

Cumulative Impact Study - Addendum

Forest Heath District Council Site Allocation Plan

March 2018

Quality information

Prepared by

Checked by

Approved by

C. Brooks
Senior Consultant

G. Whitehead
Consultant

B. Carey
Associate Director

N. Anderson
Regional Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
01	February 2018	Initial Issue - Draft	BC	B Carey	Associate Director
02	March 2018	Revised with SCC & FHDC Comments	BC	B Carey	Associate Director
03	March 2018	Revised with FHDC Comments	BC	B Carey	Associate Director
04	March 2018	Revised with SCC Comments	BC	B Carey	Associate Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Forest Heath District Council

Prepared by:

C. Brooks
Senior Consultant

G. Whitehead
Consultant

AECOM Limited
3 St James Court
Whitefriars
Norwich
NR3 1RJ
aecom.com

© 2017 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1.	Introduction.....	6
2.	Site Changes and Assessment Scenarios.....	9
3.	Highway Network Assessment.....	15
4.	Trip Generation and Distribution	17
5.	Highway Impacts.....	24
6.	Summary and Conclusions.....	31
	Appendix A – Site Summary Table.....	32
	Appendix B – Site Location Plans.....	33
	Appendix C – Junction Location Plans.....	34
	Appendix D – Future Job Calculation Sheets	35
	Appendix E – Traffic Flow Diagrams	36
	Appendix F – Percentage Impact Assessment	37

Introduction

01

1. Introduction

1.1 Background

AECOM were commissioned by Forest Heath District Council (FHDC) to undertake a study of the developments identified for allocation in the Site Allocation Local Plan (SALP) document which focuses on sites located in a number of towns and villages across the district.

A report was prepared in October 2016, entitled 'Forest Heath District Council Site Allocation Plan Cumulative Impact Study', which set out the assessment undertaken to determine the impact of the proposed SALP on the transport network within the FHDC area.

Subsequent to this, an Addendum was prepared following the removal of the Hatchfield Farm site and re-distribution of the dwellings to other locations in line with information provided by FHDC.

Further changes to the SALP were made by FHDC in March 2017 which had not been assessed prior to the Examination in Public (EIP) in September 2017 and therefore along with queries raised by the planning inspectors on the SALP, a further assessment of the transport network is required.

In order to determine the impact of the revised SALP from March 2017 and to respond to the queries raised by the planning inspectors, a total of four scenarios were derived for assessment. Of these, it was agreed between FHDC, SCC and AECOM to assess the scenario which represents the worst case in terms of additional traffic on the network and the scenario most similar to that required by the planning inspectors.

Therefore, this report acts as a further Addendum to the main report prepared in October 2017 and assesses the following:

- Scenario 1: March 2017 SALP
 - New base to take account of changes to the proposed level of dwellings provided in each of the locations and granted planning application since previous assessment.
- Scenario 2: March 2017 SALP + 450 Newmarket
 - Additional 400 dwellings at Hatchfield Farm; and
 - Additional 50 dwellings at Queensbury Lodge.
- Scenario 3: March 2017 SALP + 450 Dwellings in Newmarket – 215 Dwellings Key Service Centres
 - Additional 400 dwellings at Hatchfield Farm; and
 - Additional 50 dwellings at Queensbury Lodge.
 - Reduction of 165 dwellings in Lakenheath; and
 - Reduction of 50 dwellings in Red Lodge.
- Sensitivity Test: Scenario 3 + 500 dwellings in Kennett
 - Additional 500 dwellings at Kennett (located in East Cambridgeshire District Council)

For ease, Scenario 2 represents the worst case in terms of traffic on the network whilst Scenario 3 represents a reduction in dwellings in Key Service Centres.

The study area, accessibility appraisal, trip generation, trip distribution, traffic growth, and highway network assessment methodology are all consistent with the previous assessment. Any changes to the assessment are detailed in this Addendum.

This Addendum should be read in conjunction with the main report titled 'Forest Heath District Council Site Allocation Plan Cumulative Impact Study' dated October 2017.

1.2 Report Structure

The remaining sections of this report are set out as follows:

- Section Two provides a brief summary of the site allocations included and excluded in each of the scenarios in this traffic impact study;
- Section Three sets out the scope of the highway network assessment and reviews the accident data obtained for the study area for a five year period;
- Section Four discusses how traffic has been generated for each development site, including the multimodal trip generation for each town/villages and baseline mode shares for each town / settlement;
- Section Five sets out the percentage impact and capacity assessments for the existing junctions layouts for the 2016 base and two future year scenarios;
- Section Six provides a summary and conclusion for the report.

Site Changes and
Assessment
Scenarios

02

2. Site Changes and Assessment Scenarios

2.1 Introduction

This section of the report sets out the changes to the sites included in the original assessment and describes the scenarios assessed within this report.

2.2 Assessment Scenarios

To enable an assessment of the impact of the changes to the site allocations to take place and to answer the queries raised during the Examination Hearing sessions, the following scenarios have been assessed.

- Scenario 1: March 2017 SALP
 - This scenario takes into account the updates to the housing supply data to reflect the position at 31st March 2017 rather than the previous 2016 position, which was used in our original assessment. This new base therefore includes the revised 31st March 2017 completions and commitments in dwellings.
- Scenario 2: March 2017 SALP + 450 Newmarket
 - Additional 400 dwellings at Hatchfield Farm; and
 - Additional 50 dwellings at Queensbury Lodge.
- Scenario 3: March 2017 SALP + 450 Dwellings in Newmarket – 215 Dwellings Key Service Centres
 - Additional 400 dwellings at Hatchfield Farm; and
 - Additional 50 dwellings at Queensbury Lodge.
 - Reduction of 165 dwellings in Lakenheath; and
 - Reduction of 50 dwellings in Red Lodge.
- Sensitivity Test: Scenario 3 + 500 dwellings in Kennett
 - Additional 500 dwellings at Kennett (located in East Cambridgeshire District Council)

Sensitivity Test assesses the addition of 500 dwellings in Kennett, which is a settlement located in East Cambridge District Council (ECDC). These 500 dwellings in Kennett are proposed as part of the emerging ECDC Local Plan and represent a significant change from the current ECDC Local Plan. Therefore due to the close proximity of Kennett to the study area assessed; these 500 dwellings in Kennett have been assessed as a sensitivity test.

Following the changes to the sites, Table 1 below sets out which sites are included in each of the scenarios assessed as part of this Addendum along with confirming which sites formed part of the original assessment included in the 'Forest Heath District Council Site Allocation Plan Cumulative Impact Study' dated October 2016.

Table 1. Site Assessed by Scenario

Site Number	Site Allocation Ref	Original Assessment	Scenario 1	Scenario 2	Scenario 3	Sensitivity Test
1	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
2	SA2(a)	✓	✓	✓	✓	✓
3	SA2(b)	✓	✓	✓	✓	✓
4	SA4(a)	✓	✓	✓	✓	✓
5	SA5(a)	✓	✓	✓	✓	✓

Site Number	Site Allocation Ref	Original Assessment	Scenario 1	Scenario 2	Scenario 3	Sensitivity Test
6	SA5(b)	✓	✓	✓	✓	✓
7	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
8	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
9	SA17(a)	✓	✓	✓	✓	✓
10	SA6(a)	✓	✓	✓	✓	✓
11	SA6(b)	X	X	✓	✓	✓
12	Hatchfield Farm	✓	X	✓	✓	✓
13	SA6(c)	✓	✓	✓	✓	✓
14	SA6(d)	✓	✓	✓	✓	✓
15	SA6(c)	✓	✓	✓	✓	✓
16	SA17(b)	✓	✓	✓	✓	✓
17	SA9(a)	✓	✓	✓	✓	✓
18	SA9(b)	✓	✓	✓	✓	✓
19	SA9(c)	✓	✓	✓	✓	✓
20	SA10(a)	✓	✓	✓	✓ (Reduced by 50 dwellings)	✓ (Reduced by 50 dwellings)
21	SA9(d)	✓	✓	✓	✓	✓
22	SA8(a)	✓	✓	✓	✓	✓
23	SA8(c)	✓	✓	✓	✓	✓
24	SA7(b)	✓	✓	✓	✓	✓
27	SA8(b)	✓	✓	✓	✓	✓
29	SA7(a)	✓	✓	✓	✓	✓
30	SA8(d)	✓	✓	✓	X	X
31	SA11(a)	✓	✓	✓	✓	✓
32	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
33	SA11(b)	✓	✓	✓	✓	✓
34	SA11(c)	✓	✓	✓	✓	✓
35	SA11(d)	✓	✓	✓	✓	✓
36	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
37	SA12(a)	✓	✓	✓	✓	✓
38	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
39	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
40	SA13(a)	✓	✓	✓	✓	✓
41	SA14(a)	✓	✓	✓	✓	✓
42	Planning Consent Granted (not allocated)	✓	✓	✓	✓	✓
43	Planning Consent Granted	✓	✓	✓	✓	✓

Site Number	Site Allocation Ref	Original Assessment	Scenario 1	Scenario 2	Scenario 3	Sensitivity Test
(not allocated)						
44	SA13(b)	✓	✓	✓	✓	✓
45	SA6(f)	✓	✓	✓	✓	✓
46	SA6(e)	✓	✓	✓	✓	✓
47	Planning Consent Granted (not allocated)	X	✓	✓	✓	✓
48	Planning Consent Granted (not allocated)	X	✓	✓	✓	✓
49*	ECDC Emerging Local Plan (not FHDC allocation)	X	X	X	X	✓

Source: Forest Heath District Council & AECOM

2.3 March 2017 SALP (Summary of Revisions)

Revisions to the SALP were put forward in March 2017 which were not accounted for in the original Cumulative Impact Study. There have also been a number of planning permissions granted which are at variance with the original SALP proposals. All of these changes have been assessed under Scenario 1 and the change are summarised in Table 2 below. Where a site is not included in Table 2 below, no changes in dwellings numbers or employment area has occurred between this assessment and that carried out previously.

Table 2. Changes to Sites Assessed

Site Ref	Site Name	Change
Brandon		
1-3	Hypothetical	-200 dwellings
1	Land at Fengate Drove	+38 dwellings
2	Land at Warren Close	+23 dwellings
3	Land off Gas House Drove	+ 10 dwellings
Mildenhall		
4	Land West of Mildenhall	+50 dwellings +2.4ha of employment
5	Land at 54 Kingsway	-2 dwellings assessed
Newmarket		
11	Land at Black Bear Lane & Rowley Drive Junction	+50 dwellings (Scenario 2 and 3 only)
12	Hatchfield Farm	+400 dwellings (Scenario 2 and 3 only) +5ha of employment
16	St Leger Site	Revised employment land use split
45	146a High Street	+46 dwellings (planning permission granted)
46	Land at Jim Joel Court	+21 dwellings (planning permission granted)
47	Fordham Road, Southernwood	+10 dwellings (planning permission granted)
Red Lodge		
17	Land off Turnpike Road and Coopers Yard	+7 dwellings
18	Land East of Red Lodge North	+43 dwellings
19	Land East of Red Lodge South	+8 dwellings

Site Ref	Site Name	Change
20	Land North of Acorn Way	+ 50 dwellings (Scenarios 1 and 2 only). Revised employment land use split
48	Red Lodge Phase 4a	+ 38 dwellings (planning permission granted)
21	Red Lodge Approach site	-employment element +125 dwellings (planning permission granted)
Lakenheath		
30	Land North of Burrow Drive & Briscoe Way	-165 dwellings (Scenario 3 only)
Beck Row		
32	Land adjacent to Smoke House Inn, Skeltons Drove	-51 dwellings (to account for dwellings built by date of traffic counts)
Exning		
37	Land South of Burwell Road	+65 dwellings
38	Land off the Drift / Burwell Road	-18 dwellings
Kentford		
39	Land West of Herringswell Road	-6 dwellings (to account for dwellings built by date of traffic counts)
West Row		
41	Land East of Beeches Road	+12 dwellings

Source: FHDC

Information relating to each of the sites assessed is included in the Site Allocation table included at Appendix A and the locations of each site are illustrated on the plans included at Appendix B.

The changes set out in Table 2 and the scenarios which each site is included within as set out in Table 1 results in the number of dwellings per location per scenario as set out in Table 3 below. For clarity the Scenarios are summarised again below:

- Scenario 1: March 2017 SALP
- Scenario 2: March 2017 SALP + 450 Newmarket
- Scenario 3: March 2017 SALP + 450 Dwellings in Newmarket – 215 Dwellings Key Service Centres
- Sensitivity Test: Scenario 3 + 500 dwellings in Kennett

Table 3. Revised Dwellings Numbers per Scenario in Each Location

Location	Total Number of Dwellings				
	Scenario 1	Scenario 2	Scenario 3	Sensitivity Test	Used In Original Assessment
Brandon	71	71	71	71	200
Mildenhall	1499	1499	1499	1499	1451
Newmarket	331	781	781	781	654
Lakenheath	841	841	676	676	841
Red Lodge	1167	1167	1117	1117	896
Beck Row	353	353	353	353	404
Exning	307	307	307	307	260
Kentford	151	151	151	151	157
West Row	185	185	185	185	173
Kennett (ECDC)	0	0	0	500	0
Total	4905	5355	5140	5640	5036

This highlights that when compared to the original assessment, some 131 less dwellings are assessed in Scenario 1, which is the result of changes to the allocated sites made by FHDC since original assessment, in terms of where allocated sites are positioned, and the level of dwellings which could be provided at each. This new base also reflects the revised 31st March 2017 completions and commitments in dwellings.

In Scenario 2 and 3, 319 and 104 net additional dwellings are assessed respectively, beyond the original assessment. Some 604 additional dwellings are assessed in Sensitivity Test when compared to the original assessment, as a result of the allocation of 500 dwellings at Kennett, proposed as part of the emerging ECDC Local Plan.

Highway Network Assessment

03

3. Highway Network Assessment

3.1 Introduction

This section sets out the scope for the highway network assessment.

3.2 Study Area

All junctions that were assessed previously and formed the study area have been re-assessed in terms of percentage change. No additional junctions have been assessed. The location of the junctions are illustrated on the plans included at Appendix C.

3.3 Baseline Traffic

The traffic surveys undertaken by SCC and AECOM in April and June 2016 and used as part of the previous assessment have been re-used as the base in this assessment. The same weekday AM and PM peak hours of 08:00-09:00 and 17:00-18:00 have been utilised.

3.4 Future Traffic Growth

Vehicular trips for the employment element of the original assessment were derived using TEMPRO traffic growth factors. Due to changes in the level and type of employment provided across the district revised traffic growth factors have been derived. These are based on information provided by FHDC. The calculations for deriving the number of jobs for each employment site are shown on the Job Calculation Sheet included at Appendix D.

The methodology for deriving the traffic growth factors within TEMPRO remains as set out in the original assessment, therefore the number of jobs contained within TEMPRO has been amended to those identified in the Job Calculation Sheet. For ease, in Scenario 1 a total of 2,858 jobs have been added and for Scenarios 2 and 3, a total of 3,534 jobs have been added. The change in jobs between Scenario 1 and Scenarios 2 and 3 relate to the addition of employment use at the Hatchfield Farm site.

The resulting traffic growth factors used in each of the scenarios of this assessment are set out in Table 4 below.

Table 4. Traffic Growth Factors (2016-2031)

Peak Hour	Scenario 1	Scenario 2	Scenario 3
AM Peak	1.134	1.146	1.146
PM Peak	1.139	1.151	1.151

Source: TEMPRO

Different traffic growth factors have been derived for Scenarios 2 and 3 to that for Scenario 1 due to the inclusion of the employment use at the Hatchfield Farm site which is not included in Scenario 1.

3.5 Committed Highway Improvements

The committed highway improvements assessed as part of the original assessment have been retained for use in this assessment.

3.6 Accident Analysis

The accident analysis undertaken as part of the original assessment remains as previously assessed.

Trip Generation and Distribution

04

4. Trip Generation and Distribution

4.1 Introduction

This section sets out the trip generation identified for each of the sites assessed and confirms the approach taken to distribution.

4.2 Residential Vehicular Trip Generation

The trip rates used in the previous assessment (set out in Table 5.1) remain the same for each of the different towns and villages assessed. These trips rates have been applied to the revised number of dwellings at each of the new and existing sites to create a revised trip generation for each of the residential sites and the residential elements of the mixed use sites within each of the town / villages.

4.2.1 Scenario 1

A summary of the vehicular trip generation per town and village for Scenario 1 is set out in Table 5 below. To allow comparison, the difference between the trips generated in this scenario with those generated in the original assessment has been included.

Table 5. Scenario 1 - Revised Vehicular Trip Generation per Town / Village

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Brandon	0800-0900	71 (-129)	8	32	40	-15	-58	-73
	1700-1800		21	13	34	-39	-25	-64
Lakenheath	0800-0900	841 (+/-0)	109	416	524	0	0	0
	1700-1800		278	175	453	0	0	0
Mildenhall	0800-0900	1499 (-2)	195	747	943	6	23	29
	1700-1800		499	314	812	16	10	26
Red Lodge	0800-0900	1167 (+271)	152	584	736	35	136	171
	1700-1800		391	246	637	91	57	148
Newmarket	0800-0900	331 (-323)	36	136	171	-34	-133	-167
	1700-1800		89	56	146	-88	-55	-143
Beck Row	0800-0900	353 (-51)	46	176	222	-7	-25	-32
	1700-1800		117	74	191	-17	-11	-28
West Row	0800-0900	185 (+12)	24	92	116	1	6	7
	1700-		62	39	100	4	3	7

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
	1800							
Exning	0800-0900	307 (+47)	33	126	159	5	19	24
	1700-1800		83	52	135	13	8	21
Kentford	0800-0900	151 (-6)	20	76	95	-1	-3	-4
	1700-1800		51	32	82	-2	-1	-3
Total	0800-0900	4905 (-131)	623	2384	3008	-9	-35	-44
	1700-1800		1591	1001	2592	-22	-13	-35

Table 5 above shows within the future year with development flows for Scenario 1. In this scenario an additional 3,008 two-way vehicular trips in the AM peak hour and 2,592 two-way vehicular trips in the PM peak hour are expected to occur on the local highway network. This is based on 4,905 dwellings. The net difference in trip generation from that previously assessed (based on 5,036 dwellings) equates to a net overall reduction of 44 two-way vehicular trips in the AM peak and 35 two-way vehicular trips in the PM peak hours across the network. The most significant increase would occur in Red Lodge result from the net increase in dwellings of 271 over the original assessment.

4.2.2 Scenario 2

In Scenario 2, a further 450 dwellings are added to Newmarket and therefore result in an increase in vehicular trips in Newmarket. Table 6 below sets out the revised total vehicular trips for all locations and the study area as a whole.

Table 6. Scenario 2 with Revised Newmarket Vehicular Trip Generation

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Brandon	0800-0900	71 (-129)	8	32	40	-15	-58	-73
	1700-1800		21	13	34	-39	-25	-64
Lakenheath	0800-0900	841 (+/-0)	109	416	524	0	0	0
	1700-1800		278	175	453	0	0	0
Mildenhall	0800-0900	1499 (-2)	195	747	943	6	23	29
	1700-1800		499	314	812	16	10	26
Red Lodge	0800-0900	1167 (+271)	152	584	736	35	136	171
	1700-1800		391	246	637	91	57	148

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Newmarket	0800-0900	781 (+127)	84	321	405	14	52	66
	1700-1800		211	133	344	34	22	56
Beck Row	0800-0900	353 (-51)	46	176	222	-7	-25	-32
	1700-1800		117	74	191	-17	-11	-28
West Row	0800-0900	185 (+12)	24	92	116	1	6	7
	1700-1800		62	39	100	4	3	7
Exning	0800-0900	307 (+47)	33	126	159	5	19	24
	1700-1800		83	52	135	13	8	21
Kentford	0800-0900	151 (-6)	20	76	95	-1	-3	-4
	1700-1800		51	32	82	-2	-1	-3
Total	0800-0900	5355 (+319)	671	2569	3241	39	150	190
	1700-1800		1713	1077	2790	100	63	153

Table 6 above shows within the future year with development flows for Scenario 2 the net difference in trip generation from that previously assessed (based on 5,036 dwellings) equates to an overall increase of 190 two-way vehicular trips in the AM peak and 153 two-way vehicular trips in the PM peak hours across the network. The most significant increase would occur in Red Lodge resulting from the net increase in dwellings of 271 over the original assessment.

4.2.3 Scenario 3

In Scenario 3, the additional dwellings added in Newmarket in Scenario 2 will be retained whilst a reduction of 50 dwellings in Red Lodge and 165 dwellings in Lakenheath will occur to reduce the level of dwellings provided in Key Service Centres. Table 7 below sets out the revised total vehicular trips for all sites and the study area as a whole.

Table 7. Scenario 3 with Revised Red Lodge and Lakenheath Vehicular Trip Generation

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Brandon	0800-0900	71 (-129)	8	32	40	-15	-58	-73
	1700-1800		21	13	34	-39	-25	-64
Lakenheath	0800-0900	676 (-165)	87	334	422	-22	-82	-102
	1700-1800		224	141	364	-54	-34	-89
Mildenhall	0800-0900	1499 (-2)	195	747	943	6	23	29
	1700-1800		499	314	812	16	10	26
Red Lodge	0800-0900	1117 (+221)	146	559	704	29	111	139
	1700-1800		374	235	610	74	46	121
Newmarket	0800-0900	781 (+127)	84	321	405	14	52	66
	1700-1800		211	133	344	34	22	56
Beck Row	0800-0900	353 (-51)	46	176	222	-7	-25	-32
	1700-1800		117	74	191	-17	-11	-28
West Row	0800-0900	185 (+12)	24	92	116	1	6	7
	1700-1800		62	39	100	4	3	7
Exning	0800-0900	307 (+47)	33	126	159	5	19	24
	1700-1800		83	52	135	13	8	21
Kentford	0800-0900	151 (-6)	20	76	95	-1	-3	-4
	1700-1800		51	32	82	-2	-1	-3
Total	0800-0900	5140 (+4)	644	2463	3106	12	44	55
	1700-1800		1642	1032	2674	29	18	47

Table 7 above shows within the future year with development flows for Scenario 3 the net difference in trip generation from that previously assessed (based on 5,036 dwellings) equates to an overall increase of 55 two-way vehicular trips in the AM peak and 47 two-way vehicular trips in the PM peak hours across the network. The most significant increase would occur in Red Lodge resulting from the net increase in dwellings of 271 over the original assessment.

4.2.4 Sensitivity Test

In the Sensitivity Test, an additional 500 dwellings in Kennett have been added onto Scenario 3. Table 8 below sets out the revised total vehicular trips for all sites in this sensitivity test.

Table 8. Sensitivity Test Vehicular Trip Generation

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Brandon	0800-0900	71 (-129)	8	32	40	-15	-58	-73
	1700-1800		21	13	34	-39	-25	-64
Lakenheath	0800-0900	676 (-165)	87	334	422	-22	-82	-102
	1700-1800		224	141	364	-54	-34	-89
Mildenhall	0800-0900	1499 (-2)	195	747	943	6	23	29
	1700-1800		499	314	812	16	10	26
Red Lodge	0800-0900	1117 (+221)	146	559	704	29	111	139
	1700-1800		374	235	610	74	46	121
Newmarket	0800-0900	781 (+127)	84	321	405	14	52	66
	1700-1800		211	133	344	34	22	56
Beck Row	0800-0900	353 (-51)	46	176	222	-7	-25	-32
	1700-1800		117	74	191	-17	-11	-28
West Row	0800-0900	185 (+12)	24	92	116	1	6	7
	1700-1800		62	39	100	4	3	7
Exning	0800-0900	307 (+47)	33	126	159	5	19	24
	1700-1800		83	52	135	13	8	21
Kentford	0800-0900	151 (-6)	20	76	95	-1	-3	-4
	1700-1800		51	32	82	-2	-1	-3
Kennett (ECDC Settlement)	0800-0900	+500	65	250	315	65	250	315
	1700-1800		168	105	273	168	105	273

Location	Peak Period	Total Number of Dwellings Assessed (Change from Original Assessment)	Vehicular Trip Generation			Difference in Vehicular Trip Generation from Original Assessment		
			Arrivals	Departures	Two-Way	Arrivals	Departures	Two-Way
Total	0800-0900	5640 (+504)	709	2713	3421	77	294	370
	1700-1800		1810	1137	2947	197	123	320

Table 8 above shows within the future year with development flows for the Sensitivity Test the net difference in trip generation from that previously assessed (based on 5,036 dwellings) equates to an overall increase of 370 two-way vehicular trips in the AM peak and 320 two-way vehicular trips in the PM peak hours across the network.

The residential trip generation for Kennet has been derived using the same trip rates to that used at Red Lodge, as it is situated south of Red Lodge. The trip rates used as set out in Table 9 below.

Table 9. Trip Rates Used for Kennett

Peak Hour	Residential Trip Rates (vehs)		
	Arrivals	Departures	Two-Way
AM Peak	0.131	0.500	0.631
PM Peak	0.335	0.211	0.546

4.3 Employment Vehicular Trip Generation

Vehicular trips for the employment element have been derived using TEMPRO traffic growth factors as set out in Section 3 of this report.

4.4 Trip Distribution

The methodology to determine the distribution of trips associated with the sites being assessed has been retained from the original assessment. No changes have been made.

The resulting traffic flows identified for each scenario are illustrated on the traffic flow diagrams included at Appendix E.

Highway Impacts

05

5. Highway Impacts

5.1 Introduction

This section of the report sets out the impacts of the three scenarios assessed on the junctions located in the study area.

5.2 Percentage Change

In order to determine the impact of the proposals in each of the scenarios, a percentage impact assessment has been carried out. This assessment has compared the flows identified at each of the junctions in the original traffic study against those in each of the scenarios assessed in this report.

The resulting percentage change at the junctions in each of the scenarios when compared to the original study is set out in Table 10 below while the detailed percentage change tables for each scenario is included at Appendix F.

Table 10. Percentage Change

Jct. No.	Junction	Percentage Change							
		Original Assessment to Scenario 1		Original Assessment to Scenario 2		Original Assessment to Scenario 3		Original Assessment to Sensitivity Test	
		AM	PM	AM	PM	AM	PM	AM	PM
1	A1065 London Road / A1065 High Street / B1107 Thetford Road	-3.61%	-3.24%	-2.56%	-2.19%	-3.17%	-2.66%	-2.99%	-2.52%
2	B1107 Thetford Road / B1107 Beavor Lane / Lode Street	-4.22%	-3.74%	-2.78%	-2.67%	-3.43%	-3.24%	-3.43%	-3.24%
*3	A1101 Kingsway / A1101 North Terrace / B1102 High Street	0.08%	-0.33%	1.04%	0.65%	0.78%	0.44%	2.03%	1.43%
4	A1101 Kingsway / Brandon Road / A1101 Bury Road	-0.15%	-0.38%	0.92%	0.68%	0.78%	0.54%	2.26%	1.91%
*5	A1101 Kingsway / College Heath Road	0.06%	-0.24%	1.12%	0.81%	0.94%	0.66%	2.71%	2.20%
*6	A11 / A1101 Mildenhall Road / A1065 Brandon Road / A1101 Bury Road	-0.46%	-0.77%	0.77%	0.41%	0.36%	0.07%	1.90%	1.32%
7	Rowley Drive / Black Bear Lane	-1.13%	-1.35%	-0.06%	-0.29%	-0.06%	-0.29%	-0.06%	-0.29%
8	Black Bear Lane / A1304 High Street	-1.18%	-1.40%	0.80%	0.43%	0.77%	0.41%	0.77%	0.41%
9	St Mary's Square / B1103 Mill Hill	-0.80%	-1.11%	0.24%	-0.07%	0.14%	-0.14%	0.72%	0.28%
10	A1034 High Street / The Avenue	0.09%	-0.32%	1.98%	1.44%	1.96%	1.41%	1.96%	1.41%
*11	A142 Fordham Road / Studlands Park Avenue / Oaks Drive	-4.40%	-3.47%	1.56%	0.85%	1.49%	0.81%	1.89%	1.09%
12	Willie Snaith Road / A142 Fordham Road	-4.95%	-4.64%	1.94%	1.72%	1.81%	1.59%	2.61%	2.40%
13	B1103 Exning Road /	-0.42%	-0.84%	0.83%	0.35%	0.74%	0.29%	1.32%	0.70%

Jct. No.	Junction	Percentage Change							
		Original Assessment to Scenario 1		Original Assessment to Scenario 2		Original Assessment to Scenario 3		Original Assessment to Sensitivity Test	
		AM	PM	AM	PM	AM	PM	AM	PM
Hamilton									
14	Hamilton Road / Edinburgh Road	1.03%	0.00%	2.61%	1.38%	2.61%	1.38%	2.61%	1.38%
15	Hamilton Road / Rowley Drive	-0.13%	-0.74%	1.39%	0.60%	1.39%	0.60%	1.39%	0.60%
16	Hamilton Road / A1304 High Street	-0.70%	-1.00%	1.02%	0.72%	1.02%	0.72%	1.02%	0.72%
*17	A14 / A11 / A1304 Bury Road	0.21%	-0.22%	1.61%	1.12%	1.07%	0.67%	4.15%	3.25%
*18	A14 / A142 Fordham Road	-2.81%	-3.08%	1.10%	0.69%	1.03%	0.66%	1.42%	0.87%
*19	A1304 High Street / Exeter Road / A142 / A1304 Bury Road / B1063	-0.50%	-0.83%	1.85%	1.25%	1.56%	1.02%	3.27%	2.40%
20	A11 / B1085 Turnpike Road / Dane Hill Road	4.87%	4.44%	5.76%	5.33%	5.72%	5.29%	18.93%	17.96%
21	Warren Road / Hundred Acre Way	5.19%	4.00%	5.95%	4.80%	3.17%	2.48%	12.37%	10.17%
22a	A11 / Newmarket Road /	2.67%	1.00%	3.99%	2.08%	3.05%	1.22%	9.35%	3.41%
22b	Warren Road / Elms Road	3.97%	2.91%	5.17%	4.08%	3.54%	2.73%	9.08%	7.30%
23	B1112 High Street / Broom Road / Eriswell Road	-0.42%	-0.73%	0.51%	0.23%	-3.23%	-2.85%	-3.23%	-2.85%
*24	B1112 / Lord's Walk / Earl's Field	-0.64%	-0.92%	0.30%	0.04%	-2.63%	-2.30%	-2.63%	-2.30%
*25	B1112 / Eriswell Road	-0.63%	-0.93%	0.34%	0.06%	-2.03%	-1.77%	-2.03%	-1.77%
26	B1112 / A1065 North	0.06%	-0.43%	1.16%	0.65%	-0.41%	-0.51%	-0.41%	-0.51%
27	B1112 / A1065 South	0.14%	-0.38%	1.25%	0.70%	-0.39%	-0.49%	-0.39%	-0.49%
28	B1112 High Street / Highbridge Gravel Drove	-0.62%	-0.88%	0.15%	-0.06%	-6.72%	-5.51%	-6.72%	-5.51%
29	B1112 Station Road / Briscoe Way	-0.52%	-0.85%	0.17%	-0.05%	-10.13%	-7.34%	-	-7.34%
30	B1112 / Wangford Road	-1.61%	-1.69%	-0.65%	-0.71%	-2.54%	-2.13%	-2.54%	-2.13%
31	Wangford Road / A1065 Brandon Road	-2.10%	-2.05%	-1.15%	-1.08%	-2.28%	-1.93%	-2.28%	-1.93%
32	B1112 / Wings Road	-0.74%	-0.99%	0.12%	-0.10%	-4.69%	-3.90%	-4.69%	-3.90%
33	B1112 / Mill Road	-0.36%	-0.66%	0.55%	0.28%	-3.47%	-3.08%	-3.47%	-3.08%

* Junctions where mitigation was previously identified as being required under the original study.

The variance in traffic flows identified for each of the scenarios set out above has been reviewed against the conclusions for each of the junctions assessed in the original study. Table 11 below sets out the previous conclusion and the conclusion drawn based on the results of this Addendum.

Table 11. Summary of Conclusions

Ref	Junction	Previous Conclusion	Justification for Re-Run/No Re-Run of Capacity Assessment
1	A1065 London Road / A1065 High Street / B1107 Thetford Road	Junction operates at or below capacity in the future year assessment scenarios. No mitigation required	A rerun of capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
2	B1107 Thetford Road / B1107 Beavor Lane / Lode Street	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction.
*3	A1101 Kingsway / A1101 North Terrace / B11102 High Street	No obvious physical improvement schemes were identified. Further investigation of solutions is required. The potential to prioritise sustainable travel or the potential to direct some movements away from the town centre to be explored as part of a wider multimodal assessment of Mildenhall town centre.	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
4	A1101 Kingsway / Brandon Road / A1101 Bury Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
*5	A1101 Kingsway / College Heath Road	No obvious physical improvement schemes were identified. Further investigation of solutions is required. The potential to prioritise sustainable travel or the potential to direct some movements away from the town centre to be explored as part of a wider multimodal assessment of Mildenhall town centre.	No capacity assessment previously undertaken at junction
*6	A11 / A1101 Mildenhall Road / A1065 Brandon Road / A1101 Bury Road	Mitigation at this junction would require a step-change in provision which will require further investigation such as grade separation	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
7	Rowley Drive / Black Bear Lane	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
8	Black Bear Lane / A1304 High Street	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
9	St Mary's Square / B1103 Mill Hill	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
10	A1034 High Street / The Avenue	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
*11	A142 Fordham Road / Studlands Park Avenue / Oaks Drive	Performance to be monitored following the implementation of improvements at Junction 18 to understand whether mitigation is required.	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
12	Willie Snaith Road / A142 Fordham Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
13	B1103 Exning Road / Hamilton	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
14	Hamilton Road /	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No	No capacity assessment previously undertaken at

Ref	Junction	Previous Conclusion	Justification for Re-Run/No Re-Run of Capacity Assessment
	Edinburgh Road	mitigation required	junction
15	Hamilton Road / Rowley Drive	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
16	Hamilton Road / A1304 High Street	Junction operates at or below capacity in the future year assessment scenarios. No mitigation required	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
*17	A14 / A11 / A1304 Bury Road	Upgrading of the existing road markings at the merge and diverge junctions required	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
*18	A14 / A142 Fordham Road	The enhanced signalised option for the junction to be explored.	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
*19	A1304 High Street / Exeter Road / A142 / A1304 Bury Road / B1063	No further improvements identified. Further options should be explored as part of a wider Newmarket town centre study to include the Fordham Road signals and Exeter Road junction	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
20	A11 / B1085 Turnpike Road / Dane Hill Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	Capacity assessment to be undertaken due to traffic variance
21	Warren Road / Hundred Acre Way	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	Capacity assessment to be undertaken due to traffic variance
22a — 22b	A11 / Newmarket Road / Warren Road / Elms Road	Junction operates at or below capacity in the future year assessment scenarios. No mitigation required	Capacity assessment to be undertaken due to traffic variance
23	B1112 High Street / Broom Road / Eriswell Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
*24	B1112 / Lord's Walk / Earl's Field	Progress with proposed mitigation scheme as junction operates within theoretical capacity in the future year scenarios	Capacity assessment to be undertaken due to reduction in dwelling numbers to establish if mitigation is still required
*25	B1112 / Eriswell Road	Use the strategic model which is currently being developed to refine future year traffic flows to further understand proposed mitigation at this junction. Resolution of a number of issues, including land ownership would be required before mitigation could be implemented	A rerun of the capacity assessment with revised flows would not alter conclusions of assessment. Rerun not required.
26	B1112 / A1065 North	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
27	B1112 / A1065 South	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
28	B1112 High Street / Highbridge Gravel Drove	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
29	B1112 Station Road /	Based on percentage change at junction and location,	No capacity assessment

Ref	Junction	Previous Conclusion	Justification for Re-Run/No Re-Run of Capacity Assessment
	Briscoe Way	junction not previously assessed in terms of capacity. No mitigation required	previously undertaken at junction
30	B1112 / Wangford Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
31	Wangford Road / A1065 Brandon Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction
32	B1112 / Wings Road	Based on percentage change at junction and location, junction not previously assessed in terms of capacity. No mitigation required	No capacity assessment previously undertaken at junction

On the basis of the conclusions set out in Table 11 above, the following junctions were retested, as shown in Table 12 below, to validate the findings of the original study:

- 20: A11 / B1085 Turnpike Road / Dane Hill Road;
- 21: Warren Road / Hundred Acre Way;
- 22: A11 / Newmarket Road / Warren Road / Elms Road; and
- 24: B1112 / Lord's Walk / Earl's Field.

The results of the capacity assessments undertaken for the remaining junctions as part of the original study remain valid and therefore any mitigation previously proposed is still required to cater for each scenario.

5.3 Existing Highway Assessment

Following the percentage change assessment, junction capacity assessments have been undertaken for the four junctions identified in Section 5.2 as requiring assessment. These have been carried out using industry standard software for the assessment of priority junctions and roundabouts (Junctions 9).

The existing highway assessment results with the revised flows for Junctions 20, 21 and 22 are shown in Table 12 below.

Table 12. Existing Layout - Junction Capacity Assessment Summary

Junction Location	Junction Number	Junction	2016 Base		Revised 2031 (Scenario 1)		Revised 2031 (Scenario 2)		Revised 2031 (Scenario 3)		Revised 2031 (Sensitivity Test)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
			Max RFC	Max RFC	Max RFC	Max RFC	Max RFC	Max RFC	Max RFC	Max RFC	Max RFC	Max RFC
Red Lodge	20	A11 / B1085 Turnpike Road / Dane Hill Road	0.32	0.27	0.40	0.40	0.40	0.40	0.40	0.40	0.51	0.46
	21	Warren Hill / Hundred Acre Way	0.23	0.30	0.39	0.46	0.40	0.46	0.39	0.45	0.48	0.49
	22a	A11 / Newmarket Road / Warren Road North	0.26	0.31	0.44	0.41	0.44	0.41	0.44	0.41	0.49	0.42
	22b	A11 / Newmarket Road / Warren Road South	0.31	0.41	0.56	0.53	0.57	0.54	0.55	0.53	0.61	0.53
Lakenheath	24	B1112 / Lord's Walk / Earl's Fields	0.70	0.74	1.14	1.07	1.15	1.09	1.09	1.06	1.09	1.06

The results indicate that the junctions in Red Lodge have sufficient capacity to cater for the traffic associated with the proposals in each scenario, including the sensitivity test. No mitigation is considered necessary.

With regard to Lakenheath, the greatest reduction in traffic occurs under Scenario 3 and the Sensitivity Test. Despite this, the revised capacity assessment confirms that the variance is not significant enough to change the mitigation needed at Junction 24.

5.4 Summary

On the basis of the assessment undertaken, the impact of the first three scenarios assessed are considered to be most significant under Scenario 2 where two of the junctions in Red Lodge experience a greater than 5% increase in traffic over that previously assessed. Furthermore, the change in dwellings at Lakenheath has resulted in a decrease in traffic utilising Junction 24, the B1112 / Lord's Walk / Earl's Fields roundabout.

Junction modelling has shown that the change in Red Lodge can be accommodated comfortably at the key junctions impacted whilst mitigation previously proposed for Lakenheath is still required. These conclusions are also the same for the sensitivity test scenario.

For scenarios one to three, the majority of remaining junctions experience less of an impact than previously assessed and therefore all conclusions drawn in the original assessment remain current.

Summary and Conclusions

06

6. Summary and Conclusions

The changes to the number of dwellings and the jobs at the employment sites in each of the scenarios results in little change to the traffic flows from that previously assessed.

The three junctions within the study area which are located in Red Lodge have been re-assessed to take account of the revised traffic flows. This is due to a greater than 5% increase in traffic occurring at these junctions in the scenarios assessed. The results of the assessments illustrate that each of the junctions would operate with significant spare capacity in all of the scenarios and therefore no mitigation schemes are required for these junctions. Further to this the B1112 / Lord's Walk / Earl's Field junction in Lakenheath has been re-assessed due to the reduction in dwelling numbers in Lakenheath in Scenario 3 of the assessment and to determine if the previously proposed mitigation would still be required. The results confirm that the previously proposed mitigation is still required.

The scenarios assessed do not change the conclusions or recommendations made in the main Traffic Study and therefore they remain the same despite the changes in dwellings and jobs which occur in each of the scenarios assessed.