU).	6 / 10
14B – A505 / Stanbridge Rd	There is congestion and/or saturation on the A505 between Station Rd and Stanbridge Rd in both directions and time periods (up to 101% VoC with 1,300 PCU in the AM peak).	6 / 10	There is congestion and/or saturation on the A505 between Station Rd and Stanbridge Rd in both directions and time periods (up to 101% VoC with 1,300 PCU in the PM peak).	7 / 10

## 3.2 Network performance

3.2.1 **Table 3.4** and **Table 3.5** present the summary statistics across the CBLTM simulation network by time period, for both 2025 and 2035. **Table 3.6** presents the comparison between Forecast Year 2025 and 2035 for these network performance indicators.

**Table 3.4: Network Performance, Forecast Year 2025**

Statistics	AM			PM		
	Reference Case	Local Plan	Local Plan*	Reference Case	Local Plan	Local Plan*
Total Travel Time (PCU-hr)	50,500	50,800	50,900	56,300	56,500	56,900
Total Travel Distance (PCU-km)	2,561,200	2,575,200	2,615,500	2,675,700	2,695,200	2,745,800
Average Speed (kph)	50.7	50.7	51.4	47.5	47.7	48.3

**Table 3.5: Network Performance, Forecast Year 2035**

Statistics	AM			PM		
	Reference Case	Local Plan	Local Plan*	Reference Case	Local Plan	Local Plan*
Total Travel Time (PCU-hr)	57,300	58,200	58,300	61,300	61,900	62,100
Total Travel Distance (PCU-km)	2,750,400	2,787,800	2,847,200	2,814,600	2,848,400	2,933,500
Average Speed (kph)	48.0	47.9	48.8	45.9	46.0	47.2

**Table 3.6: Network Performance comparison, 2035 vs. 2025**

Statistics	AM			PM		
	Reference Case	Local Plan	Local Plan*	Reference Case	Local Plan	Local Plan*
Total Travel Time (PCU-hr)	+13.5%	+14.6%	+14.5%	+8.9%	+9.6%	+9.1%
Total Travel Distance (PCU-km)	+7.4%	+8.3%	+8.9%	+5.2%	+5.7%	+6.8%
Average Speed (kph)	-5.3% (-2.7)	-5.5% (-2.8)	-5.1% (-2.6)	-3.4% (-1.6)	-3.6% (-1.7)	-2.3% (-1.1)

3.2.2 On average, speeds across Central Bedfordshire and Luton are higher (up to +3 kph in 2025 and +2 kph in 2035) in the AM peak than in the PM, indicating that traffic flows are travelling faster in the morning peak hour within this area.

3.2.3 The Local Plan growth has overall limited impacts (see **Table 3.4** and **Table 3.5** for Forecast Years 2025 and 2035 respectively) on the average speed across the Central Bedfordshire and Luton networks.

3.2.4 Results suggest that the four proposed schemes in the Local Plan – strategic sites\* CBLTM scenario (i.e. the A428 Black Cat to Caxton Gibbet, A421 Cambridge to Oxford Expressway, East-West Rail Central section and A1 East of England improvement) have a positive impact on congestion (up to +1 kph depending on the time period and Forecast Year).

### 3.3 Cross-boundary impacts

- 3.3.1 It was noted (see §3.1.2) that ‘hot spot’ 3 (A1 / Black Cat) was located outside Central Bedfordshire, yet was causing network issues within Central Bedfordshire. The modelling has included an assumption about improvements to the Black Cat roundabout in the Local Plan\* scenario (see §2.1.4).
- 3.3.2 Similarly, some of the ‘hot spots’ identified may have impacts on traffic external to Central Bedfordshire and therefore on neighbouring Local Authorities, as detailed in **Table 3.7**.
- 3.3.3 The purpose of this section is to identify the potential impacts of the Local Plan growth outside Central Bedfordshire. The following analysis therefore relies on a comparative approach between the Reference Case and the Local Plan scenarios, e.g. additional traffic flows, additional delays and/or additional link stress.

**Table 3.7: Cross-boundary impacts, network issues inside Central Bedfordshire, Local Plan vs. Reference Case**

ID	Hot Spot	2025 Local Plan	2035 Local Plan
2	Barford Rd bridge	In PM, limited additional southbound traffic on High St (less than +50 PCU) causes additional stress and saturation (96% vs. 92% VoC).	
6A	Hitchin Rd / Arlesey New Rd	Limited additional westbound traffic on Arlesey New Rd (less than +50 PCU) causes limited additional stress (87% vs. 85% VoC in AM and 78% vs. 74% VoC in PM).	In PM, additional westbound traffic on Arlesey New Rd (+60 PCU) causes additional stress (86% vs. 73% VoC).
8A	A6 / Chapel End Road		In PM, limited additional southbound traffic on the A6 (less than +50 PCU) causes limited additional stress (77% vs. 75% VoC).

- 3.3.4 In addition, the CBLTM is able to provide high-level indications of the CBC Local Plan growth impacts on the Highway network in the vicinity of Central Bedfordshire (see Appendix B).
- 3.3.5 However, it should be noted that the CBLTM has been developed and validated solely for the purpose of representing Central Bedfordshire and Luton. Any result outside Central Bedfordshire is therefore strictly indicative.

3.3.6 These results suggest that the Local Plan growth has overall limited impacts outside Central Bedfordshire boundaries. **Table 3.8** presents the indicative impacts of CBC Local Plan growth outside Central Bedfordshire.

**Table 3.8: Cross-boundary impacts, indicative network issues outside Central Bedfordshire, Local Plan vs. Reference Case**

Authority	Location	Forecast Year 2025	Forecast Year 2035
Buckinghamshire County	B440 (Edlesborough)	In AM, additional southbound traffic on the B440 (+50 PCU) causes limited additional stress (78% vs. 74% VoC) at the Tring Rd junction.	In AM, additional southbound traffic on the B440 (+100 PCU) causes additional stress (92% vs. 86% VoC) at the Tring Rd junction.
Hertfordshire County	Letchworth Garden City	In AM, additional eastbound traffic on Arlesey New Rd and southbound traffic on Stotfold Rd (+50 PCU in total) cause limited additional delays (+20s) at the Stotfold Rd / Wilbury Rd junction.	In AM, minor changes in routeing cause limited additional delays (+10s) at the Stotfold Rd / Wilbury Rd junction.
	A600 (Hitchin)	In AM, additional southbound traffic on the A600 Bedford Rd (+50 PCU) causes additional stress (91% vs. 85% VoC) on the approach to Turnpike Ln junction.	In AM, additional southbound traffic on the A600 Bedford Rd (+50 PCU) causes additional stress and saturation (101% vs. 93% VoC) on the approach to Turnpike Ln junction.
	A505 (Hitchin)	In PM, limited additional eastbound traffic on the A505 (less than +50 PCU) causes limited additional stress (84% vs. 82% VoC) at the B655 Pirton Rd junction.	In PM, additional eastbound traffic on the A505 (+50 PCU) causes additional stress (97% vs. 93% VoC) at the B655 Pirton Rd junction.
	B440 Leighton Buzzard Rd	In PM, limited additional southbound traffic on the B440 (less than +50 PCU) causes limited additional delays (less than +10s) at the A4147 Link Rd junction.	In AM, limited additional southbound traffic on the B440 (less than +50 PCU) causes additional delays (+40s) at the A4147 Link Rd junction.
Luton Borough	A6 Barton Rd	In PM, additional traffic on the A6 causes additional stress and saturation: <ul style="list-style-type: none"> <li>NB: 100% vs. 95% VoC due to +100 PCU at Icknield Way junction; and</li> <li>SB: 101% vs. 87% VoC due to +150 PCU at Birdsfoot Ln junction.</li> </ul>	In PM, additional traffic on the A6 causes additional stress and saturation: <ul style="list-style-type: none"> <li>NB: 100% vs. 98% VoC due to +100 PCU at Icknield Way junction; and</li> <li>SB: 101% vs. 92% VoC due to +100 PCU at Birdsfoot Ln junction.</li> </ul>

## 4. Strategic site user analysis

4.1.1 **Appendix C** presents the user analysis for each of the eight Local Plan strategic sites, by time period. **Table 4.1** summarises the traffic patterns and cross-boundary impacts to/from each site:

- These impacts should be considered insignificant or limited when traffic flows are below 50 PCU; and
- Potential impacts on network stress or junction delays will be indicated when traffic flows are above 50 PCU.

4.1.2 'Hot spot' impacts have also been assessed based on the methodology presented in §2.5.

4.1.3 **Table 4.2** summarises the scale of impact of each 'hot spot', depending on the CBLTM scenario and Forecast Year, as well as the key contributions of the eight Local Plan strategic sites identified by CBC (based on the methodology presented in §2.5).

**Table 4.1: Strategic site user analysis**

Site	User description	Cross-boundary impacts	Hot spot impacts / access
North of Luton	Access via M1, M1-A6 link and the local network	<ul style="list-style-type: none"> <li>- Interactions (110 PCU in both peak hours) with north Luton via Northwell Drive, without significant impact on the network</li> <li>- Limited interactions (&lt; 50 PCU in both peak hours) with north Luton through the local network</li> </ul>	Low impact on 10C (M1 J11a)
Marston Vale Growth	<ul style="list-style-type: none"> <li>- Access via the M1, A421, A507, A4012 and the local network</li> <li>- Tidal pattern from the site in AM and to the site in PM</li> <li>- Some interactions within CBC e.g. locally with Ampthill and Flitwick and, to a lesser extent, Leighton Buzzard</li> </ul>	<ul style="list-style-type: none"> <li>- Limited interactions (&lt; 50 PCU in both peak hours) with Milton Keynes via the A421</li> <li>- Limited interactions (&lt; 50 PCU in both peak hours) with Bedford via the A421</li> <li>- Limited interactions (&lt; 50 PCU in PM) with Luton</li> </ul>	Medium impact on 10A (M1 J13)
East of Arlesey	<ul style="list-style-type: none"> <li>- Access via A1, A507, A600 and Arlesey Rd</li> <li>- Tidal pattern from the site in AM and to the site in PM</li> </ul>	<ul style="list-style-type: none"> <li>- Interactions with Hertfordshire via Arlesey New Road (130 PCU in AM and 50 PCU in PM) and to a lesser extent via the A1(M) (&lt;50 PCU), which contribute to limited additional delays at the Arlesey New Rd / Stotfold Rd junction in the PM peak (+20s / +10s in 2025 / 2035 respectively)</li> <li>- Limited interactions (&lt; 50 PCU in both peak hours) with Bedford via the A600</li> <li>- Limited interactions (&lt;50 PCU in AM) with Cambridgeshire via the A1</li> <li>- Limited interactions (&lt; 50 PCU in PM) with Luton via the A505</li> </ul>	<ul style="list-style-type: none"> <li>- High impact on 6A (Hitchin Rd / Arlesey New Rd) and 7A (A507 – Stotfold)</li> <li>- Access to 7B (A507 – Shefford), 4C (A1 / Wrayfields) and 4B (A1 / A6001)</li> </ul>
East of Biggleswade	<ul style="list-style-type: none"> <li>- Access via A1, A603, B659, B1042 and the local network</li> <li>- Some interactions within CBC and with the other strategic sites e.g. Sandy, RAF Henlow and East of Arlesey</li> </ul>	<ul style="list-style-type: none"> <li>- Interactions (70 PCU in both peak hours) with Cambridgeshire via the B1042, without significant impact on the network</li> <li>- Interactions (50 PCU in AM and 70 PCU in PM) with Hertfordshire via the A1(M) and the local network, which contribute to limited additional stress in the AM peak in 2035 (70% vs. 68% VoC)</li> <li>- Limited interactions (&lt; 50 PCU in both peak hours) with Bedford via the A603</li> </ul>	<ul style="list-style-type: none"> <li>- High impact on 4B (A1 / A6001) and 4C (A1 / Wrayfields)</li> <li>- Low impact on 7B (A507 – Shefford)</li> <li>- Access to 4 (A1 – Sandy) and 4A (A1 / B658)</li> </ul>
Sundon RFI	Access via M1 and A5	Limited interactions (<50 PCU cumulated in both peak hours) with Luton and Hertfordshire via M1	<ul style="list-style-type: none"> <li>- Low impact on 10C (M1 J11a)</li> <li>- Access to 13 (North of Luton)</li> </ul>

Site	User description	Cross-boundary impacts	Hot spot impacts / access
Marston Gate	Access via M1, A507, A421 and the local network	<ul style="list-style-type: none"> <li>- Limited interactions (&lt; 50 PCU cumulated in both peak hours) with Milton Keynes via the M1</li> <li>- Limited interactions (&lt; 50 PCU cumulated in both peak hours) with Hertfordshire via the M1</li> <li>- Limited interactions (&lt;50 PCU cumulated in both peak hours) with Bedford via the A421</li> </ul>	Low impact on 10A (M1 J13)
RAF Henlow	<ul style="list-style-type: none"> <li>- Access via the A507, A600 and the local network</li> <li>- Some local interactions within CBC e.g. Shefford, Arlesey and to a lesser extent Shillington</li> </ul>	Limited interactions (< 50 PCU cumulated in both peak hours) with north Hertfordshire via the A600	<ul style="list-style-type: none"> <li>- Medium impact on 6 (Shillington)</li> <li>- Access to 7B (A507 – Shefford)</li> </ul>
Holme Green Farm	<ul style="list-style-type: none"> <li>- Access via the M1, A603, A6001 and B1042</li> <li>- Some local interactions within CBC e.g. Shefford and Henlow</li> </ul>	<ul style="list-style-type: none"> <li>- Interactions (70 PCU in AM and 50 PCU in PM) with Hertfordshire via A1(M), which contribute to limited additional stress in the AM peak in 2035 (70% vs. 68% VoC)</li> <li>- Limited interactions (&lt; 50 PCU in both peak hours) with Cambridgeshire via the B1042 and the A1</li> <li>- Limited interactions (&lt; 50 PCU in both time periods) with Bedford via the A603</li> </ul>	<ul style="list-style-type: none"> <li>- Medium impact on 4B (A1 / A6001) and 4C (A1 / Wrayfields)</li> <li>- Access to 4 (A1 – Sandy) and 4A (A1 / B658)</li> </ul>



**Table 4.2: ‘Hot spot’ summary<sup>16</sup> and linkage to the Local Plan strategic sites (L: Low impact, M: Medium impact, and H: High impact<sup>17</sup>)**

Hot spot	Managed by	Reference Case 2025	Local Plan 2025	Local Plan* 2025	Reference Case 2035	Local Plan 2035	Local Plan* 2035	North of Luton	Marston Vale Growth	East of Arlesey	East of Biggleswade	Sundon RFI	Marston Gate	RAF Henlow	Holme Green Farm
2 – Barford Rd Bridge	CBC	6 / 10	6 / 10	3 / 10	6 / 10	6 / 10	6 / 10								
3 – A1 / Black Cat	HE	10 / 10	10 / 10	1 / 10	10 / 10	10 / 10	6 / 10								
4 – A1 (Sandy)	HE, CBC	10 / 10	10 / 10	10 / 10	10 / 10	10 / 10	8 / 10								
4A – A1 / B658 Hill Ln	HE, CBC	10 / 10	10 / 10	10 / 10	10 / 10	10 / 10	3 / 10								
4B – A1 / A6001 London Rd	HE, CBC	5 / 10	6 / 10	6 / 10	4 / 10	7 / 10	0 / 10				H				M
4C – A1 / Wrayfields	HE, CBC	7 / 10	7 / 10	7 / 10	7 / 10	7 / 10	0 / 10				H				M
6 – Shillington	CBC	2 / 10	2 / 10	2 / 10	4 / 10	6 / 10	3 / 10							M	
6A – Hitchin Rd / Arlesey New Rd	CBC	1 / 10	2 / 10	2 / 10	2 / 10	4 / 10	3 / 10			H					
7A – A507 (Stotfold)	CBC, HE	3 / 10	5 / 10	4 / 10	4 / 10	7 / 10	8 / 10			H					
7B – A507 (Shefford)	CBC	8 / 10	8 / 10	8 / 10	8 / 10	8 / 10	8 / 10				L				
7C – A507 (Amphill)	CBC	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10	5 / 10								
8A – A6 / Chapel End Rd	CBC	3 / 10	3 / 10	3 / 10	3 / 10	3 / 10	3 / 10								
8B – A6 / A507	CBC	3 / 10	4 / 10	4 / 10	5 / 10	5 / 10	5 / 10								
8C – A6 / Barton Rd / Higham Rd	CBC	5 / 10	5 / 10	5 / 10	5 / 10	6 / 10	7 / 10								
8D – A6 / Church Rd	CBC	5 / 10	8 / 10	8 / 10	6 / 10	9 / 10	8 / 10								
10A – M1 J13	HE, CBC	9 / 10	9 / 10	10 / 10	10 / 10	10 / 10	10 / 10		M				L		
10B – A5120 (M1 J12)	CBC	7 / 10	8 / 10	8 / 10	7 / 10	8 / 10	8 / 10								
10C – M1 J11a	HE, CBC	2 / 10	6 / 10	6 / 10	2 / 10	6 / 10	7 / 10	L				L			
12 – A5 / Woburn Rd	HE, CBC	3 / 10	3 / 10	3 / 10	4 / 10	4 / 10	4 / 10								
12A – A5 / A4012	HE, CBC	5 / 10	4 / 10	4 / 10	6 / 10	6 / 10	6 / 10								

<sup>16</sup> Based on the methodology defined in §2.4. For further details, refer to **Table 3.1**, **Table 3.2** and **Table 3.3**.

<sup>17</sup> Based on the methodology defined in §2.5. For further details, refer to **Table 4.1**.

Hot spot	Managed by
12B – A5 / A505	HE, CBC
12C – A505 (Dunstable)	CBC
12D – A5183 / Dunstable Rd	CBC
13 – North of Luton	CBC
14A – A4146 / A418	CBC
14B – A505 / Stanbridge Rd	CBC

Reference Case 2025	Local Plan 2025	Local Plan* 2025
1 / 10	3 / 10	3 / 10
8 / 10	8 / 10	8 / 10
3 / 10	3 / 10	3 / 10
7 / 10	5 / 10	5 / 10
3 / 10	3 / 10	3 / 10
5 / 10	6 / 10	6 / 10

Reference Case 2035	Local Plan 2035	Local Plan* 2035
5 / 10	4 / 10	4 / 10
8 / 10	8 / 10	8 / 10
3 / 10	4 / 10	4 / 10
7 / 10	6 / 10	6 / 10
7 / 10	7 / 10	6 / 10
7 / 10	7 / 10	7 / 10

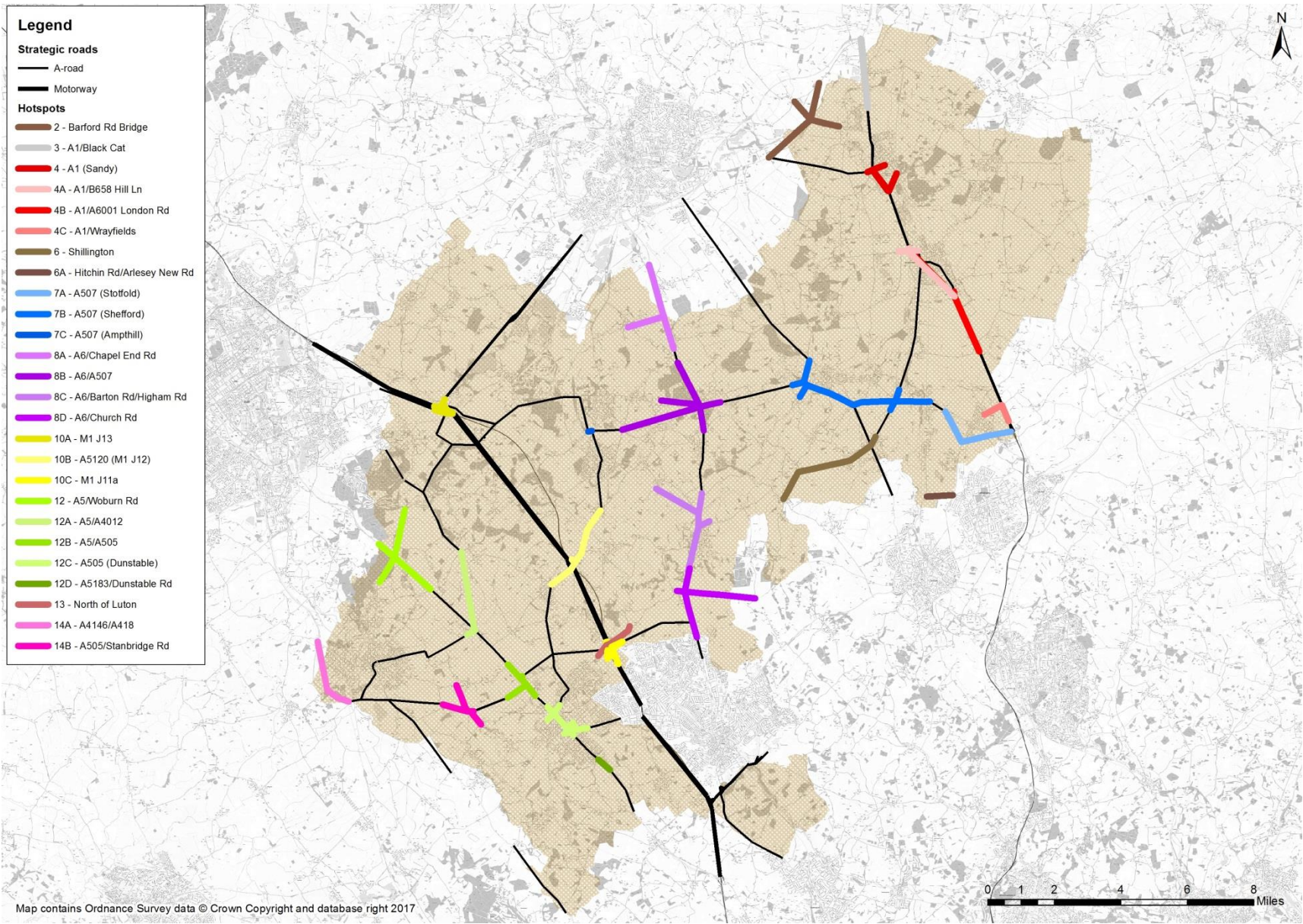
North of Luton	Marston Vale Growth	East of Arlesey	East of Biggleswade	Sundon RFI	Marston Gate	RAF Henlow	Holme Green Farm

## 5. Summary and discussion

### 5.1 Summary

- 5.1.1 CBC are in the process of updating their Local Plan. The transport evidence base for the Regulation 19 submission relies on:
- The Central Bedfordshire and Luton Transport Model (CBLTM), which is the authority's strategic transport model;
  - Two Forecast Years: 2025, and 2035, which is the end of the Plan period; and
  - Three model scenarios: Reference Case, Local Plan – strategic sites and Local Plan – strategic sites\*.
- 5.1.2 In addition to the A1 Black Cat roundabout (outside CBC), twenty-five 'hot spots' (or network issue locations) have been identified, as shown in **Figure 5.1**. Each 'hot spot' has also been linked where appropriate to the eight Local Plan strategic sites identified by CBC, as shown in **Table 4.2**.
- 5.1.3 The analysis shows that the scale of impact scores for the Reference Case scenarios are high for the strategic corridors in Central Bedfordshire, namely the A1, A507, A6, M1 and A5/A505. For these corridors and associated 'hot spots', the congestion issues are likely to be exacerbated by the Local Plan growth. For example, the modelling suggests that the delay and congestion for the hot spots on the A1 ('hot spot' 4B), A507 ('hot spot' 7A) and M1 ('hot spot' 10C), will increase for the Local Plan scenario when compared to the Reference Case. The analysis also shows that these 'hot spots' are generally accessed by traffic to/from the Local Plan strategic sites.
- 5.1.4 It should be noted that some of these 'hot spots' are not due specifically to the Local Plan growth. Comparison of the scale of impact scores between the Reference Case and Local Plan – strategic site scenario shows that the scale of impact for a number of 'hot spots' is consistent between the two CBLTM scenarios (for example, 'hot spots' 14A and 14B). In particular, fourteen of the twenty-five 'hot spots' within CBC are neither impacted nor accessed by traffic to/from the Local Plan strategic sites.
- 5.1.5 The Local Plan – strategic sites\* modelling results suggest that the introduction of the Black Cat roundabout improvements (in 2025 or earlier) and A1 East of England improvements (in 2035 or earlier) are likely to reduce the scales of impact of 'hot spots' 3 (A1 / Black Cat), 4 (A1 – Sandy), 4A (A1 / B658) and 4B (A1 / A6001):
- It should be noted however that the definition of these schemes will need to be confirmed at a later stage. In particular, it was assumed that the local Wrayfields access (4C) be removed as part of the A1 improvement scheme; and
  - Additional capacity along the A1 seems to cause additional stress on the A507 in the vicinity of the A1(M) Junction 10 (7A).

**Figure 5.1: Central Bedfordshire's 'hot spots' and their location**



## 5.2 Next stages

- 5.2.1 The transport evidence base suggests there will be network constraints in the medium term (i.e. 2025), which may worsen by the end of the Local Plan period (i.e. 2035) and/or with the addition of the Local Plan housing and employment growth.
- 5.2.2 Public Transport and highways mitigation options have been designed and costed at early conceptual level to address these issues (see Stage 2a Technical Note).
- 5.2.3 The mitigation options will then be tested in a single 'with mitigations' model run as part of Stage 2b of this study. The 'with mitigations' model run will provide an indication of the effectiveness of the proposed mitigation options to address traffic congestion within Central Bedfordshire.
- 5.2.4 It should be acknowledged that the Local Plan\* model scenario has been developed based on limited information. It is suggested that the modelling assumptions should be reviewed and refined at appropriate stages when more information is available.
- 5.2.5 It should also be noted that a number of modelling assumptions were made for development sites regarding site access and associated infrastructure for this study. The validity of these assumptions should be reviewed and may require updating when more information is available.