

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

**Transport Modelling Stage 2A** (January 2018)

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# **Technical Note**

# Central Bedfordshire Local Plan – Stage 2a

<b>Document No.</b> 5	Client name Central Bedfordshire Council	Client reference CBC	Discipline Transportation
<b>Project name</b> Central Bedfordshire Local Plan – Stage 2a	<b>Date</b> 08-Jan-18	Project number 60556564	
Prepared by APB	<b>Checked by</b> KT / BW	Verified by SPW	Approved by SK
Revision History			
Revision Revision Date	Details	Authorised	by Position
1 08/01/2018	Draft note for client commen	nts SK	Associate Director
2 10/01/2016	Final note	SK	Associate Director

#### 1. Introduction

#### 1.1 Context

- 1.1.1 Central Bedfordshire Council (CBC) is in the process of updating the transport evidence base required to support the production of their Local Plan. To assess the cumulative impact of the Local Plan growth on the highway network, transport modelling was undertaken using the Central Bedfordshire and Luton Transport Model (CBLTM):
  - The Regulation 18 submission relied on the previous version of CBLTM, which had a Base Year of 2009.
  - The CBLTM has since been enhanced and updated to a Base Year of 2016 and has been used to provide evidence for the Regulation 19 submission and to aid the understanding of potential mitigation options.
- 1.1.2 It should be noted that CBLTM is of a strategic nature. Whilst the CBLTM may provide indicative results, further assessment of local schemes' impact may be required at later stages, using additional tools (e.g. junction modelling and/or micro-simulation modelling) if necessary.
- 1.1.3 The transport modelling has be undertaken according to the following stages:
  - Stage 1a<sup>1</sup>: development of a transport evidence base for the purpose of the Regulation 18 submission;
  - Stage 1b<sup>2</sup>: to confirm the 'hot spots' identified in Stage 1a for CBC's preferred growth scenario (i.e. Scenario 1), using an updated version (i.e. Base Year 2016) of the CBLTM;
  - Stage 1c<sup>3</sup>: development of a transport evidence base for the purpose of Regulation 19 submission;
  - Stage 1d<sup>4</sup>: to analyse the impact of key strategic growth sites on the 'hot spots' confirmed in Stage 1c;
  - Stage 2a: to propose highway and public transport mitigation options for the confirmed 'hot spots' as identified in Stage 1c, including conceptual design; and
  - Stage 2b: to test the impact of the mitigation options proposed in Stage 2a on the overall network performance.

#### 1.2 Objectives / Structure of the note

- 1.2.1 This is the Stage 2a technical note. At the time of this note, Stages 1a to 1d have been completed with relevant information from these stages feeding into Stage 2a.
- 1.2.2 The purpose of this note is consistent with the objectives for Stage 2a i.e.:
  - to identify potential highway and public transport mitigation schemes, based on the transport evidence for the Local Plan scenario<sup>5</sup> generated in stage 1c;
  - to provide initial cost ranges; and
  - to relate 'hot spots' and mitigation scheme options with the Local Plan strategic growth sites, where applicable.

<sup>&</sup>lt;sup>1</sup> Study stage completed – Summer 2017. See Central Bedfordshire Local Plan – Stage 1a technical note (Apr-17) (AECOM).

Study stage completed – Autumn 2017. See Central Bedfordshire Local Plan – Stage 1b technical note (Dec-17) (AECOM).

 <sup>&</sup>lt;sup>3</sup> Study stage completed – December 2017. See Central Bedfordshire Local Plan – Stage 1c-1d technical note (Jan-18) (AECOM).
 <sup>4</sup> Study stage completed – December 2017/ January 2018. See Central Bedfordshire Local Plan – Stage 1c-1d technical note (Jan-18) (AECOM).
 (AECOM).

<sup>&</sup>lt;sup>5</sup> For information on assumptions for Local Plan scenario, see Central Bedfordshire Local Plan – Stage 1c-1d technical note (Jan-18) (AECOM).



- 1.2.3 It should be noted, at this stage, the proposed mitigation scheme options are at early conceptual stage and further works will be required for all mitigation scheme options discussed in this technical note.
- 1.2.4 Following this introductory section, this document is structured as follows:
  - Section 2 Assumptions and methodology;
  - Section 3 Summary of mitigation scheme options;
  - Section 4 Next Steps; and
  - Appendices which contain the proposed scheme pro formas.

#### 2. Assumptions and methodology

#### 2.1 Mitigation option proposals

- 2.1.1 The purpose of this stage of the study (i.e. Stage 2a) is to identify mitigation options for the 'hot spots' within Central Bedfordshire. Stage 1c of the study identified a number of 'hot spots' within Central Bedfordshire. Each 'hot spot' has then been reviewed and where appropriate, mitigation scheme options have been proposed. The mitigation options aim to reduce the level of congestion at these 'hot spots', however it may not necessarily remove the 'hot spots'. The next stage of the study (i.e. Stage 2b) will include the modelling of the mitigation options and will provide an indication of the combined impact of the proposed mitigation options.
- 2.1.2 It should be noted that this stage of the study does not differentiate the issues caused by the Local Plan growth only, but rather this stage of the study considers the combined growth from the Reference Case and Local Plan. As such, for some of the 'hot spots' and associated mitigation scheme option proposals, the relevant issues and mitigation options may be as a result of the Reference Case growth and not Local Plan growth, or a combination of both.
- 2.1.3 Stage 1d of the study provides analysis on the impact of key strategic growth sites on the 'hot spots' (through Select Link Analysis). The results of Stage 1d has been included in the relevant section of the pro forma (Appendix B) to link the mitigation option with the key strategic growth sites.
- 2.1.4 The identification of the 'hot spots' relied on two indicators, namely link stress and average delays at junctions; and the scale of impact score for each 'hot spot' incorporates two measures, namely the number of users impacted by the issue (i.e. how many vehicles are affected); and the level of congestion (i.e. how much stress and/ or junction delay is experienced by the users). The definition can be found in the "*Central Bedfordshire Local Plan Stage 1c-1d technical note (Jan-18)*" which has also been summarised in Table 2.1 and Figure 2.1.

	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

#### Table 2.1: Definition of the levels of 'Users' and 'Congestion'<sup>6</sup>





Scale of Impact

<sup>6</sup> Table 2.4, Central Bedfordshire Local Plan – Stage 1c-1d technical note (Jan-18) (AECOM)

<sup>&</sup>lt;sup>7</sup> Figure 2.2, Central Bedfordshire Local Plan – Stage 1c-1d technical note (Jan-18) (AECOM)



- 2.1.5 It should be noted that the scale of impact is a measure of the level of congestion and the overall volume of traffic affected by it in the entire 'hot spot'. For 'hot spots' which stretch across more than one junction, the scale of impact reflects the performance of the 'hot spot' as a whole, and not the performance of individual junction within the 'hot spot'. This is particularly relevant at motorway junctions, where high traffic volumes lead to high scale of impact scores which may overstate the congestion issues of individual junctions within such 'hot spot'. For performance of individual junctions, more detailed modelling data, such as link stress (V/C<sup>8</sup>) and delay should be considered instead to provide a more accurate indication of the performance of individual junctions.
- 2.1.6 For the development of the mitigation scheme options, link stress (V/C), delay and turning movement information from the modelling was analysed and used to inform the appropriate mitigation measures. Where applicable, Select Link Analysis<sup>9</sup> was also undertaken to understand the trip origins/ destinations of the trips through specific 'hot spots'.
- 2.1.7 CBC has provided pro forma for three development sites<sup>10</sup>, namely 'Land to the East of Houghton Park Road', 'Land East of Biggleswade' and 'Hayfield Park, and masterplan documents for other strategic sites<sup>11</sup> which AECOM has reviewed and incorporated into the mitigation scheme proposals when appropriate.
- 2.1.8 CBC has also shared mitigation scheme designs for the following locations, which have been incorporated for this study:
  - A6/ Chapel End Road<sup>12</sup> (mitigation option developed as part of Lane East of the B530 Ampthill Road, Wixam Park development);
  - A6/ A507<sup>13</sup> (CBC NPIF scheme); and
  - M1 Junction 13<sup>14</sup> (mitigation package option suggested by developers as part of Marston Valley development).
- 2.1.9 For each 'hot spot', local junction based highway capacity improvement schemes were considered in the first instance. Where the sites are constrained, more strategic schemes, such as providing new links, were then considered.
- 2.1.10 When developing mitigation scheme options, a 'Do Nothing' approach may be proposed if a capacity improvement scheme is not in keeping with the nature of the junctions and links and/or could potentially increase rat-running. Following the next stage of the study (i.e. Stage 2b) and the analysis of the 'with mitigations' model run, these 'hot spots' will be reviewed and the approach may be revised and updated if necessary.
- 2.1.11 An indicative delivery timescale is also included for each mitigation scheme options by considering the scale of impact in 2025 and 2035, and the potential scale of the mitigation scheme. For example, for 'hot spots' where the scale of impact is relatively low (i.e. 3 or below) for 2025, it is considered that the scheme delivery timescale can be between 2025 and 2035, whilst for 'hot spot' location where the scale of impact is greater for 2025, it is considered that the mitigation scheme will be required earlier in the Local Plan period (i.e. by 2025) to support the growth coming forward. The scale of the mitigation scheme is also considered that for schemes with an indicative costs estimate of over £10m, the potential delivery timescales are assumed to be beyond 2025 (i.e. for 2035).

<sup>&</sup>lt;sup>8</sup> Volume over capacity ratio (%) indicates the level of saturation of a road link as the ratio between the traffic flow using the road and the maximum flow the road is theoretically able to accommodate.

<sup>&</sup>lt;sup>9</sup> Select Link Analysis is a highway modelling tool that allows to determine the origins and destinations of the traffic using a section of a road in a transport model.

<sup>&</sup>lt;sup>10</sup> CBLTM\_accesss\_proforma\_v2 i-T.docx, Land East Houghton Park Road – CBLTM\_access\_proforma\_v4 Completed.docx and 170927 CBLTM\_access\_proforma\_v2 PBA Fradt.docx (from CBC, 16-Oct-17)

<sup>&</sup>lt;sup>11</sup> Strategic Site Masterplans received via Box (from CBC, 14-Nov-17)

<sup>&</sup>lt;sup>12</sup> Land East of the B530 Ampthill Road, forming part of Wixam Park Outline Planning Application – Transport Assessment (from CBC, 14-Dec-17)

<sup>&</sup>lt;sup>13</sup> Scheme design (CBC National Productivity Investment Funding Bids) (from CBC, 7-Dec-17)

<sup>&</sup>lt;sup>14</sup> Marston Valley – Outline of Marston Valley transport Assessment Conclusions in Relation to the M1 Junction 13 (pba) (from CBC, 18-Dec-2017)



- 2.1.12 At the time of this study, plans to provide significant improvements at M1 Junction 13 are being considered by Highways England as part of the A421 Oxford to Cambridge Expressway. However, as detailed scheme information is not available and timescale is uncertain at this stage, this potential significant improvement scheme cannot be relied upon to support the Local Plan growth. As such, local mitigation options were proposed for M1 Junction 13 to support the Local Plan growth. As information for the A421 Oxford to Cambridge Expressway and potential major improvement for M1 Junction 13 emerge over the coming months and years, there will be a need to review and revise the mitigation options discussed in this technical note.
- 2.1.13 Public transport schemes are also considered for this study. Public transport schemes were considered at a wider level, considering the potential for improved bus service provision to provide improved connectivity along a development corridor. Each public transport scheme proposal is therefore associated with a group of 'hot spots'.
- 2.1.14 The approach taken identifies opportunities to embed public transport in new development, and encourage users to switch to sustainable transport modes at the key decision point of moving house or switching job location. The approach is therefore to reduce the impact of development on the highway network as far as possible, and take advantage of the opportunity for change provided by new development in order to support a longer term shift towards sustainable transport modes.
- 2.1.15 Each public transport scheme that has been identified serves one or more Local Plan development location. Each scheme seeks to provide improved connectivity by public transport along a corridor where Local Plan development allocations provide an opportunity to increase ridership, and where travel by private car is expected to place strain on highway capacity.
- 2.1.16 Where appropriate, highway and public transport mitigation options which complement each other were also proposed (i.e. A507 Ampthill).
- 2.1.17 New or improved services were proposed with a headway<sup>15</sup> of up to 30 minutes, representing a reasonably attractive service for journeys planned ahead. A headway of 15 minutes was proposed for bus service improvements between Ampthill, Flitwick and the proposed Marston Gate development site, representing a turn-up and go service which would not require users to plan their journeys before travelling.
- 2.1.18 It has not been possible within the scope of this analysis to undertake a more detailed assessment of service viability, impacts and implementation. Therefore, the proposed routes and service frequencies are indicative only.
- 2.1.19 For both highway and public transport mitigation option proposals, it should be noted that the appropriateness and linkages of the scheme options in relation to CBC's wider transport vision and transport strategy has not been explored as part of this study. It is anticipated that a wider strategy and vision will be developed and the proposed mitigation scheme options discussed in this technical note should be reviewed and revised at appropriate stages as and when more information become available.

#### 2.2 Scheme cost ranges

- 2.2.1 For each mitigation option proposal, an indicative cost range has been provided. For the highway schemes (with the exception of the A6/ A507 junction), the cost ranges have been derived based on a database of schemes and their costs. Specific costings have not been undertaken for this study, and the cost range for the mitigation option proposals are based on similar scheme types and should be considered as an early indication only.
- 2.2.2 For the A6/ A507 junction, the mitigation design and associated cost<sup>16</sup> have been provided by CBC.

<sup>&</sup>lt;sup>15</sup> Headway is the time between the arrivals of two buses of the same service.

<sup>&</sup>lt;sup>16</sup> NPIF scheme. Cost provided by CBC (from CBC, 13-Dec-17)



2.2.3 For public transport, costs have been estimated based on a broad assumption that the total operating cost including staff costs for one bus (vehicle) for one year would be approximately £120,000. This cost assumption was then multiplied based on the number of vehicles required to achieve the specified service improvement to give an indicative cost estimate. The indicative estimates were then placed within cost ranges as with the highway schemes. The estimates are broadly based upon present day bus operating costs and do not take account of any increases which may occur in the future.

#### 2.3 Assessment criteria

- 2.3.1 A high level qualitative assessment for each mitigation option proposal was also undertaken. It should be noted that, at this stage, the assessment has not been based on modelling results and other quantitative assessments, and should be considered as a guide only. Following further analysis and studies (out of scope of this study), the assessment criteria should be reviewed and updated if necessary. The purpose of the assessment is to enable early considerations on mitigation scheme selections and rankings, and should be considered as indicative only.
- 2.3.2 Five assessment criteria were considered:
  - Congestion [High / Medium / Low / N/A] the potential of the mitigation proposal to reduce traffic congestion and delays;
  - Environment [Positive / Neutral / Negative] the potential impact of the mitigation proposal on the environment (for example: land take, air quality/ noise);
  - Growth [High / Medium / Low / N/A] the potential of the mitigation proposal to facilitate future developments<sup>17</sup>;
  - Risks & Uncertainties [High / Medium / Low / N/A] the potential level of risks and uncertainties associated with the mitigation proposal, considering the scale and location of the schemes (for example, CBC or Highway England's network), land take, possible crossboundary impact etc.; and
  - Deliverability [High / Medium / Low / N/A] the potential of the mitigation proposal being delivered within the Local Plan period (i.e. 2035) considering the potential cost, scale and location of the scheme, stakeholders, and implementation timescale.

#### 2.4 Pro forma

- 2.4.1 The mitigation option proposals are presented in a pro forma style in Appendix B, and each pro forma contains:
  - a description of the hotspot and transport issues, including the 'scale of impact' score from Stage 1c;
  - a location map;
  - a brief description of the highway or public transport mitigation scheme proposal;
  - a concept sketch of the proposal;
  - the assessment criteria of the proposal;
  - the indicative cost range;
  - the relevant Local Plan strategic growth sites from Stage 1d; and
  - the modelling evidence information supporting the appropriateness of the mitigation scheme proposal.
- 2.4.2 A template of the pro forma is included in Appendix A for reference.

<sup>&</sup>lt;sup>17</sup> The results from Stage 1d of the study has been considered for this assessment criteria. *High* – indicates that the mitigation proposal/ hot spot can be related to two or more Local Plan strategic sites; *Medium* – indicates that the mitigation proposal/ hot spot can be related to one Local Plan strategic site; *Low* – indicates that the mitigation proposal/ hot spot is not directly associated with any specific Local Plan strategic site; *N/A* – indicates that a Do Nothing approach has been proposed.

#### 2.5 Assumptions and limitations

- 2.5.1 The mitigation option proposals are based on the Stage 1c modelling results and aim to address the strategic transport issues and 'hot spots' identified in the 'with Local Plan growth' scenario. This stage of the study does not differentiate the issues caused by the Local Plan growth only, but rather the combined growth from the Reference Case and Local Plan.
- 2.5.2 The mitigation option proposals included in this study are at an early conceptual stage and all will require further works and assessments (such as engineering feasibility, land take analysis etc.). Further analysis and consultation, including with bus service operators, should also be undertaken (out of scope of this study).
- 2.5.3 The cost ranges for the highway mitigation schemes are based on existing available cost information of similar schemes and should be considered as an early indication only.
- 2.5.4 At this stage, the assessment of the mitigation option proposals are high level qualitative only which may be updated following more detailed study of each mitigation options (out of the scope of this study).
- 2.5.5 Potential funding sources for the mitigation scheme options discussed in this technical note has not been identified at this stage. However, it is anticipated that the delivery of the mitigation options (directly related to Local Plan growth) will be addressed through the delivery of the allocation sites, by the developer, Highways Authority and/or Highways England. Other mitigation options (not directly related to Local Plan growth) will be considered and prioritised by the Highways Authority and/or Highways England.
- 2.5.6 It should be noted that the impact of the mitigation option proposals have not been assessed at this stage. The 'with mitigations' modelling will be included in the next stage of the study (i.e. Stage 2b) in order to determine how the mitigation options proposed in this stage of the study performs. If any mitigation options do not address the congestion issues for the 'hot spots' effectively, further iterations of the mitigation option proposals may be required depending on the outcome of Stage 2b.



#### 3. Summary of mitigation scheme options

- 3.1.1 The mitigation option proposals are presented in a pro forma style in Appendix B. Table 3.2 summarises the mitigation scheme options.
- 3.1.2 The development of the mitigation scheme options are based on the issues caused by the combined growth from the Reference Case and Local Plan. As such it should be noted that not all mitigation options will be relevant to the Local Plan growth only, but rather the combined impact of the Reference Case and Local Plan growth.
- 3.1.3 The type of mitigation schemes proposed comprise of mainly local junction based highway capacity improvement schemes, which include the widening of carriageway, signalisation and junction reconfiguration. The indicative costs of these schemes are generally below £5m. For the A6 (i.e. 'Hot spot' 8D), a larger mitigation scheme of the dualling the A6 carriageway (with an indicative cost of over £10m) is proposed to address link capacity issue. Figure 3.1 shows the distribution of the indicative cost ranges for the proposed mitigation schemes.



#### Figure 3.1. Summary scheme cost range distribution (Highway and public transport)

- 3.1.4 As well as highway mitigation options, three public transport mitigation options are also proposed. Each public transport scheme seeks to provide improved connectivity by public transport along a corridor where Local Plan development allocations provide an opportunity to increase ridership.
- 3.1.5 For A507 Ampthill (i.e. H 7C & PT 7C/A10A), the highway and public transport mitigation options have been designed to complement each other and provide opportunities for bus actuated signals, at-grade pedestrian and cycle crossings and the extension of cycle lane. (See Pro forma H 7C and PT 7C/10A for more details)

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#### Table 3.2: Summary of mitigation scheme options

Hot spot	Scheme Option		Scale of	Impact <sup>1</sup>	8			
		Reference Case 2025	Local Plan 2025	Reference Case 2035	Local Plan 2035	Stakeholders	Indicative Delivery Timescale	Indicative Cost Range
Highway Schemes								
2 – Barford Rd Bridge	H – 2 – Barford Rd Bridge – Do Nothing	6 / 10	6 / 10	6 / 10	6 / 10	CBC; Other	N/A	N/A
3 – A1 / Black Cat <sup>19</sup>	N/A – Outside CBC	10 / 10	10 / 10	10 / 10	10 / 10	N	'A – Outside CB	С
4 – A1 (Sandy)	H – 4 – a – A1 (Sandy) – A1/A603 – Junction upgrade and improved access to Sandy	10 / 10	10 / 10	10 / 10	10 / 10	CBC; HE	2025	£5m-£10m
	H – 4 – b – A1 (Sandy) – A603/Vinegar Hill – Prioritisation E-W movements	10 / 10	10 / 10	10 / 10	10 / 10	CBC; HE	2025	£0-£500k
4A – A1 / B658 Hill Ln	H – 4A – A1/B658 Hill Ln – Partial signalisation	10 / 10	10 / 10	10 / 10	10 / 10	CBC; HE	2025	£500k-£1m
4B – A1 / A6001 London Rd	H – 4B – A1/A6001 London Rd – Partial signalisation	5 / 10	6 / 10	4 / 10	7 / 10	CBC; HE	2025	£500k-£1m
4C – A1 / Wrayfields	H – 4C – A1/Wrayfields – Do Nothing	7 / 10	7 / 10	7 / 10	7 / 10	CBC; HE	N/A	N/A
6 – Shillington	H – 6 – A600/A659 – Crossroads	2 / 10	2 / 10	4 / 10	6 / 10	CBC; Other	2035	£2.5m-£5m
6A – Hitchin Rd / Arlesey New Rd	H – 6A – Hitchin Rd/Arlesey New Rd - Signalisation	1 / 10	2 / 10	2 / 10	4 / 10	CBC; Other	2035	£1m-£2.5m

<sup>&</sup>lt;sup>18</sup> The Scale of Impact scores were determined in Stage 1c of the study. See also *Central Bedfordshire Local Plan – Stage 1c-1d technical note (Jan-18) (AECOM).* <sup>19</sup> Mitigation option has not been considered for this 'hot spot' (Black Cat roundabout) as this is located outside the boundary of Central Bedfordshire.

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Hot spot	Scheme Option		Scale of	Impact <sup>18</sup>	8			
		Reference Case 2025	Local Plan 2025	Reference Case 2035	Local Plan 2035	Stakeholders	Indicative Delivery Timescale	Indicative Cost Range
7A – A507 (Stotfold)	H – 7A – A507 (Stotfold) – New link road	3 / 10	5 / 10	4 / 10	7 / 10	CBC	2025	£5m-£10m
7B – A507 (Shefford)	H – 7B – A507 (Shefford) – Rd exit widening and review of lane allocation	8 / 10	8 / 10	8 / 10	8 / 10	CBC	2025	£500k-£1m
7C – A507 (Ampthill)	H – 7C – A507 (Ampthill) - Crossroads	5 / 10	5 / 10	5 / 10	5 / 10	CBC	2025	£2.5m-£5m
8A – A6 / Chapel End Rd	H – 8A – A6/Chapel End Rd (Houghton Conquest) – Extension of right turn filter lane <sup>20</sup>	3 / 10	3 / 10	3 / 10	3 / 10	CBC; Other	2025 <sup>21</sup>	£500k-£1m
8B – A6 / A507	H – 8B – A6/A507 – Conversion of roundabout to signalised junctions <sup>22</sup>	3 / 10	4 / 10	5 / 10	5 / 10	CBC	2025	£2.5m-£5m
8C – A6 / Barton Rd / Higham Rd	H – 8C – A6/Barton Rd/Higham Rd – Road widening and review of lane allocation	5 / 10	5 / 10	5 / 10	6 / 10	CBC	2025	£500k-£1m
8D – A6 / Church Rd	H – 8D – A6/Church Rd – Dualling	5 / 10	8 / 10	6 / 10	9 / 10	CBC; Other	2035	£10m-£25m
10A – M1 J13	H – 10A – M1 J13 – Junction improvements <sup>23</sup>	9 / 10	9 / 10	10 / 10	10 / 10	CBC; HE	2025	£2.5m-£5m

<sup>&</sup>lt;sup>20</sup> Mitigation option as part of Lane East of the B530 Ampthill Road, Wixam Park development. Land East of the B530 Ampthill Road, forming part of Wixam Park Outline Planning Application – Transport Assessment (from CBC, 14-Dec-17)

<sup>&</sup>lt;sup>21</sup> The first occupation of the development associated with this mitigation option is anticipated to be 2020 with a design year of 2027 Land East of the B530 Ampthill Road, forming part of Wixam Park Outline Planning Application – Transport Assessment (from CBC, 14-Dec-17). Therefore it is assumed that the indicative delivery timescale will be 2025, rather than 2035.

<sup>&</sup>lt;sup>22</sup> CBC NPIF Scheme. Scheme design (CBC National Productivity Investment Funding Bids) (from CBC, 7-Dec-17)

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Hot spot	Scheme Option		Scale of	Impact <sup>1</sup>	8			
		Reference Case 2025	Local Plan 2025	Reference Case 2035	Local Plan 2035	Stakeholders	Indicative Delivery Timescale	Indicative Cost Range
10B – A5120 (M1 J12)	H – 10B – a – M1 J12 – Do Nothing	7 / 10	8 / 10	7 / 10	8 / 10	CBC; HE	N/A	N/A
	H – 10B – b – A5120/Westoning Rd – Do Nothing	7 / 10	8 / 10	7 / 10	8 / 10	CBC	N/A	N/A
10C – M1 J11a	H – 10C – M1 J11a – Do Nothing	2 / 10	6 / 10	2 / 10	6 / 10	CBC; HE; Other	N/A	N/A
12 – A5 / Woburn Rd	H – 12 – A5/Woburn Rd – Widening of roundabout exits	3 / 10	3 / 10	4 / 10	4 / 10	CBC; HE; Other	2035	£500k-£1m
12A – A5 / A4012	H – 12A – A5/A4012 (Hockliffe) – Do Nothing	5 / 10	4 / 10	6 / 10	6 / 10	CBC; HE	N/A	N/A
12B – A5 / A505	H – 12B – A5/A505 – Dunstable Northern Bypass (Dunstable) – Road widening and partial signalisation	1 / 10	3 / 10	5 / 10	4 / 10	CBC; HE	2035	£5m-£10m
12C – A505 (Dunstable)	H – 12C – A505 (Dunstable) – Do Nothing	8 / 10	8 / 10	8 / 10	8 / 10	CBC	N/A	N/A
12D – A5183 / Dunstable Rd	H – 12D – A5183/Dunstable Rd – Do Nothing	3 / 10	3 / 10	3 / 10	4 / 10	CBC	N/A	N/A
13 – North of Luton	H – 13 – a – N of Luton – Sundon Rd/ Church Rd – Do Nothing	7 / 10	5 / 10	7 / 10	6 / 10	CBC; Other	N/A	N/A

<sup>23</sup> Mitigation package option as part of Marston Valley development. Marston Valley – Outline of Marston Valley transport Assessment Conclusions in Relation to the M1 Junction 13 (pba) (from CBC, 18-Dec-2017) Technical Note Central Bedfordshire Local Plan – Stage 2a ΑΞϹΟΜ

Hot spot	Scheme Option Scale of Impact <sup>18</sup>			8				
		Reference Case 2025	Local Plan 2025	Reference Case 2035	Local Plan 2035	Stakeholders	Indicative Delivery Timescale	Indicative Cost Range
	H – 13 – b – N of Luton – Sundon Rd/Woodside Link – Do Nothing	7 / 10	5 / 10	7 / 10	6 / 10	CBC; Other	N/A	N/A
14A – A4146 / A418	H – 14A – A4146/A418 (Leighton Buzzard) – Do Nothing	3 / 10	3 / 10	7 / 10	7 / 10	CBC; Other	N/A	N/A
14B – A505 / Stanbridge Rd	H – 14B – A505/Stanbridge Rd – "Long- about"	5 / 10	6 / 10	7 / 10	7 / 10	CBC	2025	£5m-£10m
Public Transport Schemes								

PT – 6/7A/7B – Connecting Towns and Employment – Eastern A507	N/A	N/A	N/A	N/A	CBC; Other	2025	£1m-£2.5m
PT – 7C/10A – Ampthill – Flitwick Sustainable Travel Corridor	N/A	N/A	N/A	N/A	CBC; Other	2025	£2.5m-£5m
PT – 12/14 – Connecting Leighton Buzzard Urban Extensions	N/A	N/A	N/A	N/A	CBC; Other	2025	£0-£500k

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#### 4. Next Steps

- 4.1.1 The proposed mitigation options will be tested in a single 'with mitigations' model run as part of Stage 2b of this study. This initial 'with mitigations' model run will provide an indication of the effectiveness of the proposed mitigation scheme options to address traffic congestion within Central Bedfordshire.
- 4.1.2 Further iterations of the mitigation options may be required to refine and/or to re-define the mitigation scheme concepts following Stage 2b.
- 4.1.3 The mitigation options discussed in this technical note are at an early conceptual stage and further assessments, analysis and consultations on all proposed mitigation options will be required.
- 4.1.4 Potential funding sources for the mitigation scheme options discussed in this technical note need to be identified. However it is anticipated that the delivery of the mitigation scheme options (directly related to the Local Plan growth) will be addressed through the delivery of the allocation sites, by the developers, Highways Authority and/or Highways England. Other mitigation scheme options (not directly related to Local Plan growth) will be considered and prioritised by the Highway Authority and/or Highways England.
- 4.1.5 It is suggested that the proposed mitigation scheme options discussed in this technical note should be reviewed and revised at appropriate stages to ensure the proposed options are consistent with wider transport strategies for Central Bedfordshire, masterplanning for large strategic developments and potential schemes on Highways England's network.

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#### Appendix A Scheme pro forma template



	Ρ	ro forma	a ID									
H- x- a/b PT- x/x/x	Ή 'x' 'a/b' 'PT' 'x'	indicates high indicates the 'f scheme is rela- indicates the c within the 'hot indicates publi indicates to the which this sch	way scheme not spot' which th ted to lifferent junction I spot' if applicable ic transport scher e multiple 'hot sp eme is related to	is ocation e ne ots'	Description of Location and Scheme Option						Ind	
Location M	lap				Description of Issues							
						Short de	scription	of ti	he tran	sport	issues	
	Loca	ation Map with	'hot spot' highl	ighted					202	5	2035	
	(as i	identified in S	tage 1c of the s	study)		Scale of	RC	RC Scale of Impact 2035 Reference scenario (from Stage 1c c		et for 2025/ ee Case f the study)		
						Impact	LP			Scale of Impact for 2025/ 2035 Local Plan scenario (from Stage 1c of the study)		
Scheme	Con	icept										
Scheme C	once	pt Sketch				Descrip	otion of	Scl	heme	Cond	ept	
	Inc	dicative Scher	ne Concept Sk	etch		Brief des	scription	of S	cheme	Conc	ept	
						Stakeho	olders:	C	BC	ΗE	Other	
						Indicativ Timesca	ve Delive ale:	ery	202	25	2035	
Relevant	Str	ategic De	velopment	Sites	8							
Local Plan s (from Stage	trateg 1d of	ic developme the study)	nt sites related	to this	'hot spot' lo	ocation and s	scheme c	optic	on			
Assessm	nent											
Congestion			Growt	h			Deliverat	oility				
Environment	t		Risk 8	Uncer	rtainties							
Indicativ	e Co	ost Range										
£0-£500k	÷	£500k-£1m	£1-£2.5m	£2.	5m-£5m	£5m-£10r	n £1	0m-	£25m	0\	ver £25m	



Transport modelling data, including link stress plot, from Stage 1c of the study

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#### Appendix B Proposed scheme pro formas



Н –	2		Bar	ford Road	Bridge	) <b>–</b> [	Do No	othing	
Location Map					Descri	ption	of Issu	ies	
logand				St Neots	This ho Central Bedford bridge w	otspot Bedfo I. It cc vhich i	is locat ordshire onsists o is control	ted at the and the l of a 150m lled by traff	border of Borough of single lane fic signals.
Hotspot 2 - Bar	Bedfordshire ford Rd Bridge			N	This brid River G Black C east of l and loca	dge is Great ( at rou Bedfor al road	the only Ouse be Indabout rd), and ds.	v river cros tween the ) and the A it is access	sing for the A1 (at the A21 (to the sed by rural
Clapham (Bedford) Bedford		R	5		Due to its junc 2035 Lo capacity PM pea	the co tions, ocal P / with ks.	onfigurat its capa lan scen long de	ion of the acity is lo nario, it op elays in bo	bridge and w. For the erates over oth AM and
			A	Sandy	Note: This where u generally	s hotspo ncertain greater.	ot is located hty in for	d at the bound recasts and	dary of CBLTM modelling is
Man contains Ordina	nce Survey data @	Crown Con	wright and	database right 2017				2025	2035
Map contains ordina	nce Survey data e		yngnt and a	database ngin 2017	Scale o	f	RC	6 / 10	6 / 10
					Impact		LP	6 / 10	6 / 10
Scheme Co	oncept								
Scheme Cond	ont Skotch							•	4
INDICATIVE SKETCH					Descri	ption	of Sch	eme Con	cept
				INDICATIVE SKETC	H Do Noth Due to bridge, suggest	ning. the a ted for	physica Do No	eme Con l constrain othing ap spot.	nts of the proach is
		Ranca Roce		INDICATIVE SKETC	H Do Noth Due to bridge, suggest Also ca may at rural rou	ption ning. the a ted for pacity tract ute wh	physica Do No this hots improve strategic ich is no	eme Con thing ap spot. ement for the traffic the t encourag	nts of the proach is his location prough this led.
		Part of Roce			Descri Do Noth Due to bridge, suggest Also cal may at rural rou	ption hing. the a ted for pacity tract ute wh	physica Do No this hots improve strategic ich is no	eme Con I constrain othing ap spot. ement for the traffic the t encourag	rts of the proach is his location nrough this led.
		Philophoe gery ©2017 Dig ssky, The Geoinf	inalGlobe, Gett ormation Grou	INDICATIVE SKETC	H Do Noth Due to bridge, suggest Also ca may at rural rou Stakeho Indicati Timesc	ption hing. the a ted for pacity tract ute wh olders olders ale:	physica Do No this hots improve strategic ich is no s: CB	eme Con I constrain othing ap spot. ement for the traffic the t encourag C HE 2025	rts of the proach is his location prough this led. Other 2035
Relevant St	trategic D	evelop	inalGlobe, Gettorormation Grou	INDICATIVE SKETC	H Do Noth Due to bridge, suggest Also ca may at rural rou Stakeho Indicati Timesc	ption hing. the a ted for pacity tract ute wh olders ale:	physica Do No this hots improve strategic ich is no s: CB	eme Con I constrain othing ap spot. ement for the traffic the t encourag C HE 2025	rts of the proach is his location prough this led. Other 2035
Relevant St N/A	trategic D	evelop	inalGlobe, Gett ormation Grou	INDICATIVE SKETC	<ul> <li>Descri</li> <li>Do Noth</li> <li>Due to bridge, suggest</li> <li>Also ca may at rural rou</li> <li>Stakeho</li> <li>Indicati</li> <li>Timesc</li> </ul>	ption hing. the a ted for pacity tract ute wh olders ale:	physica Do No this hots improve strategic ich is no s: CB	eme Con I constrain othing ap spot. ement for the traffic the t encourag C HE 2025	rts of the proach is his location brough this led.
Relevant St N/A Assessmer	trategic D	ery 02017 Dig sky, The Geoinf evelop	inal Globe, Gett formation Grou	INDICATIVE SKETC	<ul> <li>Descri</li> <li>Do Noth</li> <li>Due to bridge, suggest</li> <li>Also cal may at rural rou</li> <li>Stakeho</li> <li>Indicati</li> <li>Timesc</li> </ul>	ption ning. the a ted for pacity tract ute wh olders ive De ale:	physica Do No this hots improve strategic ich is no strategic ich is no	eme Con I constrain othing ap spot. ement for the traffic the t encourag C HE 2025	cept nts of the proach is his location nrough this led. Other 2035
Relevant St N/A Assessmer Congestion	trategic D	erv ©2017 Dig esky, The Geoinf evelop	inalGlobe, Gett ormation Growth Growth Risk &	INDICATIVE SKETC	Descri         H       Do Noth         Due to       bridge,         suggest       Also cal         may at       rural rou         Stakehe       Indicati         Timesc       N/A	ption hing. the a ted for pacity tract ute wh olders ale: Delive	physica Do No this hots improve strategic ich is no s: CB elivery erability	eme Con I constrain othing ap spot. ement for the traffic the t encourag C HE 2025	rts of the proach is his location brough this location brough this led.
Relevant St N/A Assessmer Congestion Environment Indicative C	trategic D nt	ery (22017 Dig esky, The Geoing evelop N/A N/A	inalGlobe, Gett ormation Growth Risk &	INDICATIVE SKETC	Descri         H       Do Noth         Due to       bridge,         suggest       Also cal         may at       rural rou         Stakehe       Indicati         Timesc       N/A         N/A       N/A	ption hing. the a ted for pacity tract ute wh olders ive De ale: Delive	physica Do No this hots improve strategic ich is no s: CB elivery	eme Con I constrain othing ap spot. ement for the traffic the t encourag C HE 2025	rts of the proach is his location birough this ed.



#### Select Link Analysis

Select Link Analysis of Barford Road Bridge shows that for the 2035 Local Plan scenario, a proportion of trips using the Barford Road Bridge are strategic traffic to/from the A421, avoiding the congested A1-A421 Black Cat roundabout.





#### Link Stress and node delays

Link stress (V/C) and delays at Barford Road Bridge and Black Cat roundabout are high. All approaches to Black Cat roundabout are over capacity, particularly the northbound and eastbound approaches (CBLTM 2035 Local Plan scenario).

As part of the A428 Black Cat to Caxton Gibbet scheme, there is plan to improve the Black Cat roundabout by Highways England which will reduce the congestion and delays at the Black Cat roundabout.





#### A1 (Sandy) – A1/A603 – Junction upgrade and improved access to Sandy



signalisation of the roundabout.									
The m	odellin	g suggests	that	for	the	203	5		
Local	Plan	scenario,	the	so	uthb	ounc	I,		
eastbo	eastbound and westbound approaches are								
over ca	apacity.								

		2025	2035
Scale of	RC	10 / 10	10 / 10
Impact	LP	10 / 10	10 / 10

#### **Scheme Concept**

**Scheme Concept Sketch** 

# INDICATIVE SKETCH

#### **Description of Scheme Concept**

The physical constrains at the A603 roundabout do not allow for the addition of extra lanes or signalisation. The proposed approach consists of improving access to Sandy to the south of the hotspot and consequently reducing traffic demand for the A1/A603 roundabout junction.

The scheme includes changing the A1/New Road junction from a priority T-junction to a roundabout which may make New Road a more attractive route into Sandy from the A1 and reduce the traffic approaching the A1/A603 roundabout.

Stakeholders:	СВС		HE	Other
Indicative Deliv Timescale:	ery	2	025	2035

# **Relevant Strategic Development Sites**

East of Biggleswade; West of A1 Biggleswade

Assessme	nt								
Congestion		Medium	Growth		High	Deli	verability		Medium
Environment		Negative	Risk &	Uncertainties	High				
Indicative	Cost Ran	ge							
£0-£500k	£500k-£1n	n £1-£	2.5m	£2.5m-£5m	£5m-£1	0m	£10m-£25m	0	ver £25m



#### Link Stress and node delays

Significant congestion and delays on all approaches to the A1/A603 roundabout (CBLTM 2035 Local Plan scenario); the south, east and westbound approaches to the A1/A603 roundabout operate over capacity, and the northbound approach operates at a V/C over 75%.

Providing an alternative access to Sandy town centre may reduce the demand on the A1/A603 roundabout and improve its operation.





# A1 (Sandy) – A603/Vinegar Hill – Prioritisation of E-W movements

Location Map					Descr	iptic	on of Iss	ues				
Legend Central Bedfordshire Hotspot - 4 - A1 (Sandy) Bedford Sandy Potton						This is a priority T-junction with the A603 western arm as the minor give-way arm and the more lightly trafficked Vinegar Hil and A603 from the A1 direction as the major arms. The modelling suggests tha the predominant flows are the A603 east west movements. With the current configuration, right turning traffic from the A1 gives way to the northbound traffic from Vinegar Hill. With limited stacking capacity, the right turning traffic queue blocks the southbound traffic causing significant delays.						
Sr Sr S		十四		A				2	025	2035		
Map contains Ordnance Survey da	ta © Crown Cop	yright and d	atabase right 2017	Ņ	Scale	of	RC	10	/ 10	10 / 10		
					Impac	t	LP	10	/ 10	10 / 10		
Scheme Concept												
Scheme Concept Sket	ch				Descr	iptic	on of Sc	heme	e Conc	cept		
4603		100	INDICATIVE SKETO	СН	The sc the jun movem flow dia With southe the min	them ction nents nents agrar the rn a nor g	e consist to priorit in cons at the m below. propose rm (i.e. ive-way a	s of r ise the istenc junctio d co Vinega rm.f	reconfig e A603 cy with on sho onfigura ar Hill)	guration of east-west the main wn in the ation, the becomes		
	inegar	1	7 . 3		Stakeh	olde	ers: C	вС	HE	Other		
	Imagery © 2017 Digi Bluesky, The Geoinfo	nalGlobe, Getm ormation Group	apping plc, Infoterra Ltd 8 , Map data ©2017 Googl	& e	Indicat Timeso	tive l cale:	Delivery	20	025	2035		
<b>Relevant Strategic</b>	Develop	ment S	Sites									
N/A												
Assessment												
Congestion	Medium	Growth			Low	Deli	iverability			High		
Environment	Neutral	Risk & l	Incertainties		Low							
Indicative Cost Ra	nge											
£0-£500k £500k-£1	m £1-£	2.5m	£2.5m-£5m		£5m-£1	0m	£10m·	£25m	0\	ver £25m		
Indicative Funding	Sources	;					·		<u>.</u>			

[To be provided by CBC]



#### Link Stress and node delays

West and southbound approaches to the A603/Vinegar Hill junction operate over capacity (CBLTM 2035 Local Plan scenario).

With the current configuration, the east-west movement at the A603/Vinegar Hill junction has a reduced capacity as it gives way to the east-south movement, causing the congestion issues shown in the Link Stress plots below.





#### Flow diagram

The flow diagram shows that the predominant movements are the A603 east-west movements. The proposed mitigation scheme consists of reconfiguration of the junction, designating the A603 east-west movements as the major movements and Vinegar Hill as the minor give-way arm.





H – 4A	4	1/B6	58 Hill Laı	ne – Pa	rtia	l sign	alisat	ion	
Location Map				Desci	iptio	n of Issu	les		
Legend Central Bedfordshire Hotspot 4A - A1/B658 Hill Li	n Sandy	Bigglesw	Potton	This is the pro- traffic. The m Local operat delays fa	This is a give-way roundabout junc the predominant flows are the A1 traffic. The modelling suggests that for th Local Plan scenario, all app operate over capacity with sig delays. fa				
Colores and	J.		SEF				2025	2035	
	May	fe	AVX.	Scale	of	RC	10 / 1	0 10 / 10	
Map contains Ordnance Survey date	<sub>b</sub> © <sub>d</sub> Crown Cop	yright and c	latabase right 2017	Impac	t	LP	10 / 1	0 10 / 10	
Scheme Concept									
Scheme Concept Sketc	h			Desci	iptio	n of Sch	ieme Co	oncept	
Hill Lane	H The so of the reducti approa require new tra The si signali capaci	The scheme consists of partial signalisation of the roundabout for the A1 arms. A reduction in the speed limit on the A1 approaches to the junction may also be required to enable vehicles to approach the new traffic signals at a reduced speed. The size of this roundabout allows for its signalisation, which would enhance							
				have s	larly shown the ju	at the sign to host anction (Fi	gnalised the ma low diagr	arms, which in movement ram, below).	
	₽1		L'aquana a	Stake	noldei	rs: CB	кс н	E Other	
lia	nagery ©2017 Digi luesky, The Geoinfi	nalGlobe, Getn ormation Grou	napping plc, Infoterra Ltd & p, Map data ©2017 Google	Indica Times	tive D cale:	elivery	2025	2035	
Relevant Strategic I	Develop	ment	Sites						
East of Biggleswade; West of A	1 Biggleswa	de							
Assessment									
			-						
Congestion	Medium	Growth		High	Deliv	/erability		Medium	
Congestion Environment	Medium Neutral	Growth Risk &	Uncertainties	High Medium	Deliv	verability		Medium	



#### Link stress and node delays

Link stress (V/C) is over capacity at all approaches to the A1/B658 Hill Lane junction, causing average delays over 2 minutes (CBLTM 2035 Local Plan scenario).





#### Flow diagram

The flow diagram shows that the predominant movements are the A1 through traffic.



#### H – 4B

#### A1/A6001 London Road – Partial signalisation

ΑΞϹΟΜ





#### Link stress and node delays

The London Road approach to the A1/A6001 junction operates at capacity during the AM peak, whilst all approaches show a high level of congestion in the PM peak (CBLTM 2035 Local Plan scenario).





#### Flow diagram

The flow diagram shows that the predominant movements are the A1 through traffic.





#### A1/Wrayfields (Stotfold) – Do Nothing





#### Link stress and node delays

High level of congestion is expected at Wrayfields approach to the A1 (CBLTM 2035 Local Plan scenario).





#### Flow diagram

The flow diagram shows that the flows from Wrayfields are relatively low (CBLTM 2035 Local Plan scenario).







Environment	N	egative	Risk &	Uncertainties	Medium				
Indicative C	Cost Range	)				•			
£0-£500k	£500k-£1m	£1-£2 /	5m	£2.5m-£5m	£5m-£10	)m	£10m-	Over £25	m



#### Link stress and node delays

The A600/A659 junction is predicted to operate at capacity (CBLTM 2035 Local Plan scenario).







#### Flow diagram

The flow diagram shows that the demand from all approaches are of similar magnitude and there are no distinct dominant movements.



Imagery ©2017 DiginalGlobe, Getmapping plc, Infoterra Ltd & Bluesky. The Geoinformation Group, Map data ©2017 Google 

H – 6A	Hitch	nin Ro	ad/Arles	ey Ne	w R	load –	Signali	sation
Location Map				De	script	ion of Iss	ues	
Legend Hotspot 6A - Hitchin Rd/Arlese Central Bedfordshire	N N N N N N N N Note whe genu	New Road eastern arm as the minor gives way arm and the more lightly traffick. Hitchin Road as one of the major arms. The modelling suggests that the predomination flows are the Arlesey Road – New Road east-west movements. With the current configuration, traffic exite the New Road minor arm gives way north-south traffic from Hitchin Lane. We limited stacking capacity, the exiting trading ueue blocks back, causing the link approach capacity. Note: This hotspot is located at the boundary of CBL where uncertainty in forecasts and modelling generally greater.						
Map contains Ordnance Survey data	© Grown-Cop	vright and d	atabase right 2017				2025	2035
	•	,		s	cale of	RC	1 / 10	2 / 10
					npact	LP	2 / 10	4 / 10
Scheme Concept								
Scheme Concept Sketch	ı			De	script	ion of Sc	heme Con	icept
				The june New Corr the beline at t	e sche ction t v Ro sistene juncti ow), c ne nort	eme consists o prioritise ad south- cy with the on (shown onsequent th and wes ders: C	ets of sign ethe Arless east move dominant fl in the Flo y reducing tbound appr bound appr	halising the ey Road – ements, in ows across w Diagram congestion oaches.
	1			Ind	icative	e Delivery		
2 A A	limag The C	ery © 2017 DiginalGlobe Seconformation Group, I	e, Getmapping pic, infoterra Ltd & Bli Map data ©2017 Google	Tin	escal	e:	2025	2035
Relevant Strategic D	evelop	ment S	ites					
East of Arlesey								
Assessment								
Congestion	Medium	Growth		Mediu	n D	eliverability		Medium
Environment	Negative	Risk & I	Uncertainties	Mediu	n			
Indicative Cost Rang	ge							
£0-£500k £500k-£1r	n £1m	£2.5m	£2.5m-£5m	£5m	£10m	£10m·	£25m C	)ver £25m



#### Link stress and node delays

Link stress (V/C) is above 95% on the Arlesey New Road approach to the junction and over 75% on the northbound approach in the AM Peak (CBLTM 2035 Local Plan scenario).





#### Flow diagram

The flow diagram shows that the predominant movements are the Arlesey Road – New Road south-east movements (CBLTM 2035 Local Plan scenario).





н	_	7A
••		

# A507 (Stotfold) – New link road

Location Map					D	escripti	on of Issu	les	
Legend Central Hotspot 7A - As	Bedfordshire 507 (Stotfold ford Lower Standor	leswade ) Ariesey	N Thar ccgr gr Fc iss jui ar at jui	ne stretcl nd the S onsists o ade rour or the 2 odelling sues, m nctions, f nd westb the A nction.	n of the A50 Stotfold Ro f a single idabout jund 2035 Local suggests a suggests nainly on for the east ound in the 507/Stotfold	07 between ad junction carriagewa ctions. I Plan sce there are the appro bound in th PM peak, d Road in	a the A1(M) n currently ay with at- enario, the congestion baches to le AM peak particularly roundabout		
2m	1	Let	chworth		20			2025	2035
NY		At A	City	12:5	s	cale of	RC	3 / 10	4 / 10
Map contains Ordna	nce Survey data	a @ Crown Cop	right and d	atabase right 2017	~~	mpact	LP	5 / 10	7 / 10
Scheme Co	ncept								
Scheme Cond	ept Sketc	h			D	escripti	on of Sch	eme Con	cept
Arlesey	k road	fold Rd Purupy Imagery ©2017 Dig Bluesky, The Geoinf	St ASC Inal Globe, Gettr ormation Grou	INDICATIVE SKE	TCH Th Main As Ar be wh to ex #15 as Main St In Ti	his scher asterplar s part of lesey, a etween th nich wou Arlesey tisting AS Source: Arle Technical arch 2014 akehold dicative mescale	me is part <sup>#1</sup> . the propos a new link ne A507 and ild provide alleviating 507/Stotfold essey Cross Ma. Guidance by C ers: CB Delivery :	of the Arle ed urban e k road is d Arlesey H an alternat traffic press Road junct sterplan Docu Central Bedfor	esey Cross xtension in proposed ligh Street, tive access sure on the tion. ment, Adopted dshire Council Other 2035
Relevant St	trategic I	Developi	nent S	Sites					
	nt								
Congestion		Medium	Growth		Hia	h De	liverability		Medium
Environment		Negative	Risk &	Uncertainties	Medi	um	<u>,</u>		
Indicative 0	Cost Ran	ge							
£0-£500k	£500k-£1	m £1-£	2.5m	£2.5m-£5m	£5r	n-£10m	£10m-£	25m O	ver £25m



#### Link stress and node delays

Eastbound congestion along the A507 during the AM peak and westbound congestion during the PM peak (CBLTM 2035 Local Plan scenario).





#### Select Link Analysis

Select Link Analysis on this section of the A507 shows a mix of local and strategic trips.





H – 7B	A507	(She	fford) – R of la	oac ane	l exit alloc	wideni ation	ng an	d r	eview
Location Map				1	Descrip	tion of Iss	sues		
Legend Central Bedfordshire Hotspot 7B - A507 (Sheffor		This str A6001 (Shefforc with a junctions Hitchin F (Shefforc Greenwa This sec pressure both dire	etch of the in Henlo I) consists of t-grade ( with the Road (Henl I) and a p y. tion of the in the 2035 ections dur	e A507, w and of a sing give-way A600, S ow) and oriority 1 A507 is 5 Local P ing both	betv C le ca rc heffc Hito -juno unde lan s AM	ween the hicksands rriageway oundabout ord Road, thin Road thin Road			
	Lower Stondon	Arlesey	P	-			202	5	2035
Man contains Ordnance Survey dat	a © Crown Con	wright and	Letchwort Garden Cit	h t y	Scale of	RC	8/1	0	8 / 10
		yngreana e			Impact	LP	8 / 1	0	8 / 10
Scheme Concept									
Scheme Concept Sketc	h				Descrip	tion of Sc	heme C	onc	ept
A507	ГСН ГСН	This scho roundabo A507 mc land take boundary The aim reduce q A507 str using bo roundabo westbour	eme consis out exits to ovements. T e from outsi /. will be to ueues on th aight ahead oth lanes o out in both nd direction	ts of wide allow two his could de the ex increase he A507 a I traffic h n the ap n the es.	ening b land l req disting e cap appro as a proa astbo	the A507 e exits for uire some g highway hacity and baches as choice of ch to the bund and			
	37				Stakeho	lders: C	BC	HE	Other
	Imagery ©2017 Dig Bluesky, The Geoint	inalGlobe, Getr formation Grou	mapping plc, Infoterra Lto p, Map data ©2017 Goog	i & gle	Indicativ Timesca	ve Delivery lle:	2025	5	2035
Relevant Strategic	Develop	ment S	Sites						
East of Arlesey; East of Big	gleswade; F	RAF Henle	ow						
Assessment									
Congestion	Low	Growth		Н	<mark>igh</mark> [	Deliverability	,		High
Environment	Neutral	Risk &	Uncertainties	Me	dium				
Indicative Cost Rai	nge								
£0-£500k £500k-£1	m £1-4	£2.5m	£2.5m-£5m	£	5m-£10n	n £10m	-£25m	Ov	er £25m



#### Link stress and node delays

The A507 operates at or over capacity. Congestion is particularly severe at the A507/A6001 junction (CBLTM 2035 Local Plan scenario).





#### **Select Link Analysis**

Select Link Analysis on this section of the A507 shows a mix of east-west and north-south movements





H – 7C			A	507 (Am	pth	nill) —	Cr	ossroa	ads		
Location Map						Descr	iptio	on of Issu	ies		
Legend Central Bedfordshire Hotspot 7C - A507 (Ampthill) Ampth III Fliftwick Greenfield						This f rounda predom west tra The m Local F stretch experie particul	notsp bout ninan affic. odelli Plan s of ence arly f	ot is for junctions t moveme ing sugge scenario, t the A507 conges for the A50	rmed on the ent is t sts tha poth jur that c tion )7 appr	of the A he A t for notion and oach	wo small 507. The 507 east- the 2035 is and the ects them delays, es.
		wick	Grèenf	ieid				RC	5/1	0	5 / 10
Map contains Ordnance Su	urvey data (	Crown Copy	right and d	atabase right 2017	17	Scale o Impac	of	LP	5/1	0	5 / 10
Scheme Conce	ept					1			<u> </u>		
Scheme Concept	Sketch					Descr	iptio	on of Sch	eme C	Conc	ept
INDICATIVE SKETCH						This s A507/A crossrc actuate The sig feasible rounda junctior rounda Public same provide pedesti footbric the exte Road.	chern 5120 pads d tra gnalise du bout, n to bout Trans locat es op rian a lge c ensic	ne consis ) roundab junction. If ffic signals sation of t e to the and the increase would be sport sche ion. The portunity to and cycle of ould be re ould be re ould be re forma PT-70 <b>rs:</b> CB	ts of o pout to t is proj s be inc his rou e small e realig e the incons eme pro propos o incorp crossing emoved ycle lan	conve pose- ludec ndab I siz gnme radi sisten pose- ed c oorate gs (th I) and e fro	erting the signalised d that bus J <sup>#1</sup> . out is not e of the nt of the i of the it with the ed for this rossroads e at-grade ne existing d facilitate m Flitwick
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Relevant Strate	egic D	evelopr	nent S	lites							
Assessment											
Congestion		Medium	Growth		I	Low	Deli	verability			Medium
Environment	I	Negative	Risk &	Uncertainties	Me	edium		-			
Indicative Cost	t Rang	je	-					T			
£0-£500k £5	00k-£1m	£1-£	2.5m	£2.5m-£5m		£5m-£1(	)m	£10m-£	25m	Ov	er £25m



#### Link stress and node delays

The stretch of the A507 between these two junctions is over capacity (CBLTM 2035 Local Plan scenario, PM peak).





#### **Select Link Analysis**

Select Link Analysis on this section of A507 (eastbound) shows a mix of trips from the M1, A421 and other rural locations via Froghall Road are using this section of the A507 (CBLTM 2035 Local Plan scenario, AM peak).





H – 8A	A6/	A6/Chapel End Road (Houghton Conquest) – Extension of right turn filter lane									
Location Map					Descr	iptio	n of Issu	ies			
Legend Central Bedfordshire Hotspot 8A - A6/Chapel End Rd Cranfield Marston, Stewartby Moretaine Mauiden Clophili Shefford Amothili						otspo and ( und ound ty, pa high pad.	t is locate Chapel End 35 Local approac approach inticularly of turning t turning t pot is located inty in fore	d at the d Road. Plan s th and h opera during th flows to at the bou ecasts an	T-ji scer l te ne l (fror	Inction of ario, the the A6 close to PM peak, n Chapel	
Amp	thill	den C	tophill Snet	I O FO			DC.	2025		2035	
Map contains Ordnance Survey data	© Crown Gor	wright and	latabase highb 2017	hall	Scale Impac	of ct		3/10		3/10	
Scheme Concept								0710		0710	
Scheme Concept Sketch	<u> </u>				Descr	riptio	n of Sch	eme Co	onc	ept	
	AG		INDICATIVE SKET	ГСН	The scheme consists of extending the right turn filter lane from A6 to Chapel End Road and widening the carriageway with a central reservation on the A6 either side of Chape End Road to ensure the layout does not impose delay for the A6 straight ahead movement.						
or and the set					Source: part of V via email	Land E Vixam I, 14 De	East of the B Park, Transpo ec 2017)	530 Ampth ort Assess	nill Ro ment	oad, forming (from CBC,	
Ima	gery ©2017 Digir	alGlobe, Getm	apping plc, Infoterra Ltd 8	8	Indica	tive D	Delivery	2025			
Blue	esky, The Geoinfo	mation Group	, Map data ©2017 Googl	e	Times	cale:	-	2025		2035	
Relevant Strategic D	evelop	ment S	bites								
Assessment											
Congestion	Low	Growth			Low	Deli	verability			High	
Environment	Neutral	Risk &	Uncertainties	Me	edium		-				
Indicative Cost Rang	ge										
£0-£500k £500k-£1n	n £1-	£2.5m	£2.5m-£5m		£5m-£1	0m	£10m-£	25m	Ov	er £25m	



#### Link stress and node delays

The southbound approach to this junction operate close to capacity. In the PM peak the eastbound approach also operates with high link stress (V/C of over 85%).





#### Flow diagram

The flow diagram shows there are high turning flows to/from Chapel End Road (CBLTM 2035 Local Plan scenario).

