



MATTER 3 (ISSUES 1-4)

THE OVERALL NEED AND REQUIREMENT FOR HOUSING

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1.0 Introduction

1.1 Background

- 1.1.1 Bidwells LLP have been instructed by Persimmon Homes/Charles Church Midlands (PHM) to provide the Inspector examining the Milton Keynes Local Plan ('Plan:MK', MKSUB001) with a hearing statement in relation his Matter Three *"The overall need and requirement for housing. The strategy and land supply to meet the requirement. (principally Policy DS2 and Table 4.3)"*, specifically issues one to three (questions 3.1-3.19).
- 1.1.2 We have already addressed the majority of these issues in our Milton Keynes FOAN Assessment (June 2017) which was submitted to the Milton Keynes Council (MKC) during consultation on the Submission draft Plan:MK at the Reg 19 stage. We have included this in **Appendix 1** to this Hearing Statement for ease and for brevity have referred directly to it in answering the questions where we have nothing further to add.

2.0 Issue 1 - Context and potential transformational growth

2.1 Q3.1 What is the status of the MKFutures 2050 and NIC reports? Did they provide a realistic or firm foundation for considering options for alternative, higher housing numbers at the time of preparing and submitting Plan:MK?

- 2.1.1 We believe that for the purposes of this plan iteration, these reports should be considered as contextual only. We recognise the MK wishes to grow at a greater rate, but this needs to be aligned with Central Government funding of infrastructure to take place sustainably, most likely through a Growth Deal arrangement (**INS1A Appendix B**). This would require knowledge of the routes and timescales for implementing key infrastructure such as the Varsity Line and Oxford to Cambridge Expressway so the relationship of Milton Keynes to other key settlements can be understood.
- 2.1.2 Notwithstanding this, we believe that the housing requirement should be higher than that currently set out in Policy DS2 of the submission Plan:MK. As set out below, we believe the figure of 34,370 dwellings is justified.
- 2.1.3 With the new statutory requirement to review local plans within five years of adoption, it is possible to have confidence that a revised plan will be able to address this higher growth in the next review when the infrastructure arrangements are better understood. Indeed, the draft revised PPG (page 48, March 2018) states that:
- "There will be occasions where there are significant changes of circumstances which may mean a review of the plan being necessary earlier than the statutory minimum of five years, for example where new cross-boundary matters arise this may trigger the need to review policies and revise the plan to reflect this."*
- 2.1.4 This will almost certainly be the case for Milton Keynes and an early review will be fundamental to the success of CaMkOx Arc and MKFutures 2050 initiatives. There is no reason why this could not be an immediate review upon adoption of the plan, to reflect the programme for the Expressway (Preferred option announcement - Summer 2018; consultation on preferred route - Autumn 2019; Preferred route announced - Autumn 2020).

2.2 Q3.2 Should the proposed housing numbers in the reports be regarded as: (1) evidence of an objectively assessed housing need; or (2) a policy objective for growth that informs a higher housing requirement; or (3) neither at this stage on grounds of prematurity?

2.2.1 They should certainly not be considered as Objectively Assessed Need as there is currently no clear indication of how and when the infrastructure that will underpin the growth will be implemented. Our recommendation is that the Plan:MK should not preclude a higher level of growth or in any way prevent the future implementation of the proposals, which we do not believe is currently the case, but not seek to actively facilitate that higher level of growth during this iteration of the local plan on the grounds that it would be premature.

3.0 Issue 2 – Determining the full OAN

3.1 Q3.3 Having regard to NPPF paragraph 159 (first bullet point), for MK is the functional Housing Market Assessment wider than the administrative boundary? If so, is the evidence and approach to the HMA justified in determining the housing numbers for Plan:MK, including the approach of adjoining authorities who may be partially within the ambit of a wider MK housing market? Is it clear there is no unmet need from adjoining authorities?

3.1.1 We firmly believe that the evidence, taken in the round, indicates strong linkages between Milton Keynes and the neighbouring administrative areas of Aylesbury Vale, Central Bedfordshire, South Northamptonshire, Bedford and Northampton (see **Appendix 1, paragraph 3.5.2**). Notwithstanding this, we see no indication that these administrative areas cannot meet their own objectively assessed needs, or the unmet needs of their own neighbours in the case of Aylesbury Vale and Central Bedfordshire. Consequently, while we differ from the Council on the definition of the HMA, we do not believe that it has a material impact on Milton Keynes' housing requirement and need not be an obstacle to finding the Plan sound.

3.2 Q3.4 Has the housing requirement figure of at least 26,500 dwellings (2016-2031) (equivalent to 1766dpa) as set out in Policy DS2 been informed by a robust, credible assessment of the full objectively assessed need (OAN) for housing and is it positively prepared and consistent with national planning policy? In particular:

i) Is the February 2017 Strategic Housing Market Assessment (SHMA) an appropriate starting point for setting the requirement in terms of its demographic assumptions (including future trends in household formation and migration), the account taken of market signals and affordability, forecast growth in employment including assumptions on economic activity rates and commuting and any other local circumstances?

i) Are the various uplifts from the demographic starting point from the 2014 CLG Household projections of 1,513dpa to 1,766dpa soundly based?

iii) Is the SHMA's estimate of 8,200 affordable dwellings in the Borough robust?

Migration Rates

3.2.1 We take issue with ORS' continued use of 10-year migration rates as a matter of course on all SHMAs they prepare across the country (see **Appendix 1, paragraph 5.2.3**). We recognise that there is a school of thought that 10-year migration rates should be used as standard in determining the OAN, but it is not for a single consultancy to unilaterally decide to do so. There have been many calls for ONS and MHCLG to produce projections based on 10-year

assumptions, which they have resisted. PPG paragraph 2a-017 is clear that “any *local* changes would need to be clearly explained and justified on the basis of established sources of robust evidence”. The same paragraph makes clear that the official projections are “statistically robust”. The Milton Keynes SHMA February 2017 (MKHOU005) provides no explanation or justification as to why a departure from the statistically robust official projections is warranted to reflect local issues.

3.2.2 Furthermore, the evidence provided to justify the use of 10-year migration rates all date from 2015 (see MKHOU005 pages 19-20). At this time the latest official projections were 2012-based and covered the five-year period 2008-2012; effectively covering the worst of the recession. By 2015 it was clear that the 2012-based projections did not reflect the rates of growth that were then occurring, and it would have been reasonable for many LPAs to consider 10-year migration rates as a tool to smooth out the impact of the recession. The 2014-based projections that were available when the SHMA was produced reflect part of the recession but also part of the recovery and are therefore likely to be far more realistic than the 2012-based projections. Consequently, it is likely that far fewer LPAs could find reasonable, local circumstances to justify changing to 10-year migration rates.

3.2.3 On this basis we do not find the SHMA to be an appropriate starting point.

Household formation

3.2.4 We generally resist amending the official household formation rates. We therefore agree with the approach undertaken in the SHMA to not adjust these rates (see **Appendix 1, paragraph 5.3.1**). Notwithstanding this, we have set this out in further detail in our response to **Question 3.5** in relation to newly published data.

Housing market signals and Affordability

3.2.5 We previously concluded that a 10% uplift to address housing market signals was necessary based on trends seen up to April 2015 (see **Appendix 1, paragraph 7.75**). We therefore agree with the approach undertaken in the SHMA. Notwithstanding this, we have provided an update to this based on newly published data in our response to **Question 3.6**.

Economic activity rates

3.2.6 The SHMA applies the OBR labour market participation projections to economic activity trends in Milton Keynes from the Labour Force Survey. Our approach is entirely consistent with this (see **Appendix 1, paragraph 6.3.4**).

Commuting

3.2.7 We continue to have significant concerns about how the EEFM and its commuting ratios are interpreted for use in FOAN (see **Appendix 1, paragraph 6.2.3**). On this basis we do not find the SHMA to be an appropriate starting point.

3.3 Q3.5 Has the SHMA given sufficient attention (sensitivity testing) to the potential suppression of household formation rates, particularly in the 25-34 and 35-44 year old cohorts, having regard to the advice at PPG paragraphs 2a-015 and 2a-017?

3.3.1 There is only limited evidence of suppression of household formation rates in the 2011 Census (see **Appendix 1, Tables 4.1 and 4.2**). However, the ONS revised mid-year population estimates

(MYPE)¹ indicate that the population grew by 980 more people between 2011 and 2014 than previously anticipated; an increase of 10.5% (see **Table 1**). As estimates of housing growth, including vacant housing, are particularly well recorded through council tax returns, we can be confident that the number of occupiable household spaces is no greater than was estimated for the 2014-based household projections (2014HP). Therefore, it is reasonable to assume that a larger population occupied the same number of households than previously thought, which, depending on the difference in age profile, might suggest overcrowding.

Table 1: Milton Keynes revised MYPEs

POPULATION	2011 NO.	2012 NO.	2013 NO.	2014 NO.	2015 NO.	2016 NO.	TOTAL CHANGE 2011-2014	
							NO.	%
Original	249,895	252,358	255,702	259,245	261,762	264,479	9,350	3.7
2018 revisions	249,895	252,773	256,376	260,225	263,181	266,240	10,330	4.1
Difference	0	415	674	980	1,419	1,761	980	-
Difference %	0%	0%	0%	0%	1%	1%	10.5	-

Source: ONS, 2018

- 3.3.2 **Table 2** investigates the difference in age profile between the original and revised MYPEs and shows that most of the growth is in the 20-29 and 30-39 age groups. This would suggest that overcrowding could be a growing issue for these particular age groups, possibly associated with the growth of the University Campus Milton Keynes, which does not currently have any associated student accommodation.

Table 2: Milton Keynes difference between Original and Revised MYPEs by 10-year age groups

AGE	MALES	FEMALES	ALL
0 to 9	65	80	145
10 to 19	36	46	82
20 to 29	298	315	613
30 to 39	268	232	500
40 to 49	145	112	257
50 to 59	48	30	78
60 to 69	46	34	80
70 to 79	6	8	14
80 to 89	2	0	2
90+	-1	-9	-10
Total	913	848	1,761

Source: ONS, 2018

- 3.3.3 Bidwells do not make changes to the official projections that cannot be fully evidenced. Instead therefore we propose to use the above indication of increasing overcrowding as a housing market signal.

¹ ONS. 22 March 2018. Revised population estimates for England and Wales: mid-2012 to mid-2016.

3.4 Q3.6 Taking into account the SHMA's approach to other adjustments, is a 10% uplift for market signals a reasonable adjustment in light of the evidence on house prices and affordability in the context of the wider HMA?

- 3.4.1 We maintain that a 10% uplift from the demographic starting point (and additional to the economic uplift) for housing market signals is the minimum required (see **Appendix 1, paragraph 7.7.5**). This is confirmed by newly published data, such as that set out in **Tables 1 and 2** above, which suggest that overcrowding is worse than previously thought.
- 3.4.2 In addition, as shown in **Figure 1** below, affordability ratios have continued to worsen since then. Figure 2 shows that gross annual earnings have improved for the resident-based cohort but worsened for the workplace-based cohort, which suggests that earnings in Milton Keynes have improved relative to surrounding commutable areas.

Figure 1: Affordability ratios for Milton Keynes

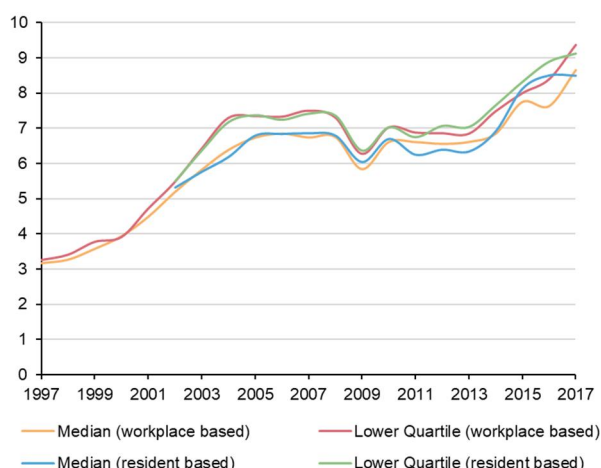
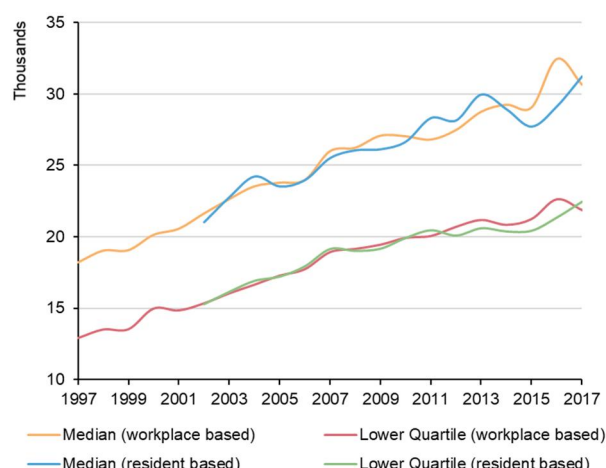


Figure 2: Gross annual earnings in Milton Keynes



Source: ONS, 2018

- 3.4.3 However, the key driver of this worsening affordability appears to be house prices, which is driven by the lack of volume of housing for sale (see **Figures 3 and 4** respectively). While, there are certainly macroeconomic issues at play that are limiting the amount of existing housing stock being put up for sale, it is notable that the percentage of housing sold that is newly built is languishing at 19.3% (Q3 2017) compared to peaks of 27.2% (Q2 1996) and 29.4% (Q2 2009), see **Figure 5**. This is particularly an issue for detached houses, the mainstay of Milton Keynes supply, which has declined from 47.0% (Q4 1995) to 24.4% (Q3 2017), see **Figure 6**.
- 3.4.4 This newly published data reinforces the need for at least a 10% uplift to address these housing market signals.

Figure 3: House prices in Milton Keynes

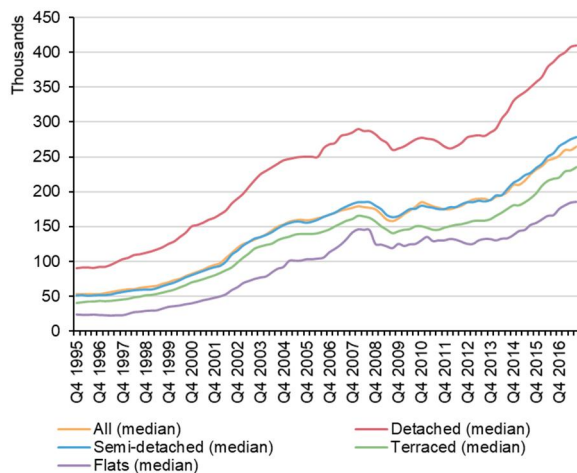
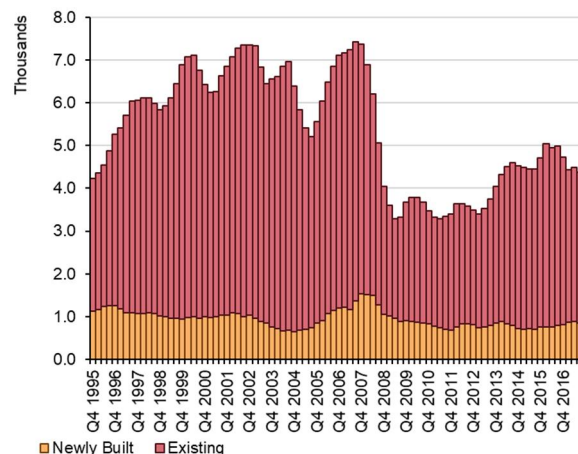


Figure 4: Sales volumes in Milton Keynes



Source: ONS, 2018

Figure 5: % sales newly built in Milton Keynes

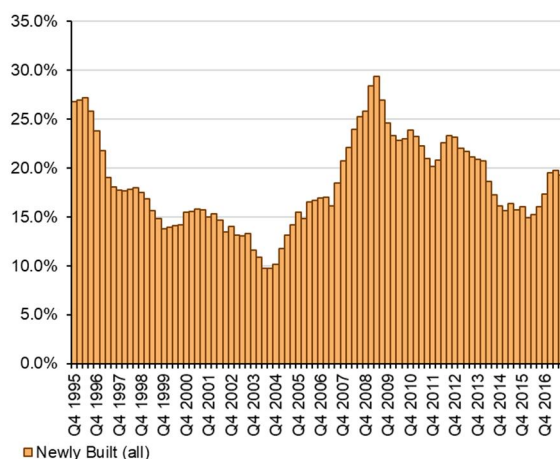
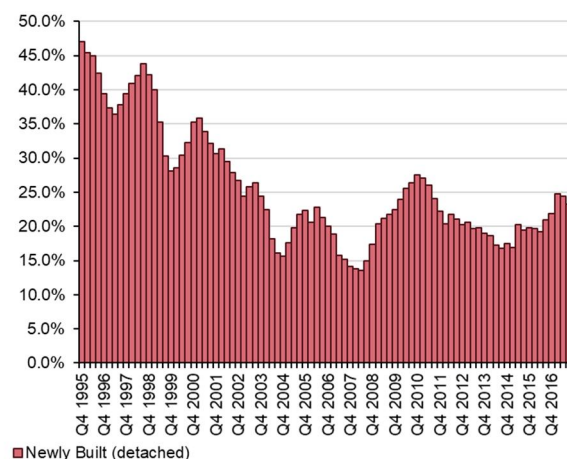


Figure 6: % detached sales newly built in Milton Keynes



Source: ONS, 2018

3.5 Q3.7 Is the 2016 EEFM a robust starting point to understand past economic trends and assess the likely change in job numbers and working age population? With regard to PPG paragraph 2a-018 should the SHMA give consideration to other models and/or past employment trends?

3.5.1 Despite our concerns regarding how the EEFM distributes employment, we do believe that it does provide a reasonable projection of future job numbers. We do feel that its calculation of the working age population, and subsequently the total population, are quite crude. However the SHMA appears to have rectified this by applying different economic activity rates (see our response to **Question 3.4**).

3.6 Q3.8 How does the EEFM model deal with the following:

(i) Commuting ratios;

3.6.1 The January 2015 EEFM Technical Report (attached at **Appendix 2**) states:

"Net commuting requires no specific forecasting method. It is the residual between an area's residence-based and workplace-based estimates of numbers of people in employment. (These variables are used to check the realism of the EEFM's workplace- and residence-based employment forecasts, and can occasionally lead to manual adjustments to the Model.)"

"Our broad assumption is that commuting flows over the forecast period are in line with past trends. Major changes in transport infrastructure, or significant new housebuilding in an area, may bring about changes in commuting patterns, but as indicated in Chapter 2, the EEFM can only take account of such changes if they are reflected in the available data."

3.6.2 As such commuting ratios are not fixed. Instead they will change in line with the trend seen over the previous five years. Commuting ratios are in a constant state of flux, because the relationship between the workplace and residence-based employment is not fixed. We discussed our concerns with this previously (see **Appendix 1, paragraph 6.2.3**) and reiterate that we do not believe that this approach is at all consistent with PPG paragraph 2a-018 (see **Appendix 1, paragraphs 6.1.1 to 6.1.3**)

(ii) Economic activity rates, unemployment, double-jobbing and any assumptions on increased economic activity in those aged 65+;

3.6.3 The EEFM uses a moving average to extrapolate future economic activity in the total resident population aged 16-74 (see **Appendix 2, page 30**). No adjustments are made to reflect known future events such as changing state pension age or known trends such as increasing activity amongst the female population. While there is some evidence that the sum of all these adjustments appear in many cases to cancel one another out and provide a relatively smooth growth in economic activity for the total resident population, this should not be taken for granted as the EEFM seems to do. For these reasons we have not used the EEFM assumptions but instead applied the OBR forecasts (see **Appendix 1, paragraph 6.3.4**)

3.6.4 The estimation of unemployment is generally unsatisfactory as it does not consider long term fluctuations (see **Appendix 2, page 16**). Despite this however, the EEFM unemployment estimates for Milton Keynes do seem reasonable and we applied them in our assessment (see **Appendix 1, paragraph 6.3.6**). Similarly, the EEFM assumptions for double jobbing are consistent with our expectations and have been used (see **Appendix 1, paragraph 6.3.8**).

In applying the "current (commuting) ratio" taken from the 2016EEFM what commuting figure was used in the SHMA?

3.6.5 The SHMA does not appear to apply a commuting ratio as it does not appear to be a fixed variable. Instead the SHMA simply assumes that "31% of jobs will be filled by people travelling in from other authorities" (SHMA paragraph 4.32, second bullet). As set out in our response to **Question 3.8(i)**, we do not believe that this accurately reflects the requirements of PPG paragraph 2a-018.

- 3.7 Q3.9 The SHMA identifies a positive uplift of 1739 dwellings to balance jobs and workers, contributing towards the submitted OAN of 1766 dpa. What should be made of alternative submissions that the EEFM provides an output for MK of 32,331 dwellings (2,155dpa) for the plan period? Please explain how the SHMA arrives a different figure from the EEFM and what assumptions have been applied. If those assumptions vary from the EEFM, how should I interpret the EEFM advice (April 2017)² that it is an integrated model that should not be subjected to “alternative estimates”?**
- 3.7.1** We concluded that the OAN for Milton Keynes between 2016 and 2031 is 34,370 dwellings (2,291dpa) (see **Appendix 1, paragraph 8.1.1**), which is not dissimilar to the EEFM given that this does not take account of housing market signals or backlog, and includes an uplift of 10,800 dwellings to address economic trends. The main difference between our calculation and the EEFM is commuting; we have fixed the commuting ratio at 0.855, which is the average seen between 2006 and 2016 (see **Appendix 1, paragraph 6.3.7**) while the EEFM allows this to perpetuate an unsustainable and unrealistic trend. The SHMA appears to use a slightly different approach to commuting that suppresses the adjustment required further.
- 3.8 Q3.10 Jobs growth has notably out-performed housing delivery in recent years (para 4.33 of Plan:MK) at a ratio of 3.5 jobs per dwelling. The submitted Plan states that the OAN aligns to the more cautious assessment of jobs growth in the Experian model at 1.06 jobs per dwelling and if the EEFM is realised the ratio would be 1.2 jobs per dwelling. Has the SHMA applied or sensitivity tested the Experian model and how is the ratio of 1.2 jobs per dwelling calculated?**
- 3.8.1** We do not believe the SHMA has addressed the differences between the EEFM and the Experian model. However, we would advocate a relatively cautious approach to jobs growth at this stage given the relatively low-level growth projected nationally over the next five years. Milton Keynes has certainly out performed many other areas of the UK in recent years, but it is questionable if this is likely to be sustained in the long term without Central Government investment in infrastructure. As per our response to **Question 3.1**, our preference would be to maintain a cautious approach for this plan iteration and reconsider it in the next statutory review in the context of progress on delivering that infrastructure.
- 3.9 Q3.11 Does the adjustment of 1739 (116dpa) provide sufficient flexibility to meet forecast employment needs? Is there plausibility to the submissions that the adjustment (and therefore the full OAN) is too cautious?**
- 3.9.1** We do believe that the adjustment of just 1,739 dwellings to reflect economic trends is far too low, primarily due to the failure to fix the commuting ratio as implied in PPG paragraph 2a-018. As stated in our response to **Question 3.9**, we believe that the adjustment should be 10,800 dwellings.
- 3.10 Q3.12 The SHMA finds a basis for making a series of adjustments for demographic factors, market signals/affordability and future jobs which cumulatively add up to 28,615 (or 1,908dpa).**
- What justifies an approach of calibrating that adjustment to only the 1,739 for future jobs, so that the OAN is 26,493 (or 26,483)? In this regard is the SHMA consistent with PPG (para 2a-005-20140306) that assessment findings should be “transparently prepared”?**
- 3.10.1** We do not find any justification for this in the NPPF or PPG, or any other guidance. Furthermore, we find the approach somewhat perverse. The demographic-led projections adjusted for

economic trends together should reflect a continuation of the trends seen in previous years. The purpose of adjusting for housing market signals is to address identified pressure within the market; in effect create a release valve to ensure affordability does not continue to worsen. To simply apply the demographic-led projections adjusted for economic trends will perpetuate the affordability issues.

3.11 Q3.13 Have any reasonable alternative OAN figures been assessed as part of sustainability appraisal?

3.11.1 No comment.

4.0 Issue 3 Translating OAN into a housing requirement/target

4.1 Q3.14 Are there any constraining factors (PPG paragraph 2a-004) that would inhibit consideration of a higher housing requirement/target than the OAN?

4.1.1 MKC have been clear throughout that there are no constraints on meeting its FOAN. Furthermore, we do not believe that there are any constraints on meeting our assessment of FOAN of 34,370 dwellings.

4.2 Q3.15 Will the housing requirement in Plan:MK significantly boost the supply of housing as sought by paragraph 47 of the NPPF? Does it reflect the objectives to keep the planned growth of MK 'on track'?

4.2.1 We do not believe the FOAN as set out in the SHMA is in keeping with paragraph 47 of the NPPF. Indeed, we believe that it intends to avoid accurately measuring FOAN by failing to acknowledge the issues surrounding commuting and failing to take account of housing market signals and backlog.

4.3 Q3.16 What explains previous under-delivery of housing in MK? If the housing requirement were to increase in the plan period what evidence would indicate that it would be (a) sustainable and (b) deliverable?

4.3.1 Much of Milton Keynes housing land supply is within very large expansion areas that have taken a considerable amount of time to implement. The key reason for this is the unprecedented recession and subsequent reticence of investors to fund such substantial projects, particularly in the housing sector. These expansion areas are now delivering and will provide the backbone to the housing land supply for many years to come, even through the next recession, which we do not anticipate being of the same scale as that seen in 2008. Consequently, we are confident that Milton Keynes can achieve and maintain a higher level of housing growth than that suggested by the SHMA in a sustainable manner.

4.3.2 Furthermore, much of the land in and around Milton Keynes is being promoted directly by housebuilders rather than landowners or others. This is a key sign that the housing sector has confidence that the local market can sustain a higher rate of house building. It is only therefore a matter of the Plan:MK facilitating this to make it happen.

- 4.4 Q3.17 Has SA of the housing requirement in Policy DS2 assessed reasonable alternatives? How has sustainability appraisal been used to support the scale of housing provision in the Plan? [Are there negative (unsustainable) effects of lower or higher housing provision?]**
- 4.4.1 No comment.
- 4.5 Q3.18 Is the housing requirement in Policy DS2 expressed as a net or gross figure? Has the figure taken into account the effects of estate regeneration? Is there any anticipated loss of existing housing stock?**
- 4.5.1 It is unclear and the text should be altered to make clear that the housing requirement is a minimum net figure.
- 4.6 Q3.19 Would an adjustment to the housing requirement for affordable housing provision be justified? (PPG para 2a-029-20140306) What overall percentage of affordable housing has been achieved over recent years? Based on the thresholds in Policy HN2 how many affordable housing units are likely to be delivered in the plan period on qualifying sites and from any other sources?**
- 4.6.1 We believe that if the housing requirement were increased to 34,370 dwellings in line with our assessment of FOAN, there would be no requirement to make a further adjustment for affordable housing.
- 4.7 Q3.25 Overall, is the housing requirement in the plan justified? If not, what should it be?**
- 4.7.1 We do not believe that the housing requirement is justified as it fails to fully reflect the FOAN. We believe it should fully reflect the FOAN at 34,370 dwellings for the reasons set out above.

APPENDIX 1

BIDWELLS 2017 FOAN REPORT

APPENDIX 2

EEFM 2014 TECHNICAL REPORT



June 2017



FULL OBJECTIVELY ASSESSED NEEDS **MILTON KEYNES**

Quality Assurance

Site name: Milton Keynes

Type of report: Full Objectively Assessed Needs Assessment

Prepared by: Simon Elliott BSc (Hons) MSc

Signed 

Date 8 June 2017

Reviewed by: Neil Waterson BA (Hons) DipTP MRTPI AIEMA

Signed 

Date 8 June 2017



Executive Summary

Bidwells LLP have been asked to consider the Full Objectively Assessed Needs (FOAN) for housing in Milton Keynes in accordance with the requirements of the National Planning Policy Framework (NPPF).

Milton Keynes Council (MKC) is currently consulting on their draft Plan:MK, which proposes a housing target of 26,500 dwellings between 2016 and 2031. This is derived from the Strategic Housing Market Assessment (SHMA), which has been found to have a number of failings.

Bidwells have reviewed the DCLG 2014-based Household Projections (2014HP) and the data on which it was based. No evidence was found to suggest that the 2014HP should be modified to take account of unattributed population change, longer term migration patterns, or other local circumstances. As such the baseline demographic-led projections found a need for 1,402 dwellings per year.

Further analysis was then undertaken of economic data set out in the East of England Forecasting Model (EEFM). This concluded that it was reasonable to assume that total jobs growth would average 2,129 per year. Analysis undertaken to consider the effect of this on housing need found that it would require a further 720 dwellings per annum.

Consideration was then given to housing market signals and affordable housing need. Overall it was concluded that there was a requirement to make further adjustments to the FOAN of 10%, equating to 140 dwellings per annum.

In total, the FOAN was concluded to be 34,370 dwellings between 2016 and 2031, equating to 2,291 dwellings per year, see below.

Component	Bidwells Foan		SHMA		SHMA (All Components)	
	Dwellings (Rounded to Nearest 10)	Dwellings per annum	Dwellings	Dwellings per annum	Dwellings	Dwellings per annum
Demographic	21,030	1,402	24,744	1,650	24,744	1,650
Economic Trends	10,800	720	1,739	116	1,739	116
Housing Market Signals	2,100	140			1,579	105
Affordable Housing						
Backlog 2015/16	440	29			553	37
TOTAL FOAN	34,370	2,291	26,493*	1,767	28,615	1,908

Note: * there appears to be an arithmetic error in the SHMA with the demographic component and single adjustment adding to 26,893 rather than the 26,493 referred to throughout the document.

It does not appear that the SHMA's concluded FOAN of 26,493 dwellings includes the uplift required for housing market signals or backlog. If these were taken into account, it would suggest a FOAN of 28,615 dwellings. This would still be low due to the errors in calculating the economic uplift.

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Appendix 1

ECONOMIC ASSUMPTIONS

1.0 Introduction

1.1 Background

- 1.1.1 Bidwells LLP have been instructed to consider the Full Objectively Assessed Needs (FOAN) for housing in Milton Keynes Borough, in accordance with the requirements of the National Planning Policy Framework (NPPF, March 2012) and its accompanying Planning Practice Guidance (PPG, April 2014).

1.2 The Development Plan

- 1.2.1 The draft Plan:MK is intended to cover the period up to 2031 and will replace the existing development plan documents; most notably the adopted Core Strategy¹. The draft Plan:MK proposes a minimum of 26,500 dwellings in the Borough between 2016 and 2031, which equates to an average delivery of 1,767 dwellings per annum. Whilst this is comparable to the 1,750dpa set out in the Core Strategy (28,000 dwellings between 2010 and 2026), the Core Strategy housing target was classed as interim only as a result of the rapidly changing national and regional planning policy framework during the time that it was prepared and adopted.
- 1.2.2 In July 2010, the Government announced the revocation of the Regional Spatial Strategies (RSSs); however, this was successfully challenged in November 2010. The years between the successful legal challenge and the final revocation were subject to considerable uncertainty in terms of the weight that could be applied by the RSS on emerging new local plans; after all, the Government had made clear that the RSSs would ultimately be abolished.
- 1.2.3 The South-East Plan (SEP) proposed some 41,360 dwellings in Milton Keynes between 2006 and 2026 (2,068dpa), with a further 10,990 in the wider Growth Area, i.e. in neighbouring authorities. The SEP was finally revoked in February 2013, only months before the publication of the Inspector's report and subsequent adoption of the Core Strategy.
- 1.2.4 In March 2012, the Government published the NPPF, replacing the majority of the national planning policy and associated guidance. Whilst the advent of the NPPF was largely welcomed, there were significant issues in interpreting its intentions without associated guidance. It wasn't until April 2014 that the PPG was published to resolve this issue, after the Core Strategy had been adopted.
- 1.2.5 Ultimately the Core Strategy Inspector concluded that:
- “Taking all of these matters into account, I consider that the current evidence supports a housing target at or around that proposed in the Plan. In the absence of an up-to-date SHMA the target selected is generally in accordance with the demographic and other evidence referred to above. Also it would provide a stimulus for recovery by significantly increasing the supply of housing in the borough. On balance, I conclude that it is a justified target that is consistent with the overall intent of NPPF and a sound plan. It should however be expressed as a minimum figure since there is no overriding sustainability reason to treat it as a cap.*

¹ MKC. July 2013. Core Strategy Adopted Version.

This target has the support of much of the development sector represented in the examination if it is regarded as an interim one. As the Preamble above indicates, the Plan has come forward in a period of some uncertainty about the wider sub-regional and regional context for the future growth of Milton Keynes. For so long as the legal requirement for general conformity with the SEP remained in force, there has been a fairly wide measure of agreement amongst participants in the examination that the housing target must at least be treated as an interim one. Revocation of the SEP has removed the legal requirement but I do not consider that the matter should be left there. In any event the Council is very firmly of the view that Milton Keynes remains “open for growth”.

Having considered all the evidence and views on this matter, I agree that the most significant policy deficits and planning challenges that may arise, following SEP revocation, are related to cross-boundary issues and the ability of the borough to respond to demographic and economic change. This now has added importance since the latest household projections do not extend beyond 2021. The borough sits at the centre of the SEMLEP area and is very well placed as a focus for strategic growth. These issues need to be addressed positively and effectively, applying the duty to co-operate, and joint working should be informed by updated assessments of the housing, economic and other needs of the wider area. The Plan has a limited time horizon and there is a large measure of agreement that its adoption would be in the public interest. But an early review is needed for greater clarity about the role that Milton Keynes and its hinterland will play in the longer term. This will complement initiatives to help deliver growth locally and ensure that the potential for significant uplift in housing and other requirements will be planned in the most sustainable way.”

- 1.2.6 Subsequent to the adoption of the Core Strategy, a full Strategic Housing Market Assessment (SHMA) was published in May 2014². This concluded that 33,000 dwellings would be required between 2011 and 2031, equating to 1,650 dwellings per annum. It however recommended that the same rate as set out in the Core Strategy is continued.
- 1.2.7 This SHMA was however flawed. It predated the publication of the PPG and, whilst it did acknowledge the presence of the consultation draft PPG, continued to use the guidance documents that were revoked on the publication of the NPPF as a basis. The SHMA appears to have been based on population and household projections produced by MKC. These however no longer appear to be available and thus cannot be reviewed. Given the timing, it is unclear if these projections were based on the latest mid-year population estimates, as those for 2002-2010 were rebased in late 2013. In addition, the most up-to-date projections at the time were the 2011-based population and household projections. These were classed as interim by the Government and were found to be inaccurate in many LPAs. They have subsequently been replaced by the 2012-based and then the 2014-based projections.
- 1.2.8 A revised SHMA was published in February 2017³, which is better aligned with the PPG methodology, on which the draft Plan:MK housing target is based. However, it still contains a number of significant flaws, which are explained under the relevant chapters of this assessment.

² ORS. May 2014. Strategic Housing Market Assessment 2013, Report of Findings.

³ ORS. February 2017. Milton Keynes Strategic Housing Market Assessment 2016-2031.

2.0 National Policy and Guidance

2.1 Introduction

- 2.1.1 This Chapter sets out the relevant national planning policy and guidance that can be used to interpret it. It is however useful to first consider what is meant by ‘housing need’.
- 2.1.2 PPG Paragraph 2a-003 defines housing need as *“the scale and mix of housing and the range of tenures that is likely to be needed in the housing market area over the plan period – and should cater for the housing demand of the area and identify the scale of housing supply necessary to meet that demand”*. However, the Planning Advisory Service (PAS) suggests that there are two alternative definitions and that the PPG does not explicitly apply one or the other⁴:
- Need-as-aspiration (i.e. if everyone is to enjoy suitable housing at acceptable cost, as defined by the standards set out in the PPG).
 - Need-as-demand (the amount of housing that would be provided if the planning system did not restrict land supply).
- 2.1.3 PAS conclude that the latter is more consistent with the NPPF and PPG when read as a whole. In particular, the former would risk being undeliverable, contrary to NPPF Paragraph 17. Consequently, PAS suggest a working definition of need as *“the housing that households are willing and able to buy or rent, either from their own resources or with assistance from the State”*. However, this definition is not compatible with affordable housing need, which necessarily must focus on the standard of housing people ought to have rather than what they can afford. Consequently, affordable housing need is considered separately.
- 2.1.4 In a recent High Court judgement, Mr Justice Hickinbottom provided a useful interpretation to the terms most often used in assessing housing need⁵:
- *“Household projections: These are demographic, trend-based projections indicating the likely number and type of future households if the underlying trends and demographic assumptions are realised. They provide useful long-term trajectories, in terms of growth averages throughout the projection period. However, they are not reliable as household growth estimates for particular years: they are subject to the uncertainties inherent in demographic behaviour, and sensitive to factors (such as changing economic and social circumstances) that may affect that behaviour.*
 - *Full Objectively Assessed Need (FOAN): This is the objectively assessed need for housing in an area, leaving aside policy considerations. It is therefore closely linked to the relevant household projection; but is not necessarily the same. An objective assessment of housing need may result in a different figure from that based on purely demographics if, for example, the assessor considers that the household projection fails properly to take into account the effects of a major downturn (or upturn) in the economy that will affect future housing needs in an area. Nevertheless, where there are no such factors, objective assessment of need may be – and sometimes is – taken as being the same as the relevant household projection.*

⁴ PAS. July 2015. Objectively Assessed Need and Housing Targets: Technical Advice note (2nd Edition), Chapter 3.

⁵ Gallagher Homes Ltd & Anor v Solihull MBC [2014] EWHC 1283.

- *Housing Requirement: This is the figure which reflects, not only the assessed need for housing, but also any policy considerations that might require that figure to be manipulated to determine the actual housing target for an area. For example, built development in an area might be constrained by the extent of land which is the subject of policy protection, such as Green Belt or Areas of Outstanding Natural Beauty. Or it might be decided, as a matter of policy, to discourage particular migration reflected in demographic trends. Once these policy considerations have been applied to the figure for full objectively assessed need for housing in an area, the result is a 'policy on' figure for housing requirement. Subject to it being determined by a proper process, the housing requirement figure will be the target against which housing supply will normally be measured."*

2.2 Sustainable Development

- 2.2.1 The NPPF makes clear that *"the purpose of the planning system is to contribute to the achievement of sustainable development"* (paragraph 6) and that there are three dimensions to sustainable development: economic, social and environmental (paragraph 7). Paragraph 7 continues by stating that *"these dimensions give rise to the need for the planning system to perform a number of roles"*. The social is defined as *"supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being"* (emphasis added).
- 2.2.2 Paragraph 14 indicates that at the heart of the NPPF is *"a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking. For plan-making this means that:*
- *local planning authorities should positively seek opportunities to meet the development needs of their area*
 - *Local Plans should meet objectively assessed needs*, with sufficient flexibility to adapt to rapid change, unless:
 - *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole*
 - *specific policies in this Framework indicate development should be restricted"* (emphasis added).
- 2.2.3 This approach is reiterated in Paragraph 151, which states that *"Local Plans must be prepared with the objective of contributing to the achievement of sustainable development. To this end, they should be consistent with the principles and policies set out in this Framework, including the presumption in favour of sustainable development"*.
- 2.2.4 Paragraph 17 that *"within the overarching roles that the planning system ought to play, a set of core land-use planning principles should underpin both plan-making and decision-taking"*. Twelves principles are set out, including, that planning should *"proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Every effort should be made objectively to identify and then meet the housing, business and other development needs of an area, and respond positively to wider opportunities for growth. Plans should take account of market signals, such as land prices and housing affordability, and set out a clear strategy for allocating sufficient land which is suitable for development in their area, taking account of the needs of the residential and business communities"* (emphasis added).

2.3 Economic Development

- 2.3.1 Paragraph 19 makes clear that “the government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning should operate to encourage and not act as an impediment to sustainable growth. *Therefore significant weight should be placed on the need to support economic growth through the planning system*” (emphasis added).
- 2.3.2 Paragraph 21 goes further by stating that “planning policies should recognise and seek to address potential barriers to investment, including a poor environment or any lack of infrastructure, services or *housing*” (emphasis added).

2.4 Residential Development

- 2.4.1 Paragraph 47 states that “to boost significantly the supply of housing, local planning authorities should use their evidence base to ensure that their Local Plan *meets the full, objectively assessed needs for market and affordable housing in the housing market area*, as far as is consistent with the policies set out in this Framework, including identifying key sites which are critical to the delivery of the housing strategy over the plan period” (emphasis added).
- 2.4.2 Paragraph 50 states that “to deliver a wide choice of high quality homes, widen opportunities for home ownership and create sustainable, inclusive and mixed communities, local planning authorities should:
- plan for a mix of housing based on current and future demographic trends, market trends and the needs of different groups in the community (such as, but not limited to, families with children, older people, people with disabilities, service families and people wishing to build their own homes)
 - identify the size, type, tenure and range of housing that is required in particular locations, reflecting local demand
 - where they have identified that affordable housing is needed, set policies for meeting this need on site, unless off-site provision or a financial contribution of broadly equivalent value can be robustly justified (for example to improve or make more effective use of the existing housing stock) and the agreed approach contributes to the objective of creating mixed and balanced communities. Such policies should be sufficiently flexible to take account of changing market conditions over time”.
- 2.4.3 Paragraph 156 states that “local planning authorities should set out the strategic priorities for the area in the Local Plan. This should include strategic policies to *deliver the homes and jobs needed in the area...*” (emphasis added). Paragraph 157 notes that “crucially, Local Plans should plan positively for the development and infrastructure required in the area to meet the objectives, principles and policies of this Framework...”.
- 2.4.4 Paragraph 158 explains that “each local planning authority should ensure that the Local Plan is based on adequate, up-to-date and relevant evidence about the economic, social and environmental characteristics and prospects of the area. Local planning authorities should ensure that their assessment of and strategies for housing, employment and other uses are integrated, and that they take full account of relevant market and economic signals”.
- 2.4.5 In terms of housing, Paragraph 159 makes clear that “local planning authorities should have a clear understanding of housing needs in their area. They should:

- prepare a *Strategic Housing Market Assessment to assess their full housing needs*, working with neighbouring authorities where housing market areas cross administrative boundaries.
- The Strategic Housing Market Assessment should identify the scale and mix of housing and the range of tenures that the local population is likely to need over the plan period which:
 - meets household and population projections, taking account of migration and demographic change
 - addresses the need for all types of housing, including affordable housing and the needs of different groups in the community (such as, but not limited to, families with children, older people, people with disabilities, service families and people wishing to build their own homes)
 - caters for housing demand and the scale of housing supply necessary to meet this demand” (emphasis added)⁶.

2.4.6 In terms of business, Paragraph 106 states that “local planning authorities should have a clear understanding of business needs within the economic markets operating in and across their area. To achieve this, they should:

- work together with county and neighbouring authorities and with Local Enterprise Partnerships to prepare and maintain a robust evidence base to understand both existing business needs and likely changes in the market
- work closely with the business community to understand their changing needs and identify and address barriers to investment, *including a lack of housing, infrastructure or viability*” (emphasis added).

2.5 Duty to Cooperate

- 2.5.1 The Duty to Cooperate is a legal requirement⁷ that requires LPAs to engage constructively, actively and on an ongoing basis with one another when preparing a local plan in order to maximise its effectiveness in contributing towards sustainable development. The Duty to Cooperate is most commonly applied where one LPA cannot accommodate its FOAN within its own administrative area and therefore requests that another, usually within the same HMA, takes some of the housing need. However, the Duty to Cooperate is not a duty to agree.
- 2.5.2 NPPF Paragraph 179 states that “local planning authorities should work collaboratively with other bodies to ensure that strategic priorities across local boundaries are properly co-ordinated and clearly reflected in individual Local Plans. Joint working should enable local planning authorities to work together to meet development requirements which cannot wholly be met within their own areas – for instance, because of a lack of physical capacity or because to do so would cause significant harm to the principles and policies of this Framework”.

⁶ Satnam Millennium Ltd v Warrington BC [2015] EWHC 370 makes clear that whilst the SHMA may cross administrative boundaries, each LPA should have a clear understanding of the housing needs within their own administrative boundaries.

⁷ Section 33A of the Planning and Compulsory Purchase Act 2004 (as amended).

- 2.5.3 Once the Duty to Cooperate has been resolved, the housing requirement for the local plan can be determined, i.e. the FOAN plus or minus the housing need transferred to another LPA through the Duty to Cooperate.

2.6 Planning Practice Guidance

- 2.6.1 Whereas the NPPF sets out what is required of a FOAN assessment, the PPG sets out how that assessment should be undertaken, although it also that *“there is no one methodological approach or use of a particular dataset(s) that will provide a definitive assessment of development need. But the use of this standard methodology set out in this guidance is strongly recommended because it will ensure that the assessment findings are transparently prepared. Local planning authorities may consider departing from the methodology, but they should explain why their particular local circumstances have led them to adopt a different approach where this is the case. The assessment should be thorough but proportionate, building where possible on existing information sources outlined within the guidance”* (emphasis added).
- 2.6.2 For each step in the process (**Figure 2.1**) the PPG sets out the purpose of the step and the likely sources of data necessary to undertake it. The PPG does not however prescribe how each step should be undertaken in detail. However, PPG Paragraph 2a-014 does not that *“Establishing future need for housing is not an exact science. No single approach will provide a definitive answer...”*.

Figure 2.1: The PPG Approach to Determining the FOAN



- 2.6.3 This process is necessarily undertaken at local authority geographic level at which most population data is available. However, PPG Paragraph 2a-008 does indicate that need should be assessed in relation to the relevant functional area, i.e. the Housing Market Area (HMA).
- 2.6.4 Determining the FOAN should be based on facts and unbiased evidence. Constraints should not be applied to the assessment of need; these are addressed later in the plan-making process, as set out in PPG Paragraph 2a-004. Constraints include the supply of land for new development, historic under performance, viability, infrastructure or environmental constraints. In reality however, past population trends will have been influenced by past planning policies and rates of housebuilding. As such no projections are strictly 'policy off' but rather 'policy neutral', i.e. a continuation of previous planning policy. This is an important concept when considering factors such as:
- Past population trends will inherently assume a continuation in economic trends. If this is unlikely to occur, for example where the LPA is seeking higher rates of job growth, this should be factored into the FOAN. The High Court has confirmed that commuting can be considered a constraint for the purposes of determining FOAN⁸:

“For an authority to decide not to accommodate additional workers drawn to its area by increased employment opportunities is clearly a policy on decision which affects adjacent authorities who would be expected to house those additional commuting workers, unless there was evidence (accepted by the inspector or other planning decision-maker) that in fact the increase in employment in the borough would not increase the overall accommodation needs.”
 - Where previous housing supply constraints have led to overcrowding resulting in suppressed household formation rates, adjustments should be made to the FOAN so as not to exacerbate the under supply.

⁸ Oadby & Wigston BC v SoSCLG & Anor [2015] EWHC 1879.

3.0 Housing Market Area

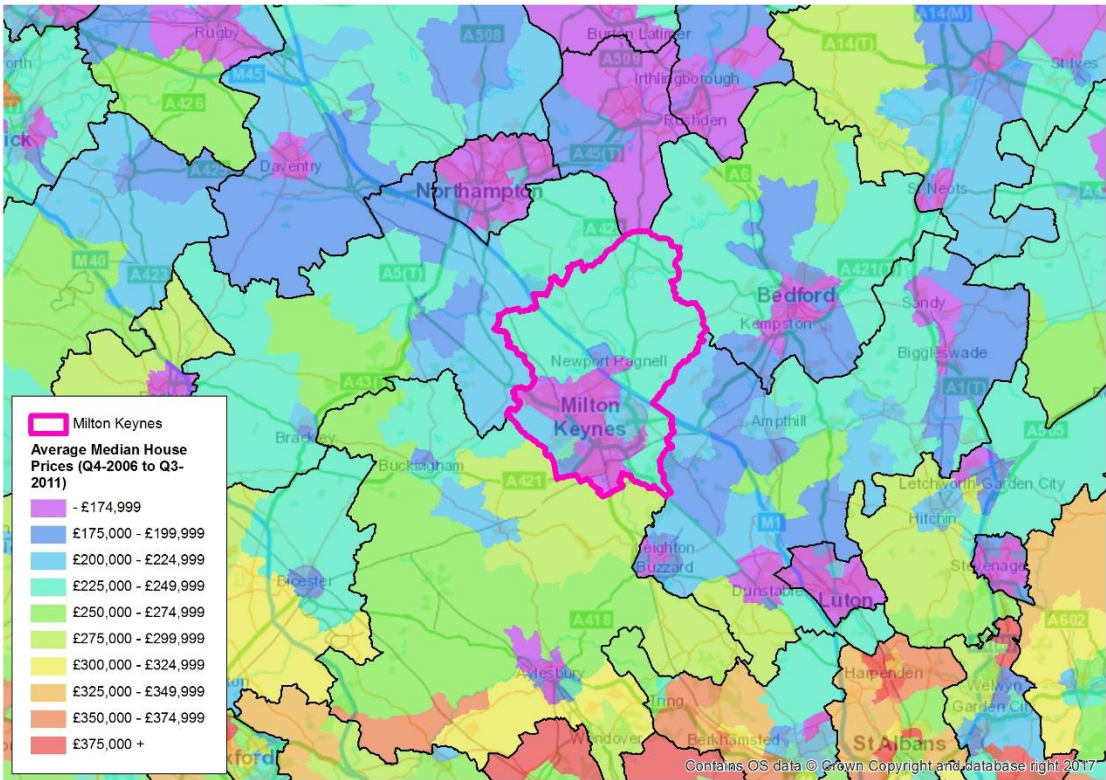
3.1 Introduction

- 3.1.1 The PPG Paragraph 2a-008 makes clear that the housing need should be assessed in relation to the relevant functional area, i.e. the HMA. PPG Paragraph 2a-009 notes that *“no single source of information on needs will be comprehensive in identifying the appropriate assessment area; careful consideration should be given to the appropriateness of each source of information and how they relate to one another...”*.
- 3.1.2 The PPG Paragraph 2a-009 states that a HMA *“is a geographical area defined by household demand and preferences for all types of housing, reflecting the key functional linkages between places where people live and work. It might be the case that housing market areas overlap. The extent of the housing market areas identified will vary, and many will in practice cut across various local planning authority administrative boundaries”*. However, for all practical purposes, HMAs need to be considered to cover entire LPAs and it is a matter of judgement as to whether one LPA is included and another is omitted.
- 3.1.3 The PPG Paragraph 2a-011 suggests three different sources of information to define a HMA:
- House prices and rates of change in house prices;
 - Household migration and search patterns; and
 - Contextual data (e.g. travel to work area boundaries, retail and school catchment areas).
- 3.1.4 The following analysis considers each in turn.

3.2 House Prices

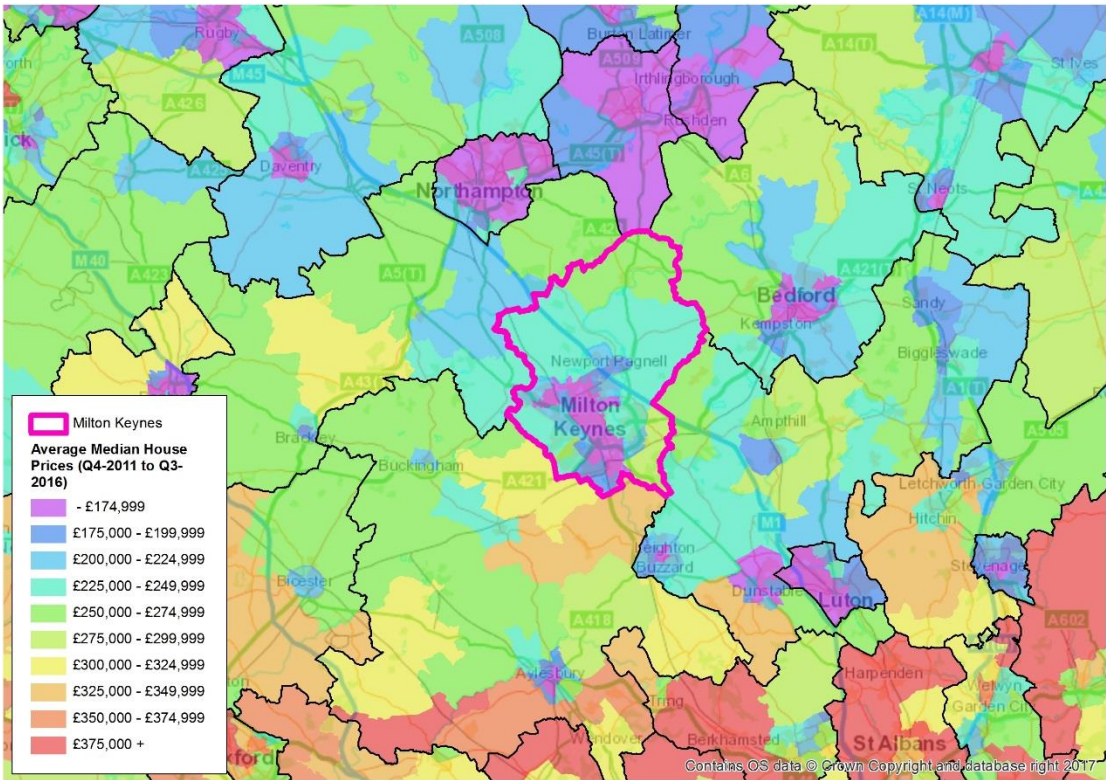
- 3.2.1 The PPG Paragraph 2a-011 states:
- “Housing market areas can be identified by assessing patterns in the relationship between housing demand and supply across different locations. This analysis uses house prices to provide a ‘market-based’ reflection of housing market area boundaries. It enables the identification of areas which have clearly different price levels compared to surrounding areas. The findings provide information about differences across the area in terms of the price people pay for similar housing, market ‘hotspots’, low demand areas and volatility.”*
- 3.2.2 Figures 3.1 – 3.3 show the median house price data across Milton Keynes and surrounding areas. Figure 3.1 shows the average median house price values between Q4 2006 and Q3 2011 at the Medium Super Output Area (MSOA) level. Data is averaged over the five-year period (or 20 quarters) to ensure that a sufficient sample of transactions is captured to make the analysis reasonably robust. Similarly Figure 3.2 shows the average median house price values between Q4 2011 and Q3 2016 for the same geographies. Figure 3.3 then considers the percentage change in median house prices between the two periods.
- 3.2.3 These clearly show that Milton Keynes is located on the border between areas to the south that are influenced by London’s housing pressures, and the relatively cheaper areas to the north. Median house prices in Milton Keynes are relatively low in comparison to Aylesbury Vale but appear to be increasing at a greater rate; especially on the periphery of Milton Keynes itself. However, generally it appears that median house prices in Milton Keynes are becoming more characteristic of those seen in Bedford, Central Bedfordshire and Luton.

Figure 3.1: Average Median House Prices (Q4 2006 – Q3 2011)

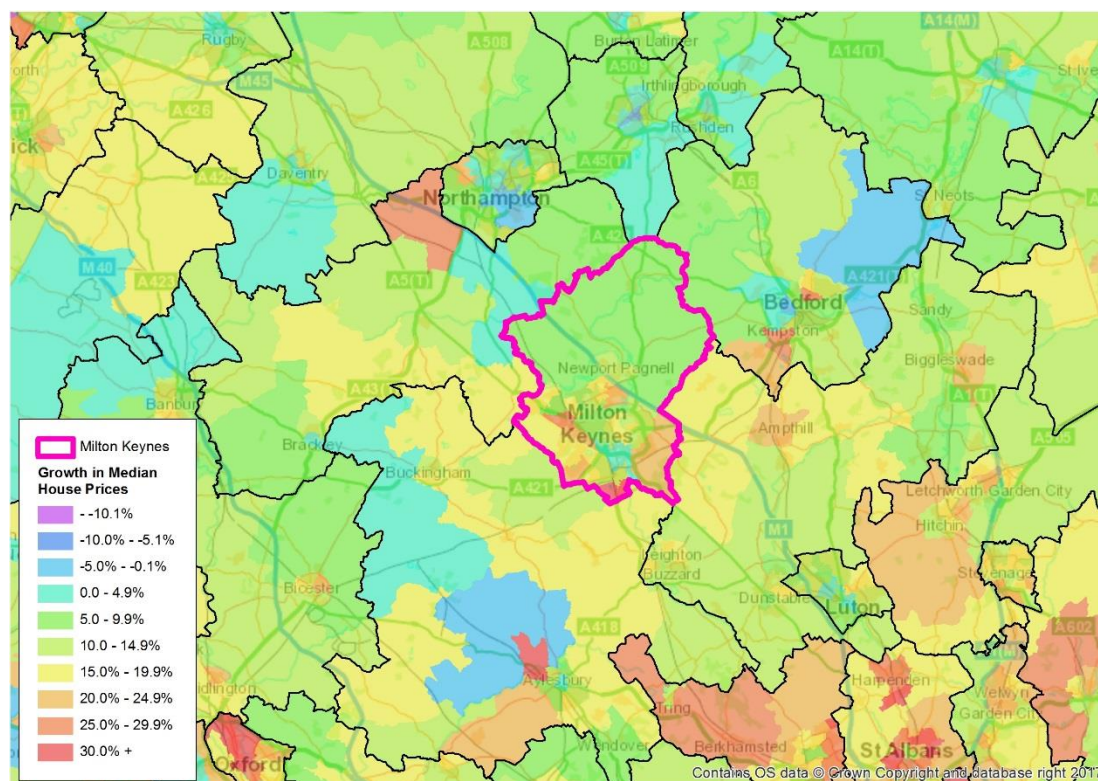


Source: ONS. March 2017. Median House Price by MSOA – HPSSA Dataset 2

Figure 3.2: Average Median House Prices (Q4 2011 – Q3 2016)



Source: ONS. March 2017. Median House Price by MSOA – HPSSA Dataset 2

Figure 3.3: Percentage Growth in Median House Prices (Q4 2006/Q3 2011 and Q4 2011/Q3 2016)

Source: ONS. March 2017. Median House Price by MSOA – HPSSA Dataset 2

3.3 Household Migration

3.3.1 PPG Paragraph 2a-011 states:

“Migration flows and housing search patterns reflect preferences and the trade-offs made when choosing housing with different characteristics. Analysis of migration flow patterns can help to identify these relationships and the extent to which people move house within an area. The findings can identify the areas within which a relatively high proportion of household moves (typically 70 per cent) are contained. This excludes long distance moves (e.g. those due to a change of lifestyle or retirement), reflecting the fact that most people move relatively short distances due to connections to families, friends, jobs, and schools.”

3.3.2 Data from the 2011 Census gives detail on the net migration within the UK (Table 3.1)⁹. Overall it appears that migration between Milton Keynes and the UK is highly dispersed with the top ten locations for inward migration accounting for just 30.7% of all inward migration and the top ten destinations for outward migration only accounting for 40.8% of all outward migration.

⁹ Note that the PPG actually refers to household migration patterns while the 2011 Census refers only to population. There is no simple conversion of population to households, as this is dependent on the prevailing reasons for migration to or from a local authority area. Furthermore, some households are inevitably created or combined as a result of migration, which means that household migration as a variable becomes extremely complex. Consequently, the PPG is generally considered to refer to population migration.

- 3.3.3 It seems probable that the much of the migration with Birmingham, Nottingham and Coventry is associated with students and can be discounted. Milton Keynes has a relatively young population (**Figure 4.5**) but doesn't have a resident university. As such it loses many of its young adults to surrounding university towns and cities. Many will then return given that Milton Keynes has a particularly high job density.

Table 3.1: Net Migration with the UK, 2010/11

INWARD MIGRATION			OUTWARD MIGRATION		
MOVING FROM	NO.	%	MOVING TO	NO.	%
Central Bedfordshire	512	5.5	South Northamptonshire	487	5.8
Aylesbury Vale	472	5.1	Central Bedfordshire	922	10.9
South Northamptonshire	599	6.5	Aylesbury Vale	580	6.9
Bedford	365	3.9	Northampton	315	3.7
Luton	132	1.4	Bedford	341	4.0
Northampton	383	4.1	Wellingborough	127	1.5
Chiltern	28	0.3	Birmingham	122	1.4
Cherwell	52	0.6	Luton	336	4.0
Wellingborough	157	1.7	Nottingham	132	1.6
Birmingham	151	1.6	Coventry	86	1.0
ALL	9,277	100	ALL	8,452	100

Source: ONS 2011 Census Table MM01CUK_ALL.

- 3.3.4 In addition, there were 18,106 movements within the LPA, which accounts for 50.5% of all movements in that year. Therefore, whilst the relationship with the rest of the UK is particularly dispersed, the LPA is actually very self-contained. **Table 3.2** uses the same information as above to show the area in which the majority of movements occur.

Table 3.2: Net Migration within the UK – All Movements, 2010/11

	MOVEMENTS	
	NO.	%
Central Bedfordshire	1,434	8.1
South Northamptonshire	1,086	6.1
Aylesbury Vale	1,052	5.9
Bedford	706	4.0
Northampton	698	3.9
Luton	468	2.6
ALL	17,729	100.0

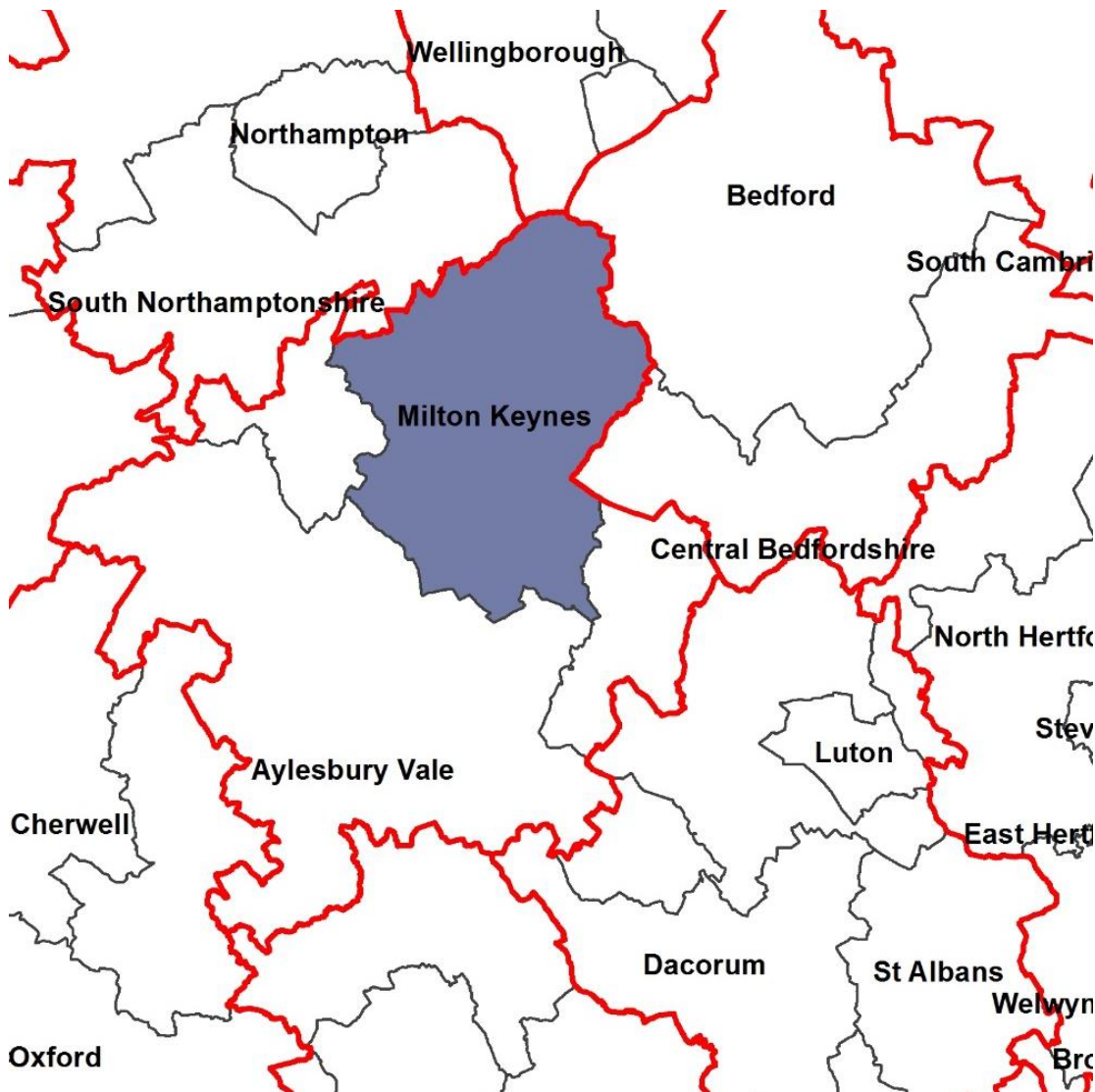
Source: ONS 2011 Census Table MM01CUK_ALL.

- 3.3.5 To achieve the 70% containment suggested in the PPG, the HMA would need to include at least Central Bedfordshire, South Northamptonshire and Aylesbury Vale.

3.4 Contextual Data

- 3.4.1 **Figures 3.4** shows the Milton Keynes ONS 2011 Travel to Work Areas (TTWAs). This clearly shows that the greatest relationship is with Aylesbury Vale with only small parts of Central Bedfordshire and South Northamptonshire also included. Care however is needed in interpreting this since many commuting flows will cross these borders. There are actually far larger commuting flows between Milton Keynes and Central Bedfordshire than between Milton Keynes and Aylesbury Vale. Overall, in 2011 Milton Keynes attracted a net 16,336 commuters with inward flows being 58% greater than outward flows.

Figure 3.4: Travel to Work Areas, 2011



Source: ONS. 2011 TTWAs

3.5 Conclusions

- 3.5.1 The above data shows a number of clear linkages between Milton Keynes and surrounding areas. Migration patterns are clearly dominated with moves within the LPA. House price data clearly shows that Milton Keynes is more comparable with Bedford and Central Bedfordshire. However, the travel to work area shows a strong association between Aylesbury Vale, Central Bedfordshire and South Northamptonshire.

3.5.2 On the basis of the above, the HMA is assumed to comprise:

- Milton Keynes;
- Aylesbury Vale;
- Central Bedfordshire;
- South Northamptonshire;
- Bedford; and
- Northampton

3.5.3 The linkages between Milton Keynes and surrounding areas are however, with the exception of commuting flows, quite weak. Previous work undertaken by Bidwells in neighbouring areas has recognised far stronger relationships are present between neighbouring authorities than between these authorities and Milton Keynes. As such, for the purposes of considering FOAN, it is reasonable to consider Milton Keynes as its own HMA. However, where neighbouring local authorities cannot accommodate their own FOAN and engage in the Duty to Cooperate, it would be entirely reasonable to request that Milton Keynes makes provision to accommodate some of that need, subject to its own capacity constraints.

4.0 Official Projections

4.1 Introduction

4.1.1 The latest official projections are:

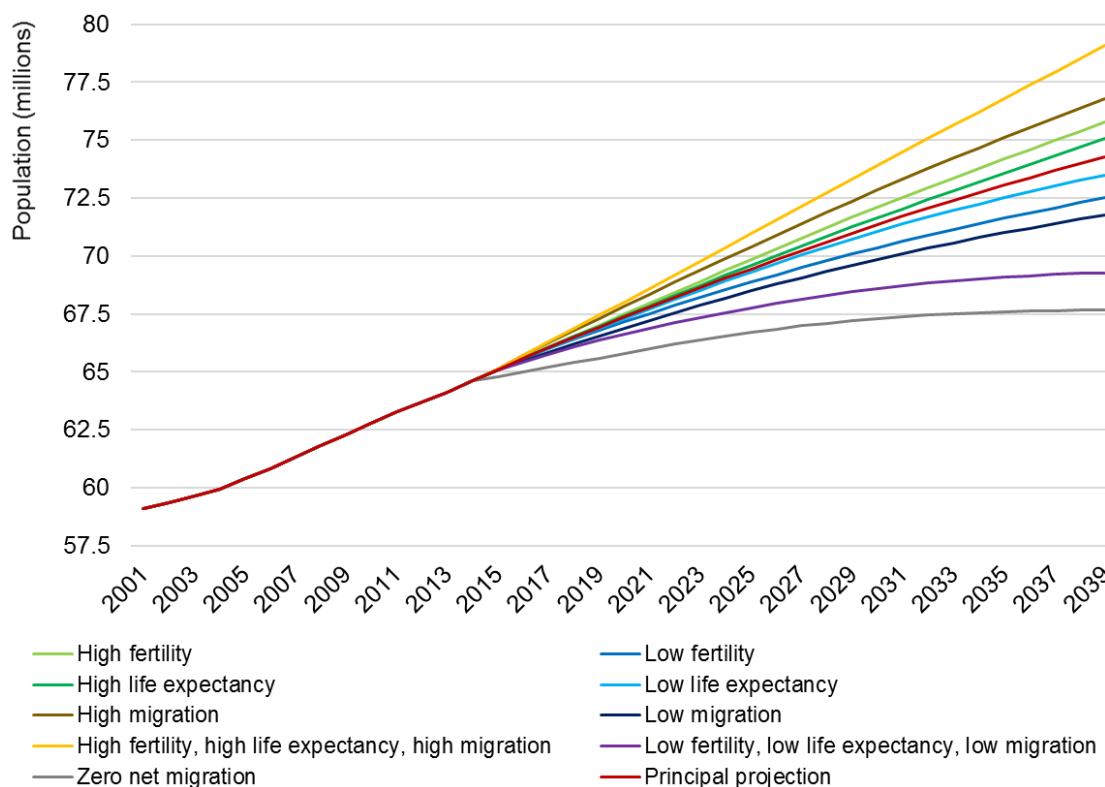
- ONS. 29 October 2015. 2014-based National Population Projections (2014NPP).
- ONS 25 May 2016. 2014-based Sub National Population Projections (2014SNPP).
- DCLG. 12 July 2016. 2014-based Household Projections (2014HP).

4.1.2 These form the starting point of any assessment of housing need and supersede previous versions. Notwithstanding this, previous versions are described below to provide context.

4.2 National Population Projections

4.2.1 The 2014NPP is the primary source of population data and the 2014SNPPs for individual LPAs is constrained to sum to the principal projection. It is worth noting however that the 2014NPP actually comprises ten different projections based on different variables, and resulting in significant differences in population growth over the subsequent 25 years (**Figure 4.1**). While fertility and life expectancy can both have an effect on the level of future population growth, it is international migration that causes the greatest variability.

Figure 4.1: 2014NPP Principal Projection and Variants



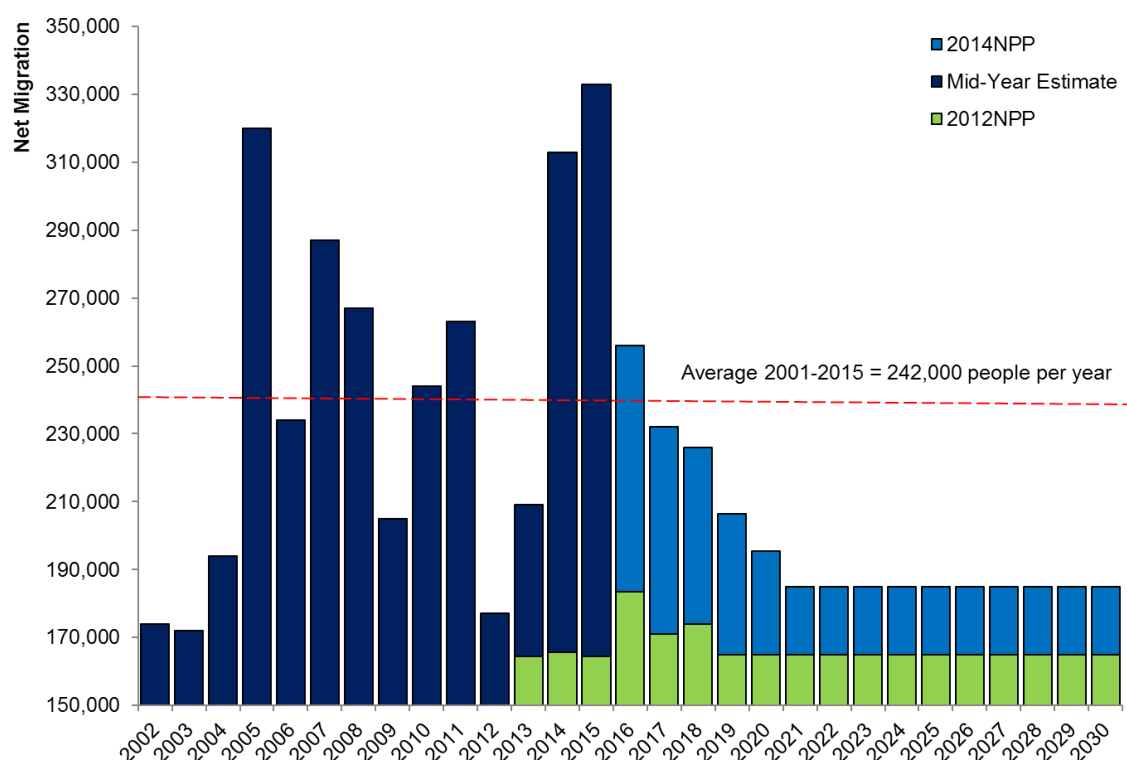
Source: ONS, 2014SNPP

4.2.2 The issue of accommodating net international migration into population projections is well documented. For the UK, as a whole the 2012-based National Population Projections (2012NPP)

were heavily criticised for significantly downplaying future net international migration. This has been partly addressed in the 2014NPP, which have increased the estimated net international migration per year, but it still does not reflect past or current trends (**Figure 4.2**).

- 4.2.3 It is estimated that over the last three years, the 2014NPP has underestimated international net migration by 360,500 people. Assuming an average household size of 2.6 people, this equates to 138,600 additional households. This suggests that the household projections for England could be out by 9% after just three years¹⁰. The effect of this will not be felt consistently across the country but will instead be focused in areas that generally see higher levels of international in-migration. These also tend to be areas of higher economic activity and higher housing need. Consequently, the household projections are not always a reliable basis for assessing housing need and adjustments are often necessary.

Figure 4.2: Difference between Estimated and Projected Net International



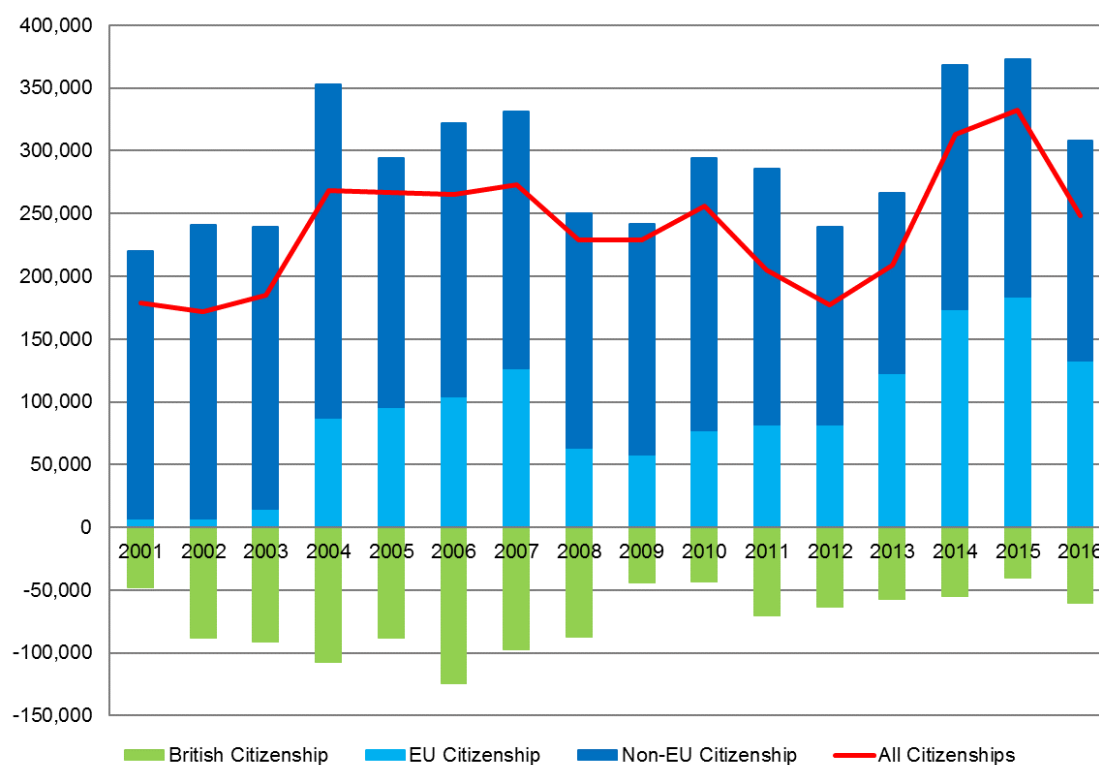
Source: ONS Mid-Year Population Estimates; 2012-based National Population Projections; 2014-based National Population Projections.

¹⁰ An accurate estimate cannot be made at this stage since detailed information is not available on the distribution of migrants across the UK and how many students would be living in student housing.

4.3 The Implications of Brexit

- 4.3.1 Article 50 was triggered in March 2017 and will be followed by two years, at least, of negotiation. It is not known what the result of those negotiations will be in terms of freedom of movement within the European Economic Area (EEA). Some restrictions seem probable but it is equally probable that the EU will not yield on the overall concept of freedom of movement.
- 4.3.2 Up until Brexit occurs freedom of movement will continue. The most recent provisional estimates of net international migration from ONS suggest that it fell to +248,000 people in 2016, a statistically significant reduction from +332,000 people in 2015. However, such significant fluctuations, both positive and negative, have been common since the enlargement of the EU in 2004 (**Figure 4.3**).
- 4.3.3 Some of this reduction will be a result of natural fluctuations but inevitably some will be a direct result of Brexit, particularly as the detailed data suggests notable changes in the flows in the third quarter of 2016. However, it is too early to tell if this is the start of a new trend or simply a 'dip' as has occurred at least twice in the last decade in response to macro-economic or geo-political reasons.

Figure 4.3: Long Term International Migration, 2001-2016



Source: ONS. May 2017. Provisional Long-Term International Migration Estimates.

- 4.3.4 Overall it seems improbable that the uncertainty in the longer term will substantially affect the number of inward migrants looking for work. The UK economy is robust and whilst the uncertainty might make high levels of growth difficult, it seems unlikely that it will result in a sharp decline in employment need. The only factor at present that might affect this is the weakened Pound against the Euro, which will affect European economic migrants that send money home. Notwithstanding this, whilst there is still demand for a labour force, it is likely the migrants will still

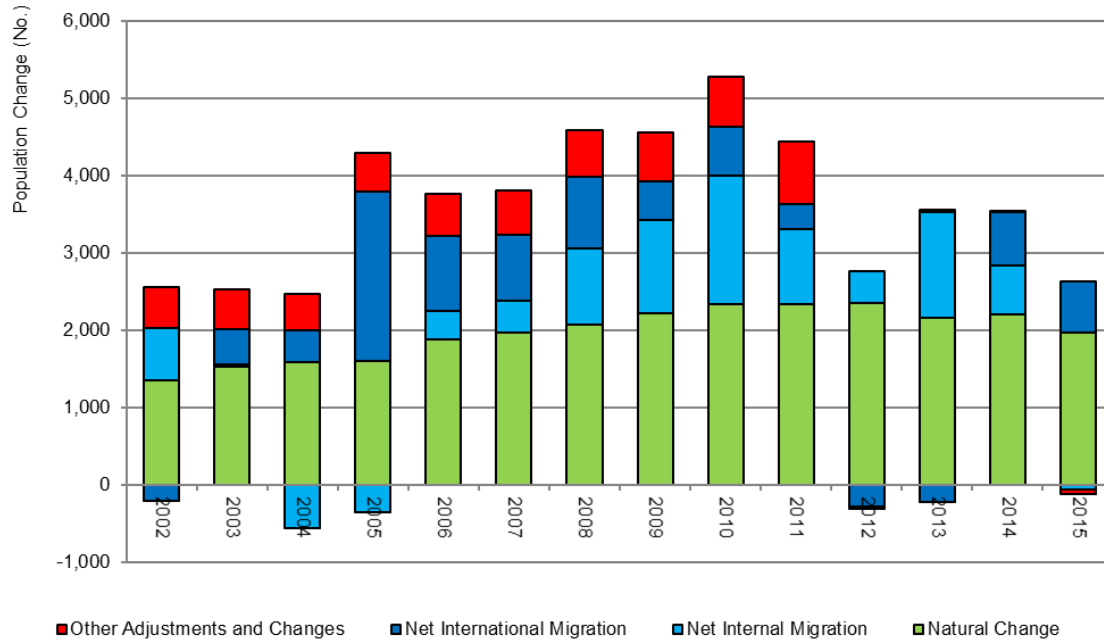
come. It is likely that those that arrive before Brexit will be given leave to remain indefinitely so there is unlikely to be significant concerns over what happens after Brexit.

- 4.3.5 There is some possibility that Brexit may dissuade some from the UK moving to elsewhere in the EU, particularly those doing so for retirement given the weakening of the pound. Therefore, this component of net international migration could actually increase in the short term.
- 4.3.6 At present, it seems likely that net international migration will continue at the same levels seen in recent years (i.e. the last decade) for at least the next two years, probably longer. Beyond this the impact on net international migration is less clear but it is highly probable that it will continue to be far higher than the tens of thousands envisaged. After all, approximately half of immigrants do not come from the EU, and many of those that do come from the EU would still be allowed into the UK even if freedom of movement was swept away entirely. These would include students and the highly qualified, both of which the UK would not want to dissuade.
- 4.3.7 In the medium term, therefore it seems possible that there will be a small decline in net international migration but this is by no means certain. The longer term is unclear although it will always be the case that the rate of migration will be linked to economic success.
- 4.3.8 In terms of household projections, the effect in the short to medium term is likely to be minimal. The national population projections on which the household projections are ultimately based have been regularly criticised for underestimating net international migration, see **Figure 4.2**. Even with Brexit it seems unlikely that net international migration would fall to the level envisaged in these projections without having an adverse effect on the UK economy. Therefore, it will still be necessary to interrogate migration levels when determining the FOAN for housing.
- 4.3.9 It is also worth pointing out that net international migration is but one component considered when determining FOAN. Migration from elsewhere in the UK will remain the most important component for those areas seeing significant economic growth. Natural change is also likely to be a positive factor with birth rates continuing to be higher than seen in previous decades and the population generally living longer. There is also the issue of backlog with a substantial increase in concealed families seen between the 2001 and 2011 Censuses that needs to be addressed.
- 4.3.10 Bidwells position therefore is that in the short to medium term there should be no change in the evidence on which FOAN is based as a result of Brexit. The effect in the longer term is unlikely to result in a significant change in the trajectory of any projections made now. However, should some significant change occur, that will be a matter for consideration during the review of the local plans being adopted now in the period prior to Brexit.

4.4 Mid-Year Population Estimates

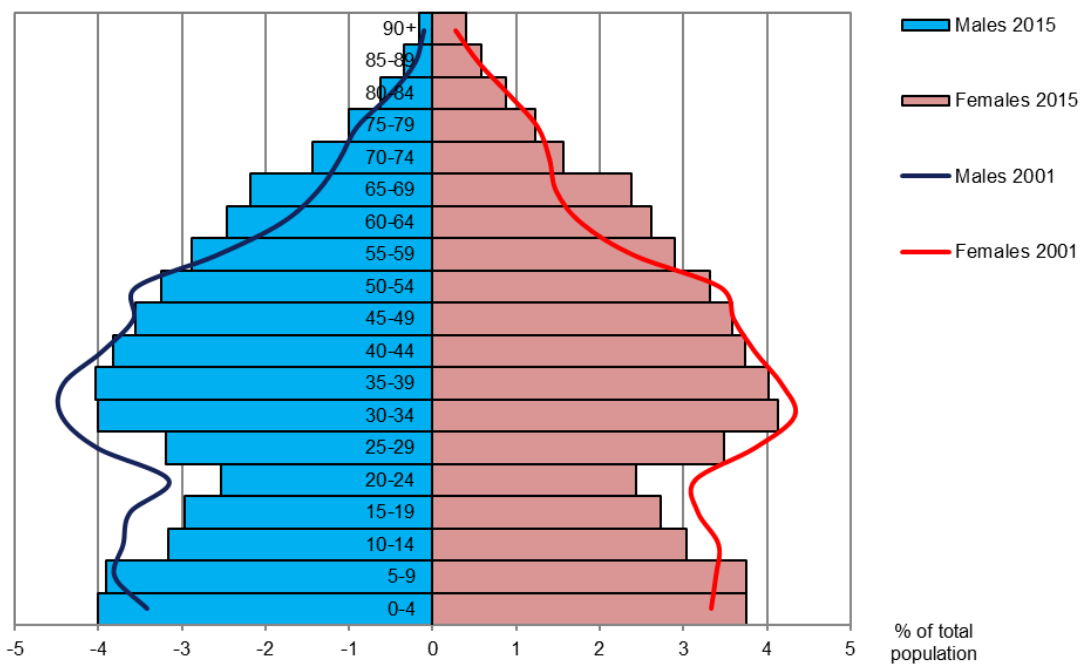
- 4.4.1 The ONS Mid-Year Population Estimates (MYPEs) for 2001 to 2015 provide detailed data on population age/sex and component of change (i.e. births, deaths and migration)¹¹, see **Figure 4.4**. This clearly shows that in Milton Keynes natural change is the main driver of population growth. Natural change has been relatively balanced throughout the period. The reason for the recent decline in migration is unclear. It could reflect a decline in housing availability relative to surrounding areas.

¹¹ ONS. June 2016. Population Estimates for UK, England and Wales, Scotland and Northern Ireland, Mid-2015.

Figure 4.4: Annual Change in Population in Milton Keynes, 2001-2015

Source: ONS Mid-Year Population Estimates, 2015.

- 4.4.2 **Figure 4.5** shows that Milton Keynes has a young population. However, there is evidence that the population is ageing. Generally, where there is a gap between the lines denoting the 2001 profile and the blocks denoting the 2015 profile there has been a significant proportional reduction in that age group. It can clearly be seen that amongst those aged 20-29 have proportionally declined by a substantial figure over the last fifteen years.

Figure 4.5: Change in Population Profile in Milton Keynes, 2001-2015

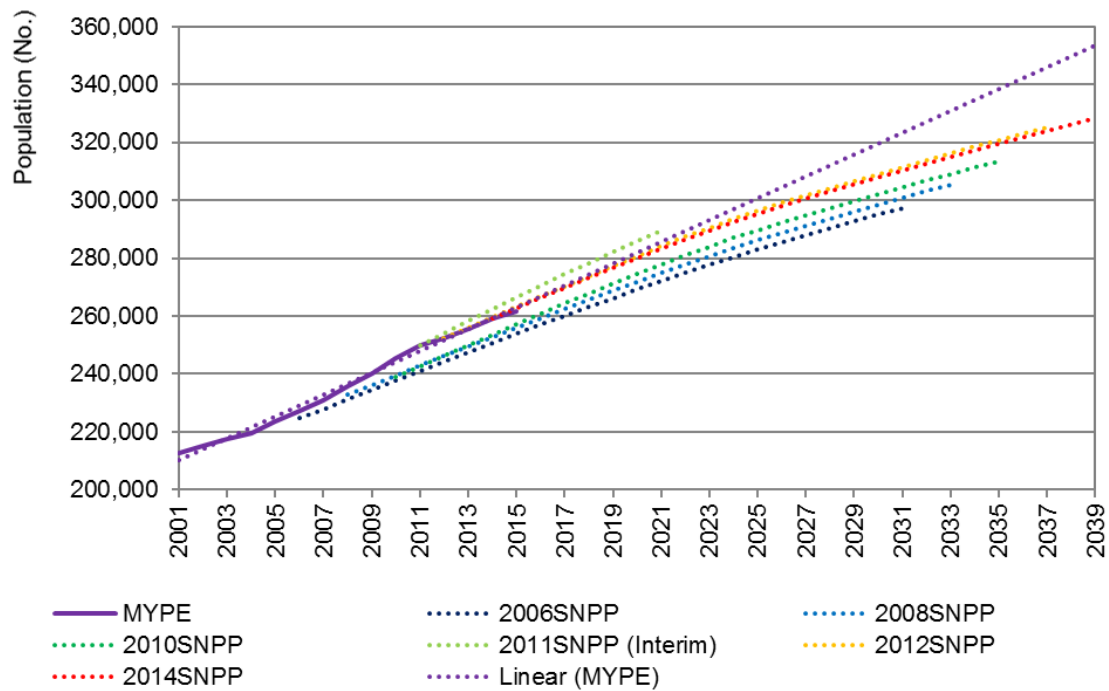
Source: ONS Mid-Year Population Estimates, 2015.

- 4.4.3 The reasons for this ageing process are numerous. There are underlying reasons such as people living longer on average. However, there can also be local issues such as limited job opportunities, lack of affordable housing (in its broadest sense) and no higher education establishments. These issues will be considered later.
- 4.4.4 Other important 'components' of change are the other adjustments and changes that result from subsequent changes to the MYPEs (known as Unattributable Population Change, UPC); principally those following on from the 2011 Census. When preparing their population projections, ONS do not take account of UPC since they have not been formally attributed to a component of change (i.e. births, deaths and migration) or could relate to errors in the Censuses. However, where there is evidence that the Censuses are sufficiently accurate and that the adjustments most likely can be attributed to migration (the accuracy of births and deaths in the UK is near perfect), there is a clear argument that these should have been included in the projections.
- 4.4.5 In the case of Milton Keynes, the UPC resulted in an increase in the population of 5,811 people between 2001 and 2011. However, the total population change over this period was 31,377 (37,188 with the UPC included) and so it appears that UPC made a net contribution of +18.5%. It appears that this underestimation was predominantly young families and likely a result of under counting international migration to the District. ONS have since revised their methodology on calculating international migration and distributing it amongst LPAs. As such, UPC is unlikely to be a significant issue from 2012 onwards.

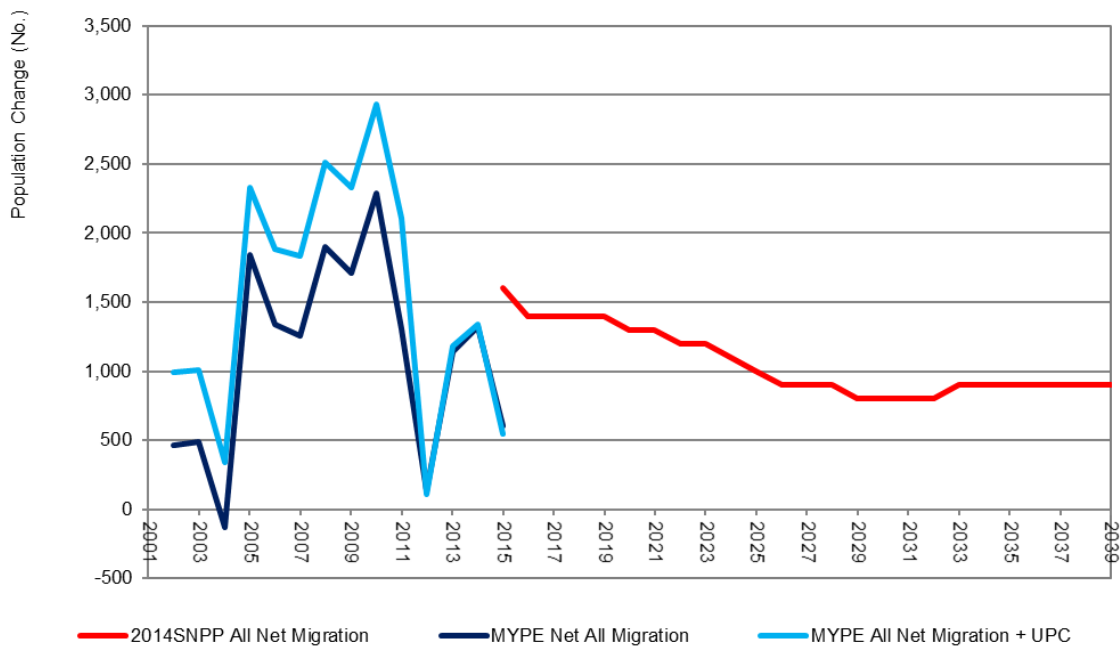
4.5 Sub National Population Projections

- 4.5.1 **Figure 4.6** shows the sub national population projections from 2006, 2008, 2010, 2011, 2012 and 2014¹², plus the MYPEs for 2001-2015. Whilst the most recent SNPP technically supersedes all previous versions, it is useful to consider the evolution of the projections over time.
- 4.5.2 It is very apparent that the SNPPs between 2006 and 2010 underestimated population growth. Indeed, following the 2011 Census the MYPEs were revised to address miscounting that occurred in the inter-censal period which has left the 2006, 2008 and 2010 SNPPs slightly adrift of the MYPEs. Between 2001 and 2015 the population grew by an average of 1.5% per year. This peaked at 2.2% in 2010 but since then growth has declined such that only 1.0% was achieved in 2015.
- 4.5.3 **Figure 4.7** shows the differences in annual average net migration between 2001 and 2015 compared to the assumptions in the 2014SNPP. This shows that net migration in Milton Keynes has been erratic, particularly in the last few years. Over the last five years it appears that on average net migration has been approximately 1,050 people per year. The 2014SNPP averages 1,080 people per year. Therefore, there is no reason to make adjustments to the 2014SNPP to accommodate longer term migration trends or UPC as the 2014SNPP is already comparable to these.

¹² ONS Sub National Population Projections.

Figure 4.6: Government Population Projections for Milton Keynes


Source: ONS Sub National Population Projections

Figure 4.7: Differences between MYPE and 2014SNPP for Milton Keynes


Source: ONS Mid-Year Population Estimates; 2014SNPP.

4.6 Household Projections

- 4.6.1 Household projections published by DCLG should provide the starting point estimate of overall housing need (PPG Paragraph 2a-015). The household projections are produced by applying projected household representative rates (HRRs) to the population projections published by ONS. Projected HRRs are based on trends observed in Census and Labour Force Survey data. The PPG goes on to state that:

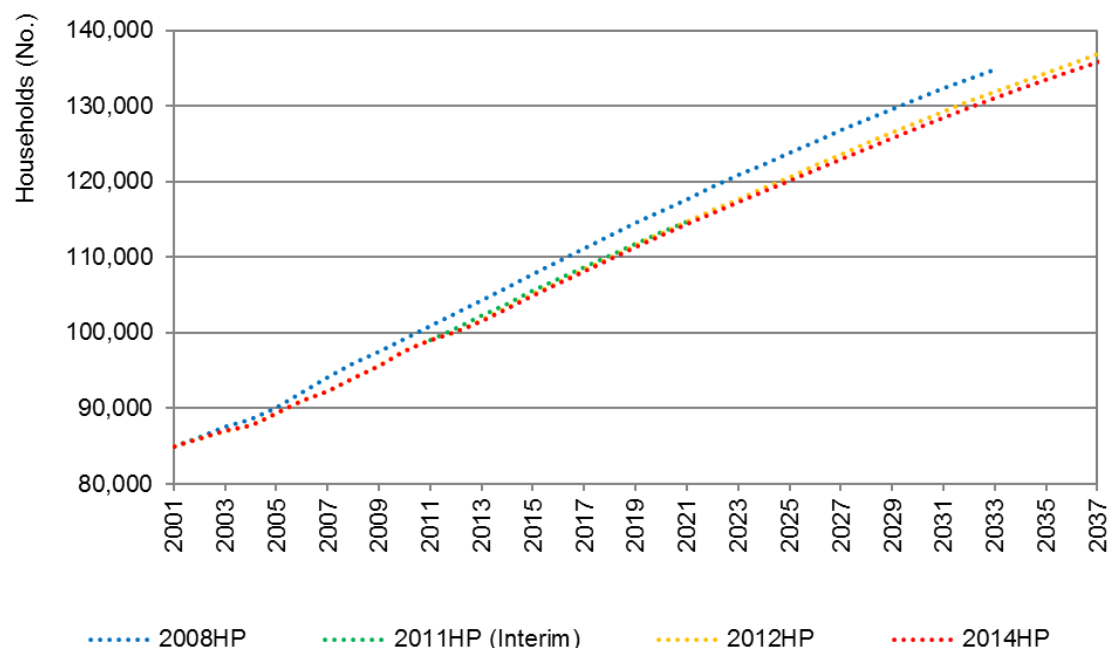
“The household projections are trend based, i.e. they provide the household levels and structures that would result if the assumptions based on previous demographic trends in the population and rates of household formation were to be realised in practice. They do not attempt to predict the impact that future government policies, changing economic circumstances or other factors might have on demographic behaviour.

The household projection-based estimate of housing need may require adjustment to reflect factors affecting local demography and household formation rates which are not captured in past trends. For example, formation rates may have been suppressed historically by under-supply and worsening affordability of housing. The assessment will therefore need to reflect the consequences of past under delivery of housing. As household projections do not reflect unmet housing need, local planning authorities should take a view based on available evidence of the extent to which household formation rates are or have been constrained by supply.”

- 4.6.2 HRRs should only be adjusted after very careful consideration. The 2008-based Household Projections (2008HP) HRRs are likely to be overestimates given that they were derived from inaccurate base data. However, it is also likely that household formation rates have been suppressed since the start of the housing crisis which arguably has its roots in the 1980s/90s¹³. Consequently, there is a danger that the 2014HP HRRs are an underestimate of household formation that could result in an undersupply in future housing.
- 4.6.3 **Figure 4.8** shows the most recent household projections¹⁴ and indicates how erroneous the 2008HP was. This was likely a result of overestimated HRRs as the population growth was underestimated. The past three household projections are however very well aligned and show a continuation of the trajectory seen in the MYPEs.
- 4.6.4 The 2011 Census shows evidence of significant overcrowding compared to the national average (**Table 4.1**). This is particularly noticeable amongst families with dependent children and single person households. The 2011 Census doesn't identify significant numbers of concealed families (i.e. two or more families sharing a dwelling, which for most of the 2011 Census would be denoted as a single household) compared to the national average (**Table 4.2**). However, concealed families are a growing concern having increased in number since 2001 by 101.0% (unconcealed families increased by 18.5%).

¹³ Simpson, L. December 2014. Whiter Household Projections? TCPA.

¹⁴ DCLG Household Projections.

Figure 4.8: Government Household Projections for Milton Keynes

Source: DCLG Household Projections

Table 4.1: Occupancy Rating (Rooms) by Household Composition, 2011

HOUSEHOLD COMPOSITION	MILTON KEYNES			ENGLAND
	ALL	-1 OR LESS		-1 OR LESS
	NO.	NO.	%	%
One-person household: Aged 65 and over	8,602	435	4.6	4.3
One-person household: Other	16,944	1,942	20.6	11.0
One family only: All aged 65 and over	5,429	52	0.6	0.7
One family only: Married or same-sex civil partnership couple: No children	12,966	243	2.6	1.6
One family only: Married or same-sex civil partnership couple: Dependent children	18,274	1,505	16.0	8.2
One family only: Married or same-sex civil partnership couple: All children non-dependent	5,289	184	2.0	3.6
One family only: Cohabiting couple: No children	6,017	365	3.9	5.9
One family only: Cohabiting couple: Dependent children	4,839	597	6.3	10.4
One family only: Cohabiting couple: All children non-dependent	493	21	0.2	5.8
One family only: Lone parent: Dependent children	8,166	1,528	16.2	17.5
One family only: Lone parent: All children non-dependent	3,256	290	3.1	8.8
Other household types: With dependent children	3,187	1,034	11.0	32.5
Other household types: Other (including all full-time students and all aged 65 and over)	5,122	1,237	13.1	25.3
ALL CATEGORIES: HOUSEHOLD COMPOSITION	98,584	9,433	100.0	8.7

Source: ONS 2011 Census Table DC4104EW1a

Table 5.2: Concealed Families, 2011

FAMILY STATUS	MILTON KEYNES		ENGLAND
	NO.	%	%
Concealed family: Total	1,224	1.7	1.9
Concealed family: Lone parent family: Total	489	0.7	0.7
Concealed family: Lone parent family: Dependent children	413	0.6	0.5
Concealed family: Lone parent family: All children non-dependent	76	0.1	0.1
Concealed family: Couple family: Total	735	1.0	1.2
Concealed family: Couple family: No children	553	0.8	0.8
Concealed family: Couple family: Dependent children	148	0.2	0.3
Concealed family: Couple family: All children non-dependent	34	0.0	0.1
Unconcealed family: Total	69,864	98.3	98.1
Unconcealed family: No children	26,229	36.9	40.4
Unconcealed family: Dependent children	33,734	47.5	42.3
Unconcealed family: All children non-dependent	9,901	13.9	15.5
ALL CATEGORIES: ALL FAMILIES	71,088	100.0	100.0

Source: ONS 2011 Census Table DC1110EWla

- 4.6.5 It is this rate of growth of concealed families that is indicative of the economic pressures on the household formation rather than natural progression. A recent study investigated the effects of changing household formation rates on household projections¹⁵. Whilst it is accepted that the 2008HP is likely to have overestimated the rate of household formation, it is likely that the 2012HP (and 2014HP) underestimated the rate of household formation by virtue of the increasing number of concealed families.
- 4.6.6 The effect on household formation is not consistent across household types. Young couples are particularly adversely affected. As discussed previously, some of this will be a result of overestimation in the 2008HP whilst some others will be a result of changing lifestyle choices. However, the rate of change in household formation amongst Household Representative Persons (HRPs) aged 25-34 is particularly significant.
- 4.6.7 The study accepts that the household formation rates in the 2012HP are the best currently available (now superseded by the 2014HP); however, the degree of change seen in the long term is likely to be a rolling forward of the housing constraints that the process enshrined in the NPPF is intended to resolve. Whilst overcrowding does not currently appear to be a significant issue, without a substantial correction to the housing supply, it is highly likely to become significant by the end of the local plan period. Whilst there are significant declines in the HRRs locally, they do not differ significantly from those seen nationally. Therefore, there is currently no justification to alter the HRRs to reflect local circumstances. The issue of overcrowding will be revisited when considering housing market signals.

¹⁵ McDonald, N., Whitehead, C. November 2015. New Estimates of Housing Requirements in England, 2012 to 2037. TCPA.

5.0 Making Local Adjustments

5.1 Background

5.1.1 The need to make local adjustments is explained in PPG Paragraph 2a-017:

“The household projections produced by the Department for Communities and Local Government are statistically robust and are based on nationally consistent assumptions. However, plan makers may consider sensitivity testing, specific to their local circumstances, based on alternative assumptions in relation to the underlying demographic projections and household formation rates. Account should also be taken of the most recent demographic evidence including the latest Office for National Statistics population estimates.

Any local changes would need to be clearly explained and justified on the basis of established sources of robust evidence.

Issues will vary across areas but might include:

- *migration levels that may be affected by changes in employment growth or a one off event such as a large employer moving in or out of an area or a large housing development such as an urban extension in the last 5 years*
- *demographic structure that may be affected by local circumstances or policies eg expansion in education or facilities for older people*

Local housing need surveys may be appropriate to assess the affordable housing requirements specific to the needs of people in rural areas, given the lack of granularity provided by secondary sources of information.”

5.2 Adjusting the Population Projections

5.2.1 The review of the MYPEs in the previous chapter suggests that population growth has been slightly suppressed in recent years, primarily due to a decline in net migration with the rest of the country. This might be a result of changes in employment growth or represent the ‘new normal’ following the recession. The effects resulting from employment growth are better considered under the next stage in the process where all the variables affecting economic trends are considered. As such, at this stage, it is not considered appropriate to adjust the underlying population projections.

5.2.2 Furthermore, the 2015 MYPE does not materially differ from the 2014SNPP prediction for 2015 so there is no need to update the projections to take account of the MYPE.

5.2.3 The 2016 SHMA disagrees with this approach and instead generates its own population projections based on 10-year trends (2005 to 2015) rather than the 5-year trends favoured by ONS in the 2014SNPP. The reasons for this are set out on pages 18-20 of the SHMA. However, all the reasons put forward are methodological rather than reflecting the local circumstances referred to in PPG Paragraph 2a-017 and are therefore not “*clearly explained and justified*”.

5.3 Adjusting the Household Projections

5.3.1 As discussed previously, the official household projections do not need to be adjusted to take account of local concerns relating to HRRs.

5.4 The Demographic-Led Projection

- 5.4.1 On the basis of the above, the demographic-led projection will reflect the 2014SNPP/2014HP. This is then adjusted to dwellings by assuming that the dwelling vacancy rate in the 2011 Census (3.40%) will remain constant throughout the projection period. **Table 5.1** summarises the results.

Table 5.1: The Demographic-Led Projection

YEAR	POPULATION	HOUSEHOLDS	DWELLINGS
2016	266,360	106,510	110,130
2031	310,240	128,430	132,790
Total (2016-2031)	40,410	20,340	21,030
Annual Average (2016-2031)	2,694	1,356	1,402

6.0 Economic Trends

6.1 Introduction

6.1.1 PPG Paragraph 2a-018 states that:

“Plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also having regard to the growth of the working age population in the housing market area. Any cross-boundary migration assumptions, particularly where one area decides to assume a lower internal migration figure than the housing market area figures suggest, will need to be agreed with the other relevant local planning authority under the duty to cooperate. Failure to do so will mean that there would be an increase in unmet housing need.

Where the supply of working age population that is economically active (labour force supply) is less than the projected job growth, this could result in unsustainable commuting patterns (depending on public transport accessibility or other sustainable options such as walking or cycling) and could reduce the resilience of local businesses. In such circumstances, plan makers will need to consider how the location of new housing or infrastructure development could help address these problems.”

6.1.2 While this approach appears sensible, it does cause inherent issues. Commuting for work fluctuates depending on the changing employment needs of an area and the location of the resident population that seeks to access it. The location of employment and population are subject to a range of very different variables that do not always comfortably align and constantly change. However, the PPG makes clear that any a decision to not accommodate the housing needed to support employment growth is a matter of policy that should be agreed with neighbouring LPAs through the duty to cooperate. See Paragraph 2.4.5 for further details.

6.1.3 It follows therefore that changing commuting patterns should not be a factor for consideration in calculating housing need, even if there is an underlying trend. To do so in the absence of agreement with neighbouring LPAs would mean an element of housing need could remain unaccounted for in the calculation. This was considered in the High Courts, where the Judge concluded that¹⁶:

“For an authority to decide not to accommodate additional workers drawn to its area by increased employment opportunities is clearly a policy on decision which affects adjacent authorities who would be expected to house those additional commuting workers, unless there was evidence (accepted by the inspector or other planning decision-maker) that in fact the increase in employment in the borough would not increase the overall accommodation needs. In the absence of such evidence, or a development plan or any form of agreement between the authorities to the effect that adjacent authorities agree to increase their housing accommodation accordingly, the decision-maker is entitled to allow for provision to house those additional workers. To decide not to do so on the basis that they will be accommodated in adjacent authorities is a policy on decision.”

6.1.4 A further complication is the balance of housing and employment when a LPA seeks to promote higher economic growth. This again would be a policy decision and technically therefore falls

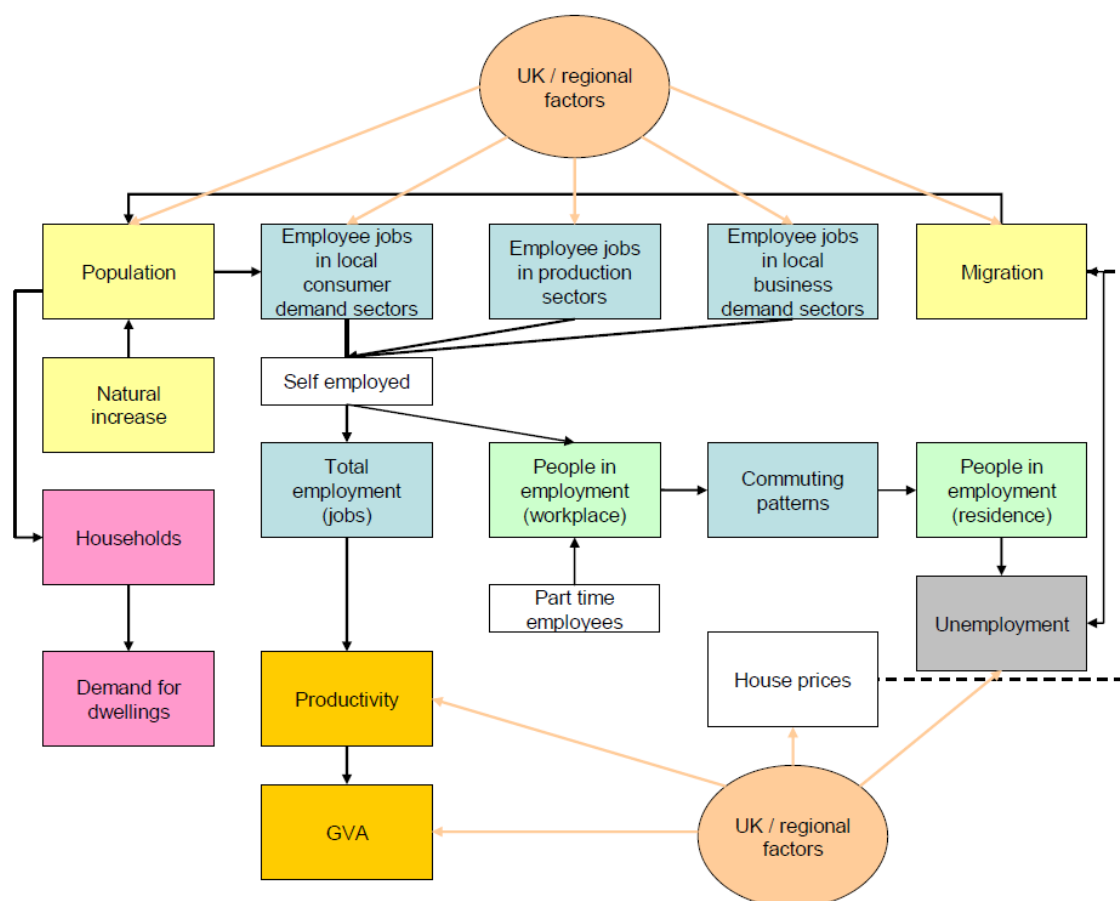
¹⁶ Oadby & Wigston BC v SoSCLG & Bloor Homes [2015] EWHC 1879 (Admin).

outside the remit of a calculation of housing need. However, for the local plan to be found sound, this balance would need to be considered either through a commensurate uplift in housing or explicit agreement of neighbouring LPAs to accommodate the additional housing. It is therefore prudent for the calculation of housing need to include some sensitivity testing to understand the implications for housing and inform the duty to cooperate.

6.2 Economic Background

- 6.2.1 Economic needs are considered using the East of England Forecasting Model (EEFM) produced by Cambridge Econometrics using a model created by Oxford Economics. The main relationships between variables in the EEFM Model are set out in **Figure 6.1**. What is notable in the model is that the demographic factors (in yellow) are largely independent of the economic variables. The population for each year in the projection period is derived from trends seen in mid-year population estimates with migration then influenced by house prices, which inevitably constrain migration in areas of high demand.
- 6.2.2 The population then influences the number of employee jobs in local consumer demand sectors, which are likely to account a very high proportion of all jobs. Therefore, the total number of jobs is influenced by constraints on migration as a result of house prices. Consequently, in areas of high demand, the number of jobs is likely to be suppressed.

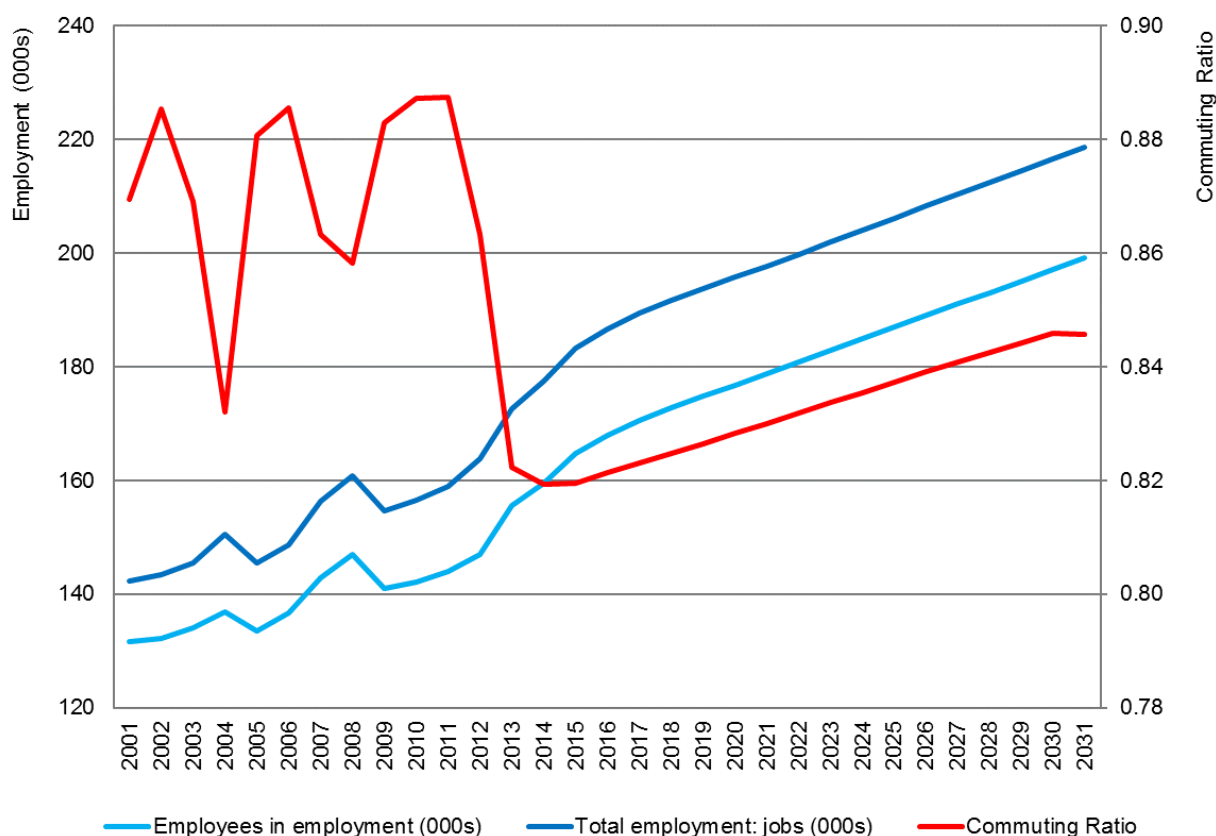
Figure 6.1: Main Relationships between Variables in the EEFM Model



Source: Oxford Economics. January 2015. East of England Forecasting Model Technical Report: Model Description and Data Sources.

- 6.2.3 It is also worth noting that the commuting ratio is calculated by comparing the number of people in employment in the area with the resident population of that area in employment. This means that in areas where employment is dominated by production and local business sectors, which are not constrained by population, the commuting ratio will likely decrease as there is no function in the model for the housing market to respond to the increased need for housing resulting from economic growth. As a result, the EEFM has the risk of perpetuating current housing market issues by either constraining migration or increasing commuting.
- 6.2.4 Clearly the decision to modify migration rates or commuting ratios are policy decisions, as explained above and in paragraph 2.4.5. Therefore, the EEFM results should always be used with care. Despite this, the data on which the model is based is comprehensive and can be used as a good starting point to understand historic economic trends.
- 6.2.5 **Figure 6.2** shows the 2016EEFM results for total jobs, employees in employment and the commuting ratio. The most notable issue is the impact that the model has on the commuting ratio, which in no way reflects the historical trends, particularly those seen between 2001 and 2011. The trend is clearly volatile with the average commuting ratio over this period at 0.873, increasing to 0.855 between 2006 and 2016. For the assessment period to gradually increase to 0.846 by 2031 is clearly unreasonable.

Figure 6.2: Employment and Commuting Trends in Milton Keynes



Cambridge Econometrics. August 2016. East of England Forecasting Model: 2016 Baseline Results.

- 6.2.6 **Figure 6.2** also shows that the difference between total jobs and employees in employment, as a result of double jobbing, has declined from 0.87 in 2001 to 0.91 in 2016 (where 1.00 would be parity between the two). The model assumes that this will continue to decline, reaching 0.90 by 2031. This does seem reasonable with the dominance of business sectors in Milton Keynes.

6.3 Economic Projections

- 6.3.1 The first part of the process is to determine the level of job growth that could be supported by the Demographic-Led Projection. This was calculated using the assumptions set out below. It found that this projection would support growth of 15,050 jobs, which equates to 1,050 jobs per annum.
- 6.3.2 **Table 6.1** sets out the scenarios considered in this assessment. The first is intended to reflect the 2016EEFM anticipated job growth. This is the level of economic growth that appears to be intended in the draft Plan:MK, although paragraph 4.31 appears to refer to the number of employees in employment rather than the total number of jobs required to sustain this level of growth. To consider the validity of this level of economic growth, three other scenarios are also assessed that reflect the historical trends set out in the 2016EEFM. All scenarios are clearly suggesting far higher levels of job growth than would be supported by the Demographic-Led Projection.

Table 6.1: Economic Scenarios

SCENARIO	JOBS 2016-2031			
	2016	2031	GROWTH	PER ANNUM
1. 2016EEFM	186,609	218,541	31,932	2,129
2. 5-Yr Average (2011-2016)		269,706	83,097	5,540
3. 10-Yr Average (2006-2016)		243,564	56,955	3,797
4. 15-Yr Average (2001-2016)		230,919	44,310	2,954

- 6.3.3 For each scenario tested the following parameters are applied:

Economic Activity

- 6.3.4 Unfortunately, the 2016EEFM does not include details of the economic rates applied. In any event, the EEFM model only makes provision for those aged 16-64 while those aged 65+ are expected to provide much of the increase in economic activity in future years as a result of the increase state pension age, cost of living and overall health of the older population enabling to continue earning for longer.
- 6.3.5 Instead, current economic activity rates are derived from the 2011 Census and the Annual Population Survey (APS), and are assumed to follow the same trajectory as shown in the national projections prepared by the Office for Budget Responsibility (OBR)¹⁷. Largely the same approach has been adopted by ORS in the SHMA. For transparency, these economic activity rates are set out in **Appendix 1**.

Unemployment Rates

- 6.3.6 The unemployment rates set out in the 2016EEFM seem entirely reasonable and are therefore applied to each scenario. These are set out in **Appendix 1**.

¹⁷ OBR. June 2015. Fiscal Sustainability Report: Supplementary Tables: Labour Market Participation Rates.

Commuting

- 6.3.7 As discussed above, the commuting assumptions in the 2016EEFM clearly perpetuate short term issues and do not reflect the rate of commuting seen historically. Instead therefore the ratio of 0.855 is used, the average ratio seen between 2006 and 2016.

Double Jobbing

- 6.3.8 As discussed above, the rates of double-jobbing in the 2016EEFM are entirely reasonable and are therefore applied to each scenario. These are set out in **Appendix 1**.

Possible Criticisms of this Approach

- 6.3.9 A note has recently been published on the Cambridgeshire Insights website, which hosts the EEFM, explaining how the EEFM should be used to estimate the number of dwellings required to support economic growth. This makes clear that users should not make alternative estimates of population to fill EEFM jobs, based on economic activity rates from another source¹⁸. However, this appears inconsistent with a recent case where the Judge concluded¹⁹:

“It is clear in my judgment that as the interested party observed, the methodological inconsistency simply did not arise on Mr Donagh’s approach since he took the 887 additional jobs per annum on the basis of it being a conservative figure justified from a number of sources, including in particular evidence of past trends and historic employment growth, both of which were empirical rather than theoretical. On the basis of his evidence neither he, nor the Inspector in accepting his evidence, was bound to endorse, adopt and redeploy any underlying assumptions in the EEFM modelling work. He was entitled to take the 887 additional jobs per annum figure as a conservative starting point and then roll the analysis forward taking, in accordance with the advice and guidance available, what he considered to be a realistic future EAR assumption” (emphasis added).

- 6.3.10 This is exactly the approach undertaken in this assessment; scenarios have been identified that best reflect the evidence, and have been subject to assumptions that have been considered to be the most appropriate.

6.4 Results of the Economic-Led Projections

- 6.4.1 **Figure 6.3** and **Tables 6.2 to 6.5** set out the results of the Economic-Led Projections. These show some significant variations in the level of dwellings that might be needed. In summary:
- Scenario 1 assumes the level of jobs growth set out in the 2016EEFM but is corrected to reflect a more appropriate commuting ratio.
 - Scenario 2 assumes the level of jobs growth seen in the last five years, i.e. the period following the recession. This level of growth is highly unlikely to be sustainable in the long term but is useful as it explains the response in the commuting ratio as shown in **Figure 6.3**.
 - Scenario 3 assumes the level of jobs growth seen in the last 10 years and therefore provides a cross-section of the height of the economy, the recession, and subsequent rebound. This

¹⁸ NMSS. April 2017. Using the East of England Forecasting Model (EEFM) to Estimate the Number of Homes Needed to Support Economic Growth.

¹⁹ Chelmsford CC v SoSCLG & Gladman Developments [2016] EWHC 3329 (QB).

however is unlikely to be a complete cross-section of the economic cycle and probably does not reflect a sustainable level of growth for the future.

- Scenario 4 assumes the level of jobs growth seen in the last 15 years and probably best reflects the last full economic cycle. However, over much of this period double jobbing was more prevalent and the national economy was far stronger than it currently is or expected to be in the near future. While this level of job growth might be aspirational, it is unlikely to be realistic in the current economic climate.

Figure 6.3: Results of the Economic-Led Projections (Dwellings)

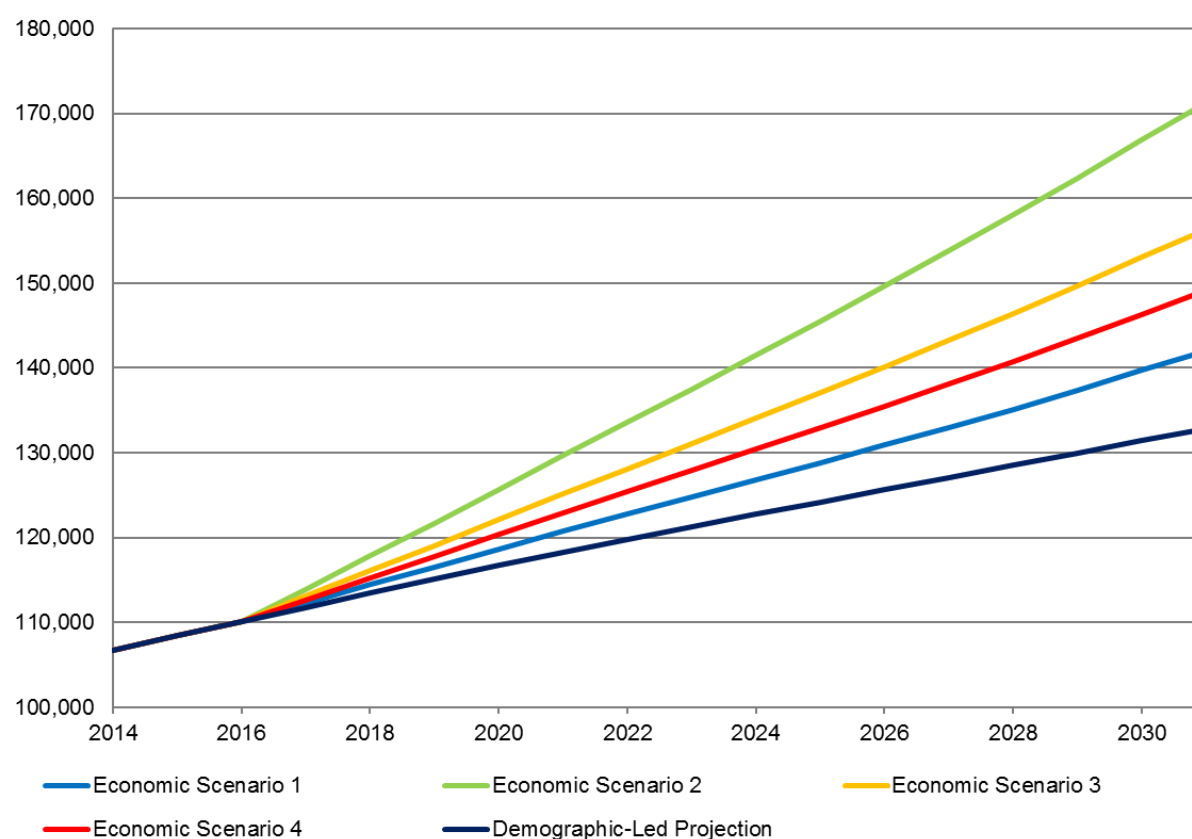


Table 6.2: The Economic-Led Projection Scenario 1: 2016EEFM

YEAR	POPULATION	HOUSEHOLDS	DWELLINGS
2016	266,360	106,508	110,130
2031	334,630	137,293	141,961
Total (2016-2031)	68,270	30,784	31,831
Annual Average (2016-2031)	4,551	2,052	2,122

Table 6.3: The Economic-Led Projection Scenario 2: 5-Year Average

YEAR	POPULATION	HOUSEHOLDS	DWELLINGS
2016	266,360	106,508	110,130
2031	412,590	165,666	171,299
Total (2016-2031)	146,230	59,158	61,169
Annual Average (2016-2031)	9,749	3,944	4,078

Table 6.4: The Economic-Led Projection Scenario 3: 10-Year Average

YEAR	POPULATION	HOUSEHOLDS	DWELLINGS
2016	266,360	106,508	110,130
2031	372,790	151,214	156,355
Total (2016-2031)	106,430	44,705	46,225
Annual Average (2016-2031)	7,095	2,980	3,082

Table 6.5: The Economic-Led Projection Scenario 4: 15-Year Average

YEAR	POPULATION	HOUSEHOLDS	DWELLINGS
2016	266,360	106,508	110,130
2031	353,520	144,191	149,093
Total (2016-2031)	87,160	37,682	38,964
Annual Average (2016-2031)	5,811	2,512	2,598

- 6.4.2 As a result of this analysis, Scenario 1 is the most reasonable prospect given the current economic circumstances.
- 6.4.3 It is noted that the SHMA appears to follow a similar methodology but generates significantly different results. Part of this is likely to be due to the selection of a much lower commuting ratio from 2016 onwards; the document does not actually state what ratio is used but refers to a 'current' ratio, which if taken from the 2016EEFM, could well have been 0.82. The remainder of the difference is likely to be the ratio of resident workers per household. The Bidwells model suggests that this was 1.3 workers per household in 2014, declining to 1.2 workers per household in 2031 as a result of the ageing population. The SHMA however appears to apply a flat rate of 1.4 workers per household, which appears exceptionally high.

7.0 Housing Market Signals & Affordable Housing Need

7.1 Introduction

7.1.1 Whilst projecting population, employment and household trends is a useful starting point to understanding FOAN, it is inherently flawed in that it will replicate any historical constraints on the housing market or economy. To understand the degree to which this has occurred it is useful to consider a range of housing market signals. The PPG suggests the following signals may be relevant but does not prevent the use of other signals where appropriate (Paragraph 2a-019):

- Land prices;
- House prices;
- Rents;
- Affordability;
- Rate of development; and
- Overcrowding.

7.1.2 The PPG suggests that prices or rents rising faster than the national or local average may well indicate particular market undersupply relative to demand.

7.1.3 The PPG states that appropriate comparisons of indicators should be made (Paragraph 2a-020). This includes comparison with longer term trends (both in absolute levels and rates of change) in the:

- Housing market area;
- Similar demographic and economic areas; and
- Nationally.

7.1.4 A worsening trend in any of these indicators will require upward adjustment to planned housing numbers compared to ones based solely on household projections.

7.1.5 In areas where an upward adjustment is required, this should be set at a level that is reasonable. The more significant the affordability constraints (as reflected in rising prices and rents, and worsening affordability ratio) and the stronger other indicators of high demand (e.g. the differential between land prices), the larger the improvement in affordability needed and, therefore, the larger the additional supply response should be.

7.1.6 Market signals are affected by a number of economic factors, and an attempt should not be made to estimate the precise impact of an increase in housing supply. Rather the adjustment should increase planned supply by an amount that, on reasonable assumptions and consistent with principles of sustainable development, could be expected to improve affordability.

7.1.7 For the purposes of this exercise, the HMA is assumed to be those nearby local authorities with the strongest linkages to Milton Keynes, as set out in Chapter 3.

7.2 Land Prices

- 7.2.1 The PPG suggests that variations in land prices could be indicative of the relative demand for land. There is a considerable number of factors that are considered in determining the market or sale value of a parcel of land which makes much of the data available difficult to use in comparisons. However, a recent document by the DCLG helps to do this²⁰. In calculating the typical residential land value for a local authority area, the DCLG states:

"The valuations have been undertaken using a truncated residual valuation model. This involves valuing the proposed development and deducting the development costs, including allowances for base build cost, developer's profit, marketing costs, fees, and finance to leave a "residual" for the site value.

The purpose of these values is to use in appraising land projects from a social perspective, in line with Green Book principles. The values here assume nil Affordable Housing provision, because the additional benefits to society of policy compliance are assumed to offset the associated reduction in market value. This means that they should not be seen as estimates of market values."

- 7.2.2 **Table 7.1** shows the residential land value for each LPA in the local housing market area and the difference from the area average. This shows that land values in Milton Keynes are above average, although that average has been significantly influenced by the considerably higher prices across Aylesbury Vale. Since Aylesbury Vale is a predominantly rural district, this is unsurprising. Growth in land values in Milton Keynes has not been as great as elsewhere in the HMA.

Table 7.1: Post Permission Residential Land Value Estimates as of January 2014 & March 2015

	JANUARY 2014		MARCH 2015		
	LAND VALUE PER HECTARE	% DIFFERENCE FROM HMA AVERAGE	LAND VALUE PER HECTARE	% DIFFERENCE FROM AREA AVERAGE	% CHANGE 2014- 2015
Aylesbury Vale	£3.635m	49.2	£3.865m	+52.3	+6.3
Bedford	£2.135m	-12.4	£2.255m	-11.1	+5.6
Central Bedfordshire	£2.415m	-0.9	£2.575m	+1.5	+6.6
Milton Keynes	£2.725m	11.9	£2,830m	+11.5	+3.9
Northampton	£1.635m	-32.9	£1.550m	-38.9	-5.2
South Northamptonshire	£2.070m	-15.0	£2,145m	-15.5	+3.6
HMA Average	£2.436m	-	£2.537m	-	4.1

Source: DCLG, March 2015

²⁰

DCLG. December 2015. Land Value Estimates for Policy Appraisal.

7.3 House Prices

- 7.3.1 Previous DCLG guidance²¹ provided a table considering possible comparative benchmarks for assessing growth in house prices, see **Table 7.2**.
- 7.3.2 With the regional tier of planning abolished the second benchmark is no longer relevant. Instead however it is appropriate to consider house price growth in the context of the HMA. Imbalances within the HMA are clearly likely to be indicative of ‘hotspots’ of housing need that need to be addressed.
- 7.3.3 **Figures 7.1 and 7.2** set out median and lower quartile house prices respectively. Both figures show that in Milton Keynes house prices are generally in line with the national average and fall in the mid-range for the HMA.

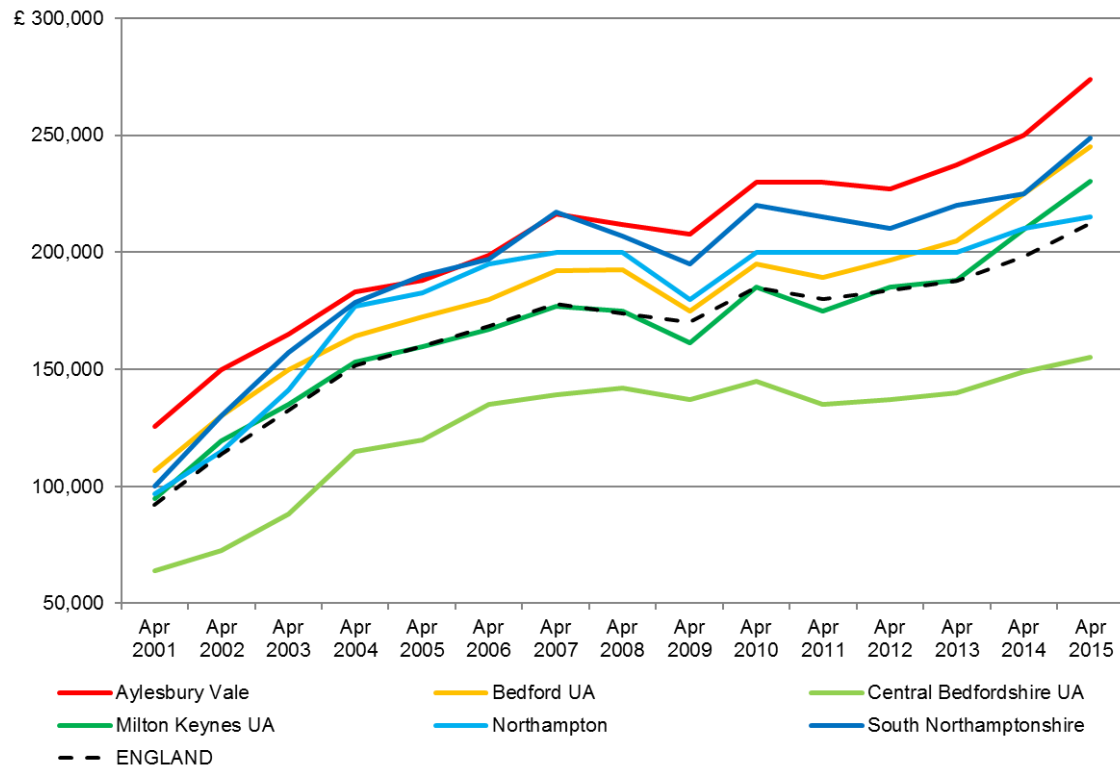
Table 7.2: Possible Comparative Benchmarks for Assessing Growth in House Prices

BENCHMARK	ANALYSIS	INTERPRETATION
1. Historic average	Has the annual growth in median house prices increased significantly above the historic average?	If “yes”, then there could be evidence of housing market imbalance
2. Regional average	Has the annual growth in median house prices increased significantly higher than the regional average?	If “yes”, then there could be evidence of housing market imbalance
3. Lower quartile house prices growth	How does annual growth in median house prices compare with the annual growth in lower quartile house prices?	Significantly high rises in lower quartile prices (compared to median house prices) could signal affordability issues

Source: DCLG. May 2007. Housing Market Information.

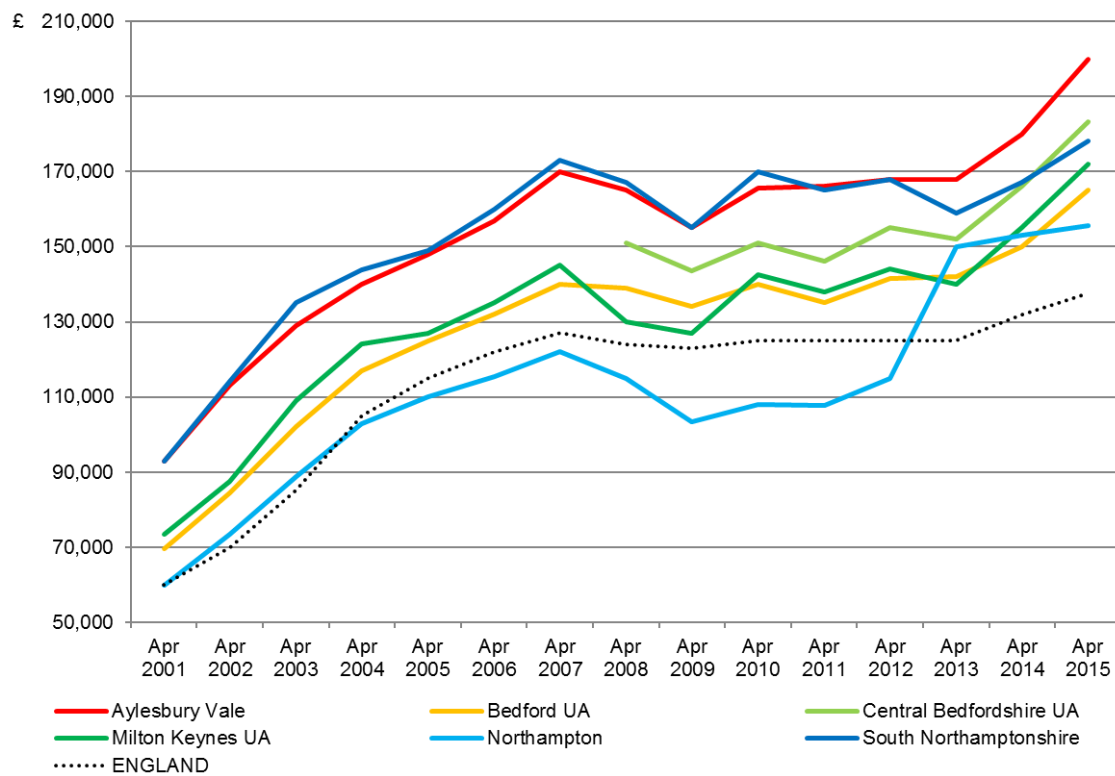
²¹ DCLG. May 2007. Housing Market Information.

Figure 7.1: Median House Prices



Source: ONS House Price Statistics

Figure 7.2: Lower Quartile House Prices



Source: ONS House Price Statistics

7.4 Affordability

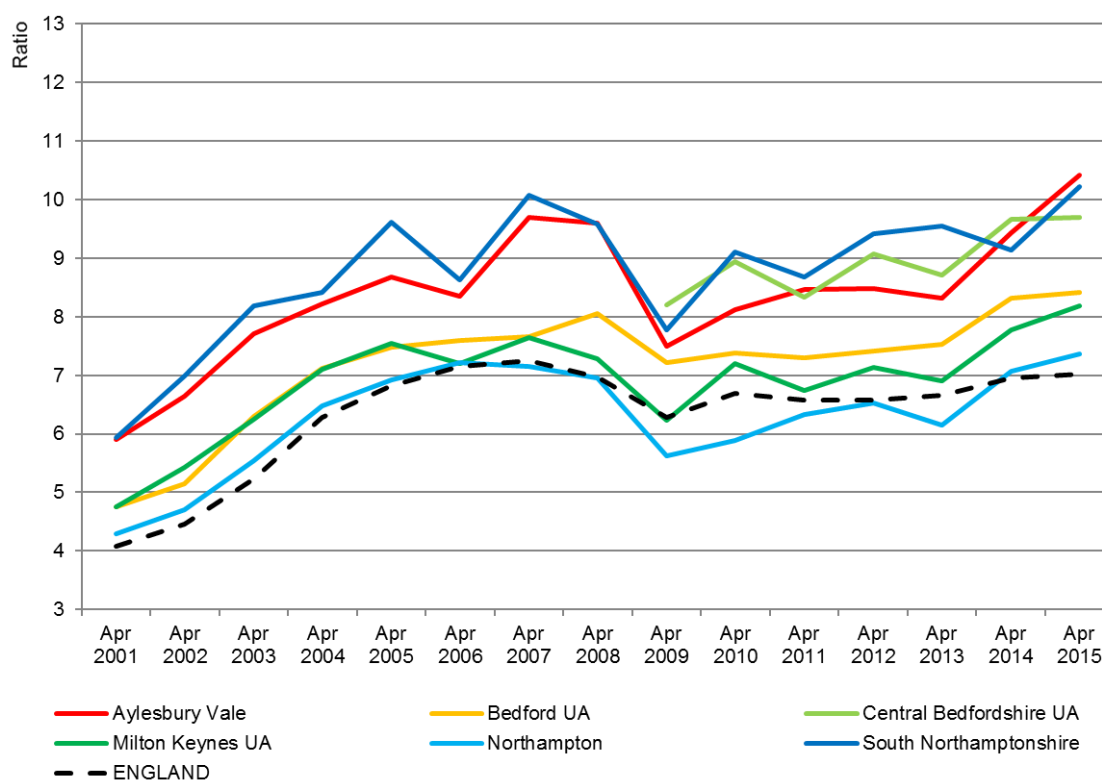
- 7.4.1 Previous DCLG guidance provided a table considering possible comparative benchmarks for assessing affordability, see **Table 7.3**. As before, the regional tier should be read as meaning the HMA.
- 7.4.2 **Figure 7.3** sets out the ratio of lower quartile house prices to lower quartile earnings. This suggests that the HMA is largely comparable with the national average with Milton Keynes again falling with the mid-range. **Figure 7.4** shows the ratio of median house prices to median earnings. This shows very little variability to the lower quartile ratios although it is notable that Milton Keynes is slightly below the national average.

Table 7.3: Possible Comparative Benchmarks for Assessing Affordability

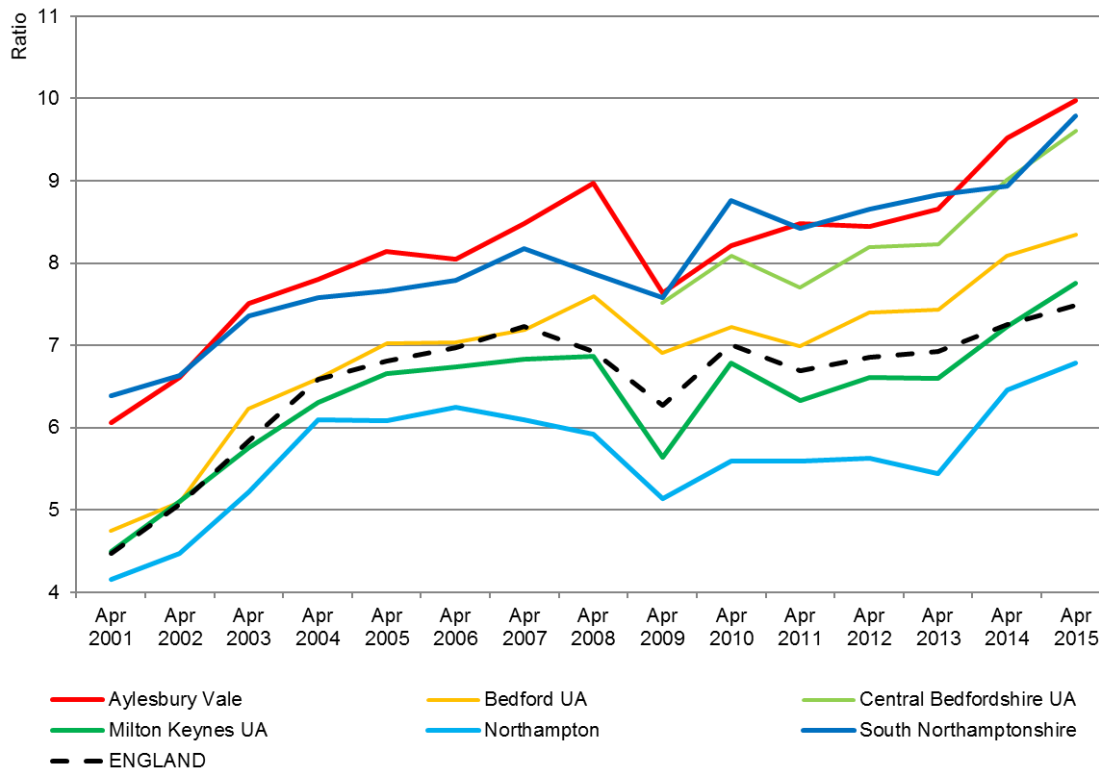
BENCHMARK	ANALYSIS	INTERPRETATION
1. Historic average	Has the affordability ratio worsened over time - is it significantly higher than the historic average?	If "yes", then this could suggest housing market imbalance (i.e. demand for housing is significantly higher than supply).
2. Regional average	Has the affordability ratio worsened over time, relative to regional averages?	If "yes", then this could suggest housing market Imbalance.
3. Ratio of median house prices to median earnings	How does the lower quartile affordability ratio compare with the median affordability ratio?	Comparatively high rises in the lower quartile affordability ratio compared to the median affordability ratio could signal affordability issues and problems for first-time buyers.

Source: DCLG. May 2007. Housing Market Information.

Figure 7.3: Ratio of Lower Quartile House Prices to Lower Quartile Earnings



Source: DCLG Live Table 576

Figure 7.4: Ratio of Median House Prices to Median Earnings

Source: DCLG Live Table 577

7.5 Overcrowding

- 7.5.1 As set out in Chapter 5, there is some indication of overcrowding amongst some households and there has been a substantial increase in the number of concealed families since 2001.

7.6 Affordable Housing Need

- 7.6.1 The SHMA identified a need for 8,200 dwellings; approximately 547 additional affordable dwellings per year. Assuming a requirement that 33% of new dwellings should be affordable housing, as set out in Policy HN2 of the draft Plan:MK, this would suggest an annual housing requirement of 1,658 dwellings. This is below the requirement suggested in the jobs-led forecasts.

7.7 Responding to Housing Market Signals and Affordable Housing Need

- 7.7.1 The evidence above suggests that Milton Keynes is not affected by significant market stresses when compared to the rest of the HMA or national averages. However, there is some worsening in terms of affordability, which is affecting the entire HMA. There is some concern regarding overcrowding; however, in isolation this measure could simply be indicative of choice rather than necessity.
- 7.7.2 The data on affordable housing suggests that there is a significant future requirement but that this could be accommodated within the jobs-led projection.
- 7.7.3 Overall, it is reasonable to apply a relatively small uplift to reflect housing market signals. This would hopefully correct the worsening affordability, and provide some headroom should jobs growth return to longer term trends.

7.7.4 Calculating an uplift is not an exact science and Planning Inspectors to date have generally acted using professional judgement based on the evidence before them rather than a defined formula. There are now four cases that are used to assist in determining the uplift to be applied:

- For the Eastleigh Local Plan the Inspector identified a worsening affordability as the principal issue. He suggested a cautious approach since Eastleigh was only one part of a large housing market area centred on Portsmouth. He then concluded that uplift of 10% would seem compatible with moderate pressure in the housing market.
- For the Uttlesford Local Plan the Inspector considered uplift in terms of housing market signals and affordable housing need combined. He also suggested 10% uplift overall since affordability appeared to be worsening, although house prices were increasing at a slower rate than much of the rest of the housing market area.
- For the Canterbury Local Plan the Inspector highlighted the stark difference in the housing market compared to the national average. In this case the Inspector recommended uplifting the FOAN by 30%. However, this did factor in jobs growth, affordable housing need as well as housing market signals.
- For Mid Sussex the Inspector considered the implications of the above three reports. In this case an uplift of 20% was proposed to take account of affordability issues, the high demand for affordable housing and, to a lesser extent, the need to address economic trends.

7.7.5 On balance an uplift of 10% from the Demographic-Led Projection (2,100 dwellings, 140dpa) is considered appropriate as the affordability issues affecting Milton Keynes are reasonably comparable to Eastleigh and Uttlesford. This is consistent with the SHMA.

7.7.6 In the SHMA however, the recommended uplift of 1,579 dwellings does not seem to have been considered with the final FOAN total being the sum of the demographic and economic needs. There is no explanation for this in the SHMA and seems to be in error.

7.8 Housing Delivery Backlog

7.8.1 The SHMA also includes a further additional 553 dwellings in the calculation to reflect the under delivery of housing in 2015/16; the year preceding the start of the local plan period. This is a somewhat bizarre analysis as the use of the latest data should effectively re-set the model such that backlog in the supply is already accommodated. However, in this instance, it is agreed that the projection data would have started from the date of the most recent MYPE, 2015, i.e. a year before the start of the local plan period.

7.8.2 The SHMA calculates that this backlog should be the difference between the level of housing need suggested in the projections used for that year, some 553 dwellings. The Economic-Led Projections in this assessment conclude that 1,683 dwellings should have been completed in 2015/16 to meet the needs of the time. This does not include a correction for housing market signals, which it possibly should but is probably within the realms of error. Comparing this to the actual number of dwellings completed, 1,248, suggests a backlog of 435 dwellings.

7.8.3 Similar to the housing market signals, the backlog does not seem to have been considered with the final FOAN total being the sum of the demographic and economic needs. There is no explanation for this in the SHMA and seems to be in error.

8.0 Conclusions

8.1 Summary

- 8.1.1 Overall it is calculated that the FOAN for Milton Keynes is 34,370 additional dwellings between 2016 and 2031 (equating to on average 2,291 dwellings per year). **Table 8.1** summarises the components of the FOAN.

Table 8.1: Summary of the Components of the FOAN

Component	Bidwells Foan		SHMA		SHMA (All Components)	
	Dwellings (Rounded to Nearest 10)	Dwellings per annum	Dwellings	Dwellings per annum	Dwellings	Dwellings per annum
Demographic	21,030	1,402	24,744	1,650	24,744	1,650
Economic Trends	10,800	720	1,739	116	1,739	116
Housing Market Signals	2,100	140			1,579	105
Affordable Housing						
Backlog 2015/16	440	29			553	37
TOTAL FOAN	34,370	2,291	26,493*	1,767	28,615	1,908

Note: * there appears to be an arithmetic error in the SHMA with the demographic component and single adjustment adding to 26,893 rather than the 26,493 referred to throughout the document.

- 8.1.2 As discussed previously and shown in **Table 8.1**, it does not appear that the SHMA's concluded FOAN of 26,493 dwellings includes the uplift required for housing market signals or backlog. If these were taken into account, it would suggest a FOAN of 28,615 dwellings. This would still be low due to the errors in calculating the economic uplift.

8.2 Conclusions

- 8.2.1 This is a far more robust position than relied upon in the draft Plan:MK as it is based on the latest interpretation of the NPPF as set out in the PPG and recent case law.
- 8.2.2 It is also notable that it is a comparable rate of delivery as set out in the SEP for Milton Keynes of 2,068 dwellings per annum between 2006 and 2026. The main difference is that the SEP required a further 10,990 in the wider Growth Area, which would have added a further 550 dwellings per annum. This additional housing may still be needed to meet the FOAN of neighbouring authorities but is not required to meet Milton Keynes' needs.

APPENDIX 1

ECONOMIC ASSUMPTIONS

Economic Activity Rates

		MALE					FEMALE				
		16-24	25-34	35-49	50-64	65+	16-24	25-34	35-49	50-64	65+
APS	2014	0.672	0.936	0.938	0.798	0.120	0.566	0.768	0.853	0.681	0.040
	2015	0.626	0.966	0.948	0.847	0.105	0.686	0.744	0.846	0.654	0.06
	2016	0.512	0.947	0.965	0.794	0.096	0.501	0.759	0.803	0.639	0.058
Derived from OBR	2017	0.512	0.942	0.964	0.795	0.098	0.501	0.755	0.802	0.640	0.059
	2018	0.512	0.938	0.962	0.797	0.099	0.501	0.752	0.800	0.641	0.060
	2019	0.511	0.933	0.961	0.799	0.100	0.500	0.748	0.800	0.643	0.061
	2020	0.507	0.930	0.961	0.799	0.101	0.496	0.745	0.799	0.643	0.061
	2021	0.506	0.926	0.960	0.800	0.102	0.496	0.742	0.799	0.644	0.062
	2022	0.506	0.925	0.958	0.801	0.104	0.495	0.741	0.797	0.645	0.063
	2023	0.506	0.923	0.957	0.802	0.105	0.495	0.740	0.796	0.646	0.063
	2024	0.505	0.922	0.955	0.801	0.107	0.494	0.739	0.795	0.645	0.064
	2025	0.506	0.922	0.953	0.801	0.109	0.495	0.739	0.793	0.645	0.066
	2026	0.506	0.922	0.951	0.801	0.112	0.495	0.739	0.791	0.645	0.068
	2027	0.506	0.923	0.947	0.803	0.115	0.495	0.740	0.788	0.646	0.069
	2028	0.505	0.925	0.943	0.804	0.117	0.494	0.741	0.784	0.647	0.071
	2029	0.506	0.926	0.940	0.804	0.119	0.495	0.742	0.782	0.647	0.072
	2030	0.507	0.926	0.937	0.805	0.120	0.496	0.742	0.780	0.648	0.073
	2031	0.507	0.926	0.935	0.805	0.121	0.496	0.742	0.778	0.648	0.073

Unemployment Rates

	%
2014	2.13
2015	1.48
2016	1.52
2017	1.52
2018	1.55
2019	1.56
2020	1.62
2021	1.67
2022	1.69
2023	1.73
2024	1.75
2025	1.79
2026	1.85
2027	1.89
2028	1.92
2029	1.99
2030	2.09
2031	2.08

Double Jobbing per Scenario

	TOTAL EMPLOYMENT JOBS				Double Jobbing	EMPLOYEES IN EMPLOYMENT			
	1	2	3	4		1	2	3	4
2014	177,411	177,411	177,411	177,411	0.910	161,502	161,502	161,502	161,502
2015	183,248	183,248	183,248	183,248	0.911	166,902	166,902	166,902	166,902
2016	186,609	186,609	186,609	186,609	0.910	169,851	169,851	169,851	169,851
2017	188,738	192,149	190,406	189,563	0.910	171,691	174,794	173,209	172,442
2018	190,867	197,689	194,203	192,517	0.909	173,533	179,736	176,567	175,034
2019	192,995	203,228	198,000	195,471	0.909	175,374	184,673	179,922	177,624
2020	195,124	208,768	201,797	198,425	0.908	177,212	189,603	183,272	180,210
2021	197,253	214,308	205,594	201,379	0.908	179,046	194,527	186,617	182,791
2022	199,382	219,848	209,391	204,333	0.907	180,877	199,443	189,957	185,368
2023	201,511	225,388	213,188	207,287	0.907	182,706	204,355	193,293	187,943
2024	203,639	230,927	216,985	210,241	0.906	184,530	209,258	196,624	190,513
2025	205,768	236,467	220,782	213,195	0.906	186,353	214,156	199,951	193,079
2026	207,897	242,007	224,579	216,149	0.905	188,186	219,062	203,286	195,655
2027	210,026	247,547	228,376	219,103	0.905	190,016	223,962	206,618	198,229
2028	212,155	253,087	232,173	222,057	0.904	191,850	228,864	209,952	200,804
2029	214,283	258,626	235,970	225,011	0.904	193,685	233,766	213,287	203,381
2030	216,412	264,166	239,767	227,965	0.903	195,520	238,664	216,621	205,958
2031	218,541	269,706	243,564	230,919	0.903	197,368	243,575	219,966	208,546



OXFORD ECONOMICS

East of England Forecasting Model

**Technical Report:
Model description and data sources**

January 2015



OXFORD
ECONOMICS

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This report has been prepared solely for the East of England local authorities as a technical note for the East of England Forecasting Model. We do not accept or assume any liability or duty of care for any other purpose or to any other person to whom this document is shown or into whose hands it may come, save where expressly agreed by our prior consent in writing.

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1: Introduction

The East of England Forecasting Model (EEFM) was developed by Oxford Economics to project economic, demographic and housing trends in a consistent fashion and in a way that would help in the development of both the Regional Economic Strategy and the Regional Spatial Strategy for the East of England. The Model is based in Excel spreadsheets, allowing users to produce scenarios under which the impacts of a given scenario can be monitored.

This report provides technical information on the EEFM's coverage, methodology and data sources. The latest forecast results are presented separately, on the Cambridgeshire Insight website.

The Model's outputs are just one piece of evidence to assist in making strategic decisions. As in all models, forecasts are subject to margins of error which increase at more detailed geographical levels. In addition, the EEFM relies heavily on published data, with BRES / ABI employment data in particular containing multiple errors at local sector level, though the Model does attempt to correct for these.

The development of a model, though a largely quantitative exercise, also requires past modelling experience and a degree of local knowledge if it is to produce plausible long-term projections. The EEFM and wider suite of Oxford models have been developed by a team of senior staff (Graham Gudgin, Kerry Houston and Mark Britton) who have a long history in model-building and forecasting at both local and regional level. The team has built up considerable knowledge of the East of England's local economies, but the feedback of local partners is essential. Discussions with local stakeholders and the EEFM Model Steering Group, and a BRES consultation exercise with local authority representatives, are key inputs to each run of the Model.

History of the EEFM

A number of EEFM baseline forecasts have been published to date, or are programmed for the future. The timings are:

- August 2007 - First EEFM release
- February 2008 - Second EEFM release
- November 2008 - Third EEFM release
- March 2009 – 'Spring 2009 release'
- October 2009 – 'Autumn 2009 release'
- March 2010 – 'Spring 2010 release'
- October 2010 – 'Autumn 2010 release'
- Spring 2012 – 'EEFM 2012 release'
- Summer 2013 – 'EEFM 2013 release'
- Autumn 2014 – 'EEFM 2014 release'

In addition, a number of alternative scenarios were generated using the Model to inform the development of the RES and RSS. The EEFM Model Steering Group has oversight of the scenario process. An advantage of the Model is that it is sufficiently flexible to generate a variety of scenarios. With each model update, these scenarios are produced by Oxford Economics. However, representatives at Cambridgeshire County Council have been trained to use the model to generate bespoke scenarios using the model which is delivered with each update.

Key outputs associated with the development of the EEFM and its forecasts so far include:

- East of England: Joint Modelling for the RES and RSS – August 2007
- East of England: Joint Modelling for the RES and RSS (update) – November 2008
- East of England Forecasting Model, Spring 2009 forecasts – May 2009
- East of England Forecasting Model, Autumn 2009 forecasts – November 2009
- East of England Forecasting Model, Spring 2010 forecasts – June 2010
- East of England Forecasting Model Technical Report (Spring 2010 update) – June 2010
- East of England Forecasting Model, Autumn 2010 forecasts – November 2010
- East of England Forecasting Model Technical Report (Autumn 2010 update) – December 2010
- East of England Forecasting Model, EEFM 2012 forecasts – June 2012
- East of England Forecasting Model Technical Report – June 2012
- East of England Forecasting Model, EEFM 2013 forecasts – July 2013
- East of England Forecasting Model Technical Report – August 2013
- East of England Forecasting Model, EEFM 2014 forecasts – November 2014
- East of England Forecasting Model Technical Report – January 2015

The outputs released are available on the Cambridgeshire Insight website. A number of other related resources can also be accessed on the site (see below).

Report structure

The purpose of this document is to provide a description of the Model's methodology and the data sources used, and act as a companion reference guide to the published results. It will be updated as the Model itself is developed, improved and updated. The report is structured as follows:

- **Chapter 2: Description of the Model** – This chapter summarises the EEFM coverage with respect to geography, time periods and linkages with other models produced by Oxford Economics.
- **Chapter 3: Model Overview** – This chapter summarises the structure of the EEFM, and the linkages and relationships between variables.
- **Chapter 4: Data Used** – This chapter lists the variables in the Model, and indicates the latest data used. It also explains any processing of the data carried out prior to its use in the EEFM.
- **Chapter 5: Outliers and Data Validity** – This chapter summarises Oxford Economics' approach to anomalous data (so-called "outliers") and the methods used to check that the EEFM is internally consistent.
- **Chapter 6: Performance Monitoring** – This chapter explores the accuracy of the Model over previous forecasting cycles. It will be updated with each run of the Model in order to monitor its performance.
- **Chapter 7: Employment Land Module** – This chapter outlines our methodology for calculating employment land use forecasts under the 2014 update of the East of England Forecasting Model (EEFM).

This report does not provide EEFM forecast results. These can be found on the Cambridgeshire Insight website www.cambridgeshireinsight.org.uk/EEFM. The detailed forecasts are available in Excel spreadsheets, accompanied by an Oxford Economics PowerPoint report which is also available from the Cambridgeshire Insight website.

2: Description of the Model

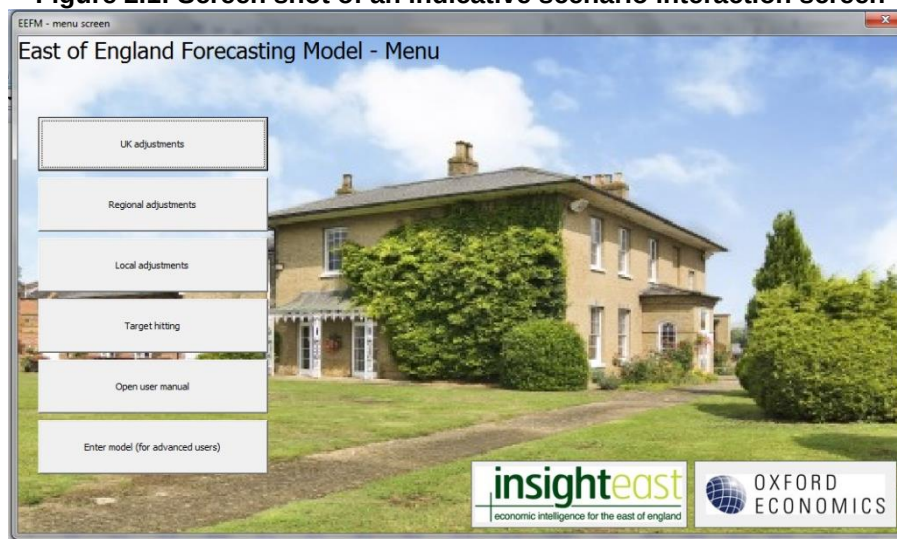
This chapter provides an overview of the East of England Forecasting Model (EEFM) and summarises its coverage and links to other Oxford Economics models. It also contains a list of the variables and geographies used. The forecasting methods and data sources are described in subsequent chapters.

Structure of the EEFM

The East of England Forecasting Model (previously the EEDA-EERA Forecasting Model) is a spreadsheet-based model originally designed to help inform and monitor the development and review of the RES and RSS. It covers a wide range of variables, and is designed to be flexible so that alternative scenarios can be run and the impacts of different assumptions can be measured.

In addition to the Excel spreadsheet version, Oxford Economics has designed a 'front-end' version of the Model (see figure 2.1 below) providing an easy way for users to input scenario assumptions for testing. The Model software processes these scenario assumptions and produces outputs in Excel. Unfortunately, this facility is not available through the Cambridgeshire Insight website, and anyone wanting to test their own scenarios should discuss with Cambridgeshire County Council first.

Figure 2.1: Screen shot of an indicative scenario interaction screen



Key features of the Model are:

- A full database including over 150 separate variables for each of the East of England's 48 pre-April 2009 local authorities, as well as for historic counties, strategic authorities, selected other local authority groupings, the East as a whole, 8 local authorities in the East Midlands and the region as a whole, 21 local authorities in the South East and the region itself, and the UK;
- EEFM software allowing users to produce scenarios tailored to their needs (not available over the web);
- A comprehensive set of tables, charts and PowerPoint slides allowing users to select and assemble data on the variables, localities, scenarios and results they want; and

- A spreadsheet system containing:
 - Linked worksheets, to facilitate faster updating;
 - Worksheets structured to generate forecasts and scenarios;
 - Worksheets designed to produce tables, charts and PowerPoint presentations.

The overall Model structure captures the interdependence of the economy, demographic change and housing at a local level, as well as reflecting the impact of broader economic trends on the East of England. The employment forecasts take account of the supply and demand for labour, the demographic forecasts reflect labour market trends as they are reflected in migration (and natural change indirectly), and the housing forecasts take account of both economic and demographic factors. This structure allows scenarios which test the impact of variables upon each other – for example, the impact of housing supply on economic variables.

Geography

The Model produces forecasts for each local authority district and unitary authority in the East of England, and selected local authorities in the East Midlands and South East region to allow for LEP aggregation. For the EEFM 2014 forecasts, that equates to 77 local authorities, including the former Mid Bedfordshire and South Bedfordshire districts which have been retained at the request of regional partners - the new Central Bedfordshire unitary authority is one of the strategic groupings for which forecasts are also provided.

Forecasts are also available for selected groupings of local authority districts and unitaries. These were decided in consultation with regional partners through the EEFM Model Steering Group, and also include the new Local Enterprise Partnerships (LEPs). For a full list of the groupings available, refer to the EEFM section of the Cambridgeshire Insight website.

In addition to these geographies, forecasts for the East of England, East Midlands and South East regions, and for the UK, are available.

Time periods

The EEFM is constructed on an annual basis. Historic data for most variables has been collected over 20 years to provide a basis for estimating the relationships between variables and for forecasting future trends. Forecasts are currently made up to 2031, reflecting the available global, national and regional forecasts. But the longer-term forecasts should be treated with some caution, as unforeseen - but inevitable - future change in the underlying drivers will affect forecast accuracy. Medium-term forecasts are actually more likely to be better approximations than shorter-term ones, as we can usually be more confident about medium-term trends than about short-term random fluctuations around the trend.

Things to Remember When Using the Model

EEFM forecasts are based on observed past trends only

Past trends reflect past infrastructure and policy environments. Even where major new investments or policy changes are known and have actually started, they can only affect EEFM forecasts to the extent that they are reflected in the currently available data. If they have not yet impacted on the available data, they will not be reflected in the forecasts.

There are two sets of exceptional circumstances in which the currently available data need to be supplemented by other information. The first is where there are concerns about data quality. This issue is explored in Chapter 5. The second is where the Model produces unrealistic forecasts - for example, continuing an employment decline in a particular sector in a particular area until it reaches zero or even negative values. Manual adjustments to the Model are necessary in these situations, and here professional judgement inevitably comes into play. This is discussed further below.

The forecasts are unconstrained

This means that the forecast numbers do not take into account any policy or other constraints that might prevent their actual realisation on the ground. Forecasts of the demand for dwellings, for example, are the outcome of projected changes in employment, population, etc. If in reality planning constraints were to prevent this demand being satisfied, the associated forecast levels of economic, labour market and demographic variables would be less likely to materialise.

The forecasts are subject to margins of error

As with all kinds of forecasting, there are margins of error associated with the results which tend to widen over time. Furthermore, the quality and reliability of data decreases at more detailed levels of geography. Under current data-quality conditions, models are most helpful for identifying trends, average growth rates and broad differentials between areas and sectors. Accordingly, users are encouraged to focus on the patterns over time, not figures for individual years.

Reality is more complex than any model

Several of the modelled relationships are complicated and their treatment in the EEFM is necessarily simplified, despite its large size. In particular, the demand for housing is complex and not all the factors may be fully captured. Questions such as whether migrants' apparent willingness to live at higher densities than the existing population is merely a temporary state which requires much more investigation.

Forecasting models will not all agree

The EEFM's baseline forecasts can be compared with other published forecasts, but close agreement should not be expected and sometimes there can be wide divergences. These can arise from even small differences in underlying assumptions and in the timing and definitions of the data used. But with an awareness of these factors, the EEFM forecasts provide a useful starting point for an understanding of regional and local economic trends in the East of England, particularly when the baseline is accompanied by alternative scenario forecasts with which it can be compared.

Coverage

Later chapters provide more detailed information on the data used in the EEFM and how the linkages in the Model are used for the forecasting and scenario work. But the list below gives an overview of the variables covered by the Model:

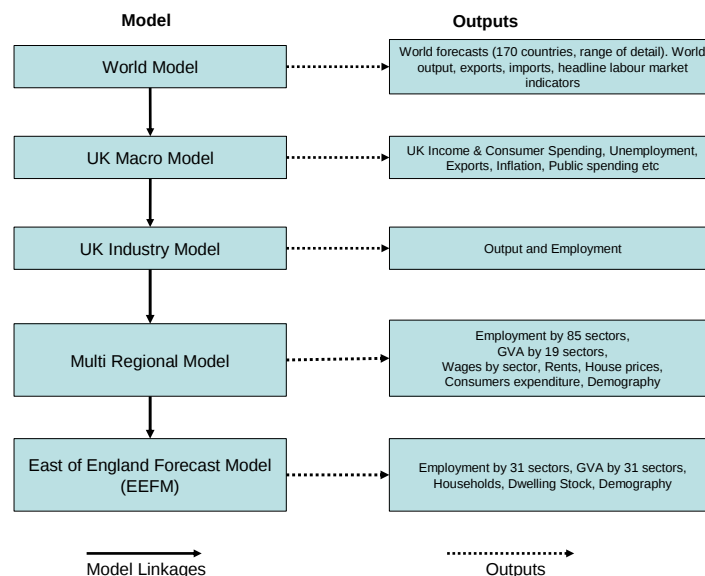
- **Demography**
 - Population
 - Total
 - Working age (this was changed in EEFM 2013 to be defined as all people aged 16-64, as working age population defined as all people aged 16-retirement age - the previous definition of working age in the EEFM - is no longer published by the ONS)
 - Young (defined as all persons aged 0-15)
 - Elderly (all people aged 65+)
 - Migration (Note: domestic and international migration are not differentiated in the EEFM at either the regional or the local level. However, the regional migration forecasts are scaled to those from Oxford Economics' Regional Model, which does identify international migration.)
 - Natural increase
- **Labour market**
 - Employee jobs by 31 sectors (workplace-based, SIC 2007 based)
 - Agriculture & fishing (**SIC 01-03**)
 - Mining & quarrying (**SIC 05-09**)
 - Food manufacturing (**SIC 10-12**)
 - General manufacturing (**SIC 13-18, 31-33**)
 - Chemicals excl. pharmaceuticals (**SIC 19-23, excluding 21**)
 - Pharmaceuticals (**SIC 21**)
 - Metals manufacturing (**SIC 24-25**)
 - Transport equipment, machinery & equipment, etc. (**SIC 28-30**)
 - Electronics (**SIC 26-27**)
 - Utilities (**SIC 35-37**)
 - Waste & remediation (**SIC 38-39**)
 - Construction (**SIC 41-43**)
 - Wholesale (**SIC 45-46**)
 - Retail (**SIC 47**)
 - Land transport (**SIC 49, 52-53**)
 - Water & air transport (**SIC 50-51**)
 - Hotels & restaurants (**SIC 55-56**)
 - Publishing & broadcasting (**SIC 58-60**)
 - Telecoms (**SIC 61**)
 - Computer related activities (**SIC 62-63**)
 - Finance (**SIC 64-66**)
 - Real estate (**SIC 68**)
 - Professional services excl. R&D activities (**SIC 69-75 excluding 72**)
 - Research & development (**SIC 72**)
 - Business services excl. employment activities (**SIC 77-82 excluding 78**)
 - Employment activities (**SIC 78**)
 - Public administration (**SIC 84**)
 - Education (**SIC 85**)
 - Health & care (**SIC 86-88**)

- Arts & entertainment (**SIC 90-93**)
 - Other services (**SIC 94-99**)
 - Employee jobs – full time and part time by 31 sectors (workplace-based)
 - Self-employed jobs by the 31 sectors (workplace-based)
 - Total employment (employee jobs plus self-employed jobs) by the 31 sectors (workplace-based)
 - Total number of people employed in an area (consistent with 2001 and 2011 Census points)
 - Total number of an area's residents who are employed (consistent with 2001 and 2011 Census points)
 - Employment rate of an area's residents (aged 16-74, consistent with 2001 and 2011 Census points)
 - Net commuting (number of people employed in an area, minus the number of that area's residents who are employed)
 - Unemployed (claimant and ILO)
- **Output**
 - GVA (£m, workplace-based, 2003 prices for Spring 2009 forecasts, 2005 prices for Autumn 2009 and Spring 2010 forecasts, 2006 prices for Autumn 2010 forecasts, 2008 prices for EEFM 2012 forecasts, 2009 prices for EEFM 2013 forecasts, and 2010 prices for EEFM 2014 forecasts by 31 sectors listed above). Note that ownership of dwellings (imputed rents as defined in the Blue Book) is now included within real estate sector, previous published as its own sector.
 - Productivity by 31 sectors (per job, including both employee and self employed jobs)
 - **Housing**
 - Households
 - Demand for dwellings

Links with other models

An important feature of the EEFM is its links to other Oxford Economics forecasting models, ensuring that all EEFM forecasts are consistent with Oxford Economics' world, UK national and UK regional forecasts. The links are summarised in Figure 2.2.

Figure 2.2: Links with the Oxford Economics suite of models



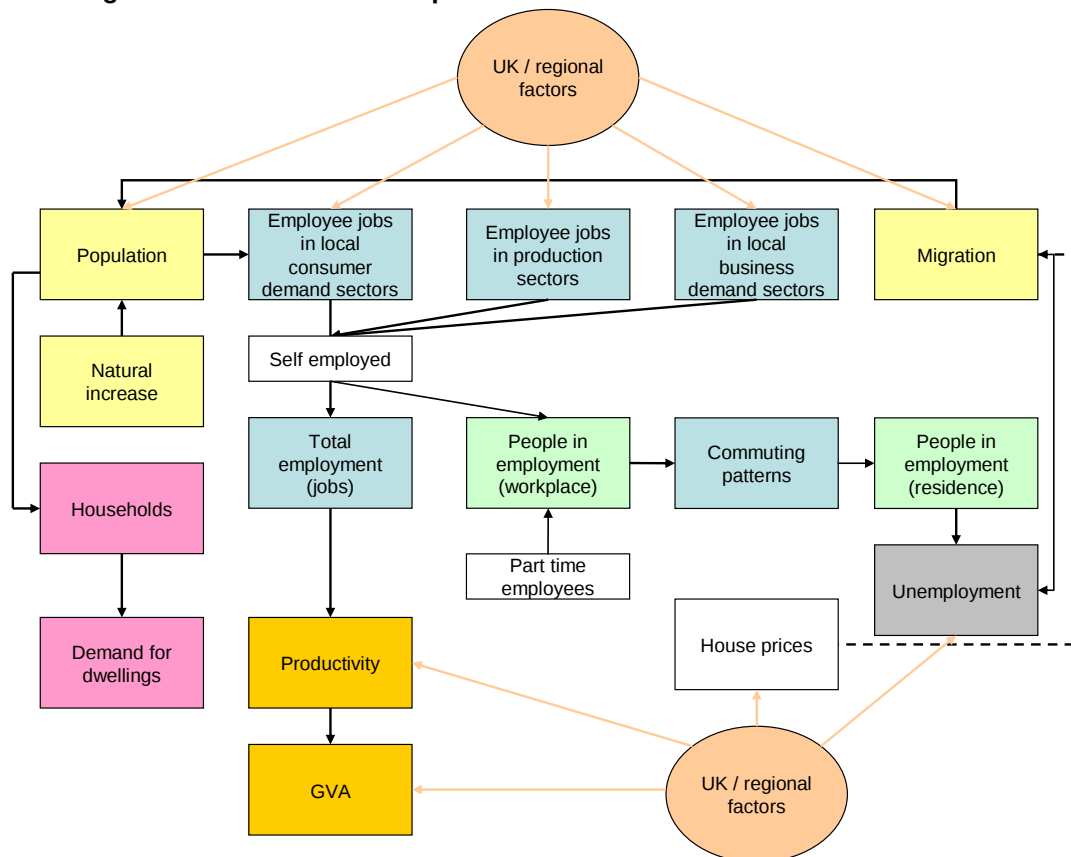
3: Model overview

The structure and data inputs of the Oxford Economics Regional Model, which underpins the EEFM, is not set out here, but can be obtained from Oxford Economics on request.

Variables in the EEFM

The EEFM is very large, with over 12,000 economic, demographic and housing indicators. Each of these variables is linked to others within the Model, and many key variables are also linked to others in the wider Oxford Economics suite of models. The main internal relationships between variables are summarised in Figure 3.1, and the forecasting methodology for each element in the Model is then summarised.

Figure 3.1: Main relationships between variables in the EEFM Model



Economic variables

Workplace employees (jobs)

The total number of employee jobs in an area, whether full- or part-time. These can be taken by residents or by commuters from outside. Note that this is a measure of jobs, not workers, so if one person has two part-time jobs, for example, they are counted twice.

This is forecast separately in every area for each of the 31 sectors listed on page 9. The forecasts begin with something called a “location quotient” (LQ). This is a ratio which summarises the concentration of a particular sector in a particular area, relative to the regional average. So an LQ of 0.8 (or 80%) for a given sector and area means that that sector is under-represented in the area. An LQ of 1.25 (or 125%) means that the sector is overrepresented in the area.

The EEFM contains location quotients for every local authority in the East region including the additional local authorities in the East Midlands and South East region required to construct LEP aggregates, for each of the 31 sectors, and for every year since 1991. Forecast trends in the LQs are based on how they have changed over time. So if the LQ for a given sector in a given area has been rising in recent years, the forecasts will project this to continue, and vice versa. LQs which have been stable for a long time (including at zero) will be forecast to remain so.

Three forms of location quotient are used in the EEFM. In the first, the LQ is based on *an area’s share of the region’s employees in a particular sector*. This is most appropriate for sectors which are essentially independent of the local economy (e.g., manufacturing). Their activities are largely driven by regional, national or international suppliers and customers, and the goods and services they produce are typically traded over long distances. The EEFM treats the following sectors in this way:

- Agriculture
- Mining & quarrying
- Food manufacturing
- General manufacturing
- Chemicals excluding pharmaceuticals
- Pharmaceuticals
- Metals manufacturing
- Transport equipment, machinery & equipment, etc.
- Electronics
- Utilities
- Waste & remediation
- Water & air transport
- Publishing & broadcasting
- Telecoms
- Computer related activity
- Research & development
- Other services

For this group, the local employee growth forecasts in the EEFM come from the interaction of the relevant LQ forecasts with the regional sector employee forecasts from Oxford’s Regional Model. To take a hypothetical example, if the Regional Model forecasts a 5% increase in air transport employees in the East of England, this filters down to the local area forecasts in the EEFM. If the LQ for air transport in a given area is forecast to remain stable, the employee forecasts for air transport in that area will tend to show a 5%

increase. (In absolute terms, this means many new jobs in areas with high LQs and relatively few in areas with low LQs.) If the LQ is forecast to increase (or decrease) in an area, the local employee growth forecasts for air transport will tend to be more than (or less than) 5%.

The LQ in an area can also be based on the number of employees in a given sector *per head of the local population*, relative to the regional average. This is most appropriate for sectors in which employment change is primarily (but rarely exclusively) driven by changes in the local population (e.g., health and education). In the EEFM, this group includes:

- Wholesale
- Retailing
- Hotels & restaurants
- Public administration
- Education
- Health & care
- Arts & entertainment

For this group, the local employee growth forecasts in the EEFM come from the interaction of the relevant LQ forecasts with the demographic forecasts for the area (which are also in the EEFM) and for the region as a whole (from the Regional Model). To take the example of education, consider an area which has an education LQ of 1.3 (or 130%) - perhaps because it has a university. Suppose that that LQ has been unchanged for a long time and is forecast to stay the same. And suppose that the area's population is also forecast to remain stable. But if the region's population is forecast to increase, education employees in this area will have to increase as well to keep the equation in balance (all other things being equal). This makes sense inasmuch as the area's education institutions clearly serve a market wider than the local area.

Finally, a sector's LQ can be based on the number of its employees *relative to all jobs in the area*, relative to the regional average. This is most appropriate for sectors where changes in employment arise primarily from changes in *total* employment locally - where the latter is effectively a proxy for business activity. (As might be expected, business services sectors tend to be in this group.) In the EEFM, the following are included:

- Construction
- Land transport
- Finance
- Real estate
- Professional services
- Business services
- Employment activities

In this group, the local employee growth forecasts in the EEFM come from the interaction of the relevant LQ forecasts with the regional sector employment forecasts from the Regional Model.

It is important to stress that the process of making these forecasts cannot be wholly automated. That is, some professional judgement is required to manually adjust the forecasts in cases where simply extrapolating the trend in location quotients from 1991 produces results which appear unrealistic for whatever reason. Altogether, around three-quarters of local sector LQ trends in the EEFM are subject to some kind of manual adjustment. The need for this is illustrated in Figures 3.2 and 3.3 below. Figure 3.2 shows two LQ trends for labour recruitment in Babergh - an automated extrapolation of past trends and a

manually-adjusted trend designed to offer a more plausible forecast in the light of recent data. It is this manually-adjusted trend which is imposed in the EEFM.

Figure 3.2: Employment location quotient for labour recruitment before and after manual adjustment in Babergh, 1991-2020

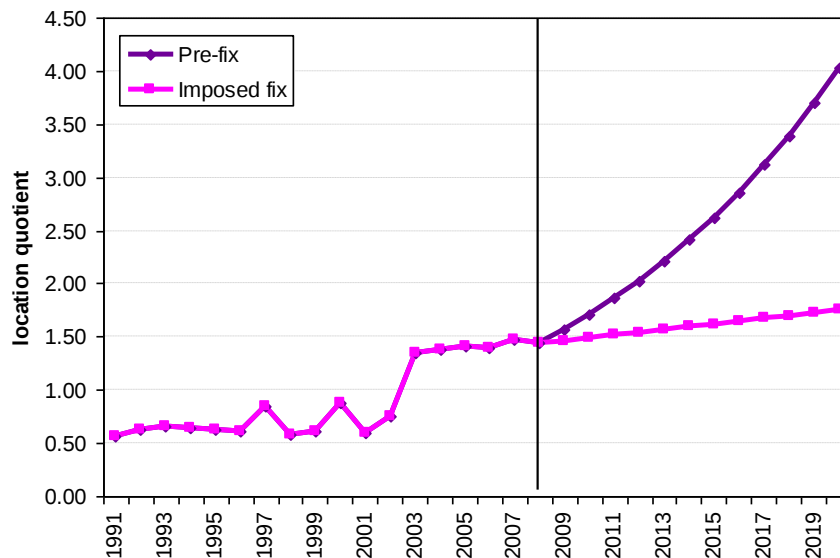
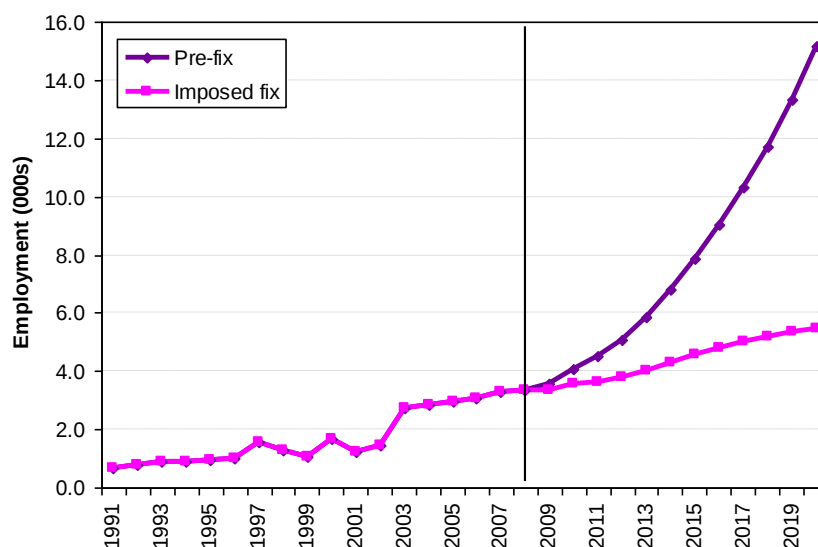


Figure 3.3 shows how these trends translate into actual jobs growth. It is clear that an uncritical acceptance of automated trends would have a substantial, implausible impact on longer-term employment forecasts for an area.

Cambridgeshire County Council and Oxford Economics would like to encourage Local Authorities to view and give feedback on the forecast trends for their areas. We regard such feedback as essential to ensure the EEFM is as credible and as accurate as possible. Chapter 5 (Table 5.1) records the instances where well-evidenced local intelligence on employment trends has been used to modify initial EEFM assumptions.

Figure 3.3: Employment in labour recruitment before and after manual adjustment in Babergh, 1991-2020



Oxford Economics' Regional Model has employee forecasts linked to a wide range of variables - for example, a region's wages and rents relative to those in London, which is particularly important as an influence on financial and business services employment. These are not replicated in the EEFM, although there is obviously an indirect link in that Regional Model employee growth forecasts in a given sector in the East of England must be allocated by the EEFM to the region's local authorities.

Both the Regional Model and the EEFM incorporate links between employment, migration and unemployment. The details of this are explained below.

Full-time and part-time employment

The total number of jobs in an area, broken down into full- and part-time jobs.

East of England shares of part-time employees among all employees in the 31 EEFM sectors (which are trend forecasts linked to regional and national projections) are applied to the workplace employee estimates described above. Full-time employees are simply the total of employees minus the part-time employees for each of the 31 sectors.

Workplace self-employment (jobs)

The total number of self-employed jobs in an area.

Self-employment data for the East of England in Oxford Economics' Regional Model comes from ONS's Labour Force Survey / Annual Population Survey. Previously, self employment data at a regional level was not available by sector, however the ONS now publishes this information.

Self-employment data for local authorities is Census-based, and scaled to the East of England self-employed jobs estimates from the Regional Model. It is broken down by the 31 EEFM sectors. The sectors are forecast using the growth in the sectoral employees in employment data and the estimates are scaled to the Regional Model's estimate of self-employment by sector for the East of England.

Total workplace employment (people)

The total number of people in employment in an area, including both residents and commuters. A person who has more than one job is only counted once, so total workplace employed people is smaller than total workplace employment.

The employment data from the Business Register and Employment Survey (BRES) over the years 2008-12 (and the Annual Business Inquiry (ABI) for earlier years) which is used in the Model measures jobs rather than workers. Because a model aiming to simulate housing demand needs to focus on people, we have to convert the total number of jobs in an area into numbers of employed people.

The 2001 and 2011 Census results give the number of people in employment in an area. For other years, we use BRES / ABI data to estimate residents in employment using the full-time and part-time projections (see above). Individuals are assumed to hold only one full-time job each. Part-time jobs are assumed to account for 0.75 of a full-time job, and self-employed people are assumed to account for 0.93 of a self-employed job. A simple adjustment is made to scale the indicator so it is consistent with the Census.

This measure is not forecast, but derived from the forecasts of jobs discussed above.

Total workplace employment (jobs)

The total number of employee jobs and self-employed jobs in an area. These can be taken by residents or commuters from outside. Note that this includes all full- and part-time jobs, so if someone has two part-time jobs, they are counted twice.

This is not forecast separately in the EEFM, but derived by summing the workplace-based employee jobs and self-employed jobs forecasts described above, and then adding in a constant for the Armed Forces (see below). (Note: Armed Forces data are added to the public administration & defence sector.)

Residence employment

The total number of employed people living in an area. This includes residents who commute elsewhere to work.

Residence employment is based on a commuting matrix taken from the 2011 Census. This matrix tells us, for any given area, where its residents work. Using this information, each available job (see workplace employment (people) above) is allocated to a resident of one of the authorities with which the area has commuting links, in proportion to the strength of that link. This method assumes that commuting patterns do not change over time.

Net Commuting

The number of people commuting into an area for work, less the number of residents commuting out.

Net commuting requires no specific forecasting method. It is the residual between an area's residence-based and workplace-based estimates of numbers of people in employment. (These variables are used to check the realism of the EEFM's workplace- and residence-based employment forecasts, and can occasionally lead to manual adjustments to the Model.)

Our broad assumption is that commuting flows over the forecast period are in line with past trends. Major changes in transport infrastructure, or significant new housebuilding in an area, may bring about changes in commuting patterns, but as indicated in Chapter 2, the EEFM can only take account of such changes if they are reflected in the available data.

Claimant unemployed

The total number of people in an area without a job and claiming unemployment benefits

The number of unemployed people is projected as:

- the previous year's value
- **plus** 0.55 X (projected change in working-age population)
- **minus** 0.45 X (projected change in resident employment)

The two coefficients were obtained by Oxford Economics after an iterative process to produce the most plausible forecasts for unemployment – and, indirectly, migration. Both are less than one, reflecting the fact that many people adding to the local working age population go into education (e.g., students) or directly into employment (e.g., by moving to the area specifically to take up a new job), and the fact that many new job vacancies in the area will not necessarily be filled by the local unemployed (e.g., migrants, commuters).

(Note: in some districts, the coefficient of working-age population, 0.55, produces implausible results – for example, in suburban areas where population change may be unrelated to employment change. In these situations, a different value is manually introduced into the Model.)

ILO unemployment is also included in the Model and comes from the Annual Population Survey. This data is available for 2004-2013 and is both back-cast and forecast, using growth rates in the claimant series.

Gross Value Added (GVA)

The total sum of income generated in an area over a specified period, usually a year. It is the sum of wages, profits and rents. An alternative and equivalent definition is the value of gross output less purchases of intermediate goods and services.

GVA forecasts are available for 31 sectors in Oxford Economics' Regional Model. Previously, a sector entitled 'ownership of dwelling' (imputed rents in the ONS National Accounts) was excluded from the overall business services sector and published as its own sector. In Summer 2011, the ONS changed its methodology to publish data which included imputed rents within the business services sector. To remain consistent with National data, the EEFM now includes this measure of GVA within the real estate sector.

Sub-regionally, limited sector GVA data is available at NUTS 3 level (i.e. for unitaries and shire counties) but not for local authorities. Our initial forecasts at this level are obtained by multiplying forecast regional GVA per job in a sector (from the Regional Model) by forecast total workplace employment (jobs) in that sector (from the EEFM) for each local authority.

These initial forecasts are then subject to two adjustments. The first is for wage differentials (from ONS's Annual Survey of Hours and Earnings), which has the effect of increasing GVA disproportionately in areas where wages are higher. The second scales local sector GVA to the most recent published NUTS 3 level GVA estimates for the relevant base year (2010).

Productivity

GVA divided by total workplace employment (jobs). It measures the average amount of income generated in each area by every person working there.

Productivity estimates do not require specific forecasting. They are simply forecast sector GVA divided by forecast total jobs (both employee and self-employed) in that sector.

Relative productivity is simply productivity in a specified area, divided by productivity in the region. A relative productivity value greater than 1.0 implies that productivity in that area (and sector) is higher than the regional average, and vice versa.

Demographic variables

Total population

The total number of people living in an area

All population data is taken from ONS's mid-year estimates (MYE). Population at regional level is forecast using official projections of natural increase, plus Oxford's projected numbers of migrants (broken down by domestic and international). At local level, total population is forecast as last year's population plus natural increase plus net migration (domestic and international).

Working age population

The total number of people in an area that are aged 16-64 (note: in the EEFM 2013 update the definition of working age was changed, previously it was defined as all people aged 16-retirement age, however this data is no longer published by the ONS leading to the decision being made to change the definition of working age)

Working age population for the region is calculated using official projections of natural increase in the working age population and Oxford's forecast of net migration of working age people (see below).

For local areas, forecast working age population is forecast total population multiplied by a ratio of working age to total population. This ratio is forecast for each year of the forecast period, and calculated as the *previous year's* ratio multiplied by the growth in the ratio regionally according to the ONS (2012-based) projections.

Young population

The total number of children in an area (defined as all people aged 0-15)

The population aged under 16 years is forecast at local authority level using an annual ratio of children to working age people. This ratio is forecast for each year of the forecast period, and calculated as the *previous year's* ratio multiplied by the growth in the ratio regionally according to the ONS (2012-based) projections. The regional forecast for this variable is simply the sum of these local area forecasts.

Elderly population

The total number of elderly people in a given area (defined as all people aged 65+). Note this definition has changed in line with the changes to the definition of working age people (see above)

The local elderly population forecasts are simply the residual of the total population when the young and working age populations are subtracted. The regional forecast for this variable is simply the sum of these local area forecasts.

Migration

The net flow of people moving into and out of an area, whether this be to/from other parts of the region, the UK or the world. A negative number signifies a net outflow of people from an area, a positive number a net inflow.

- Regional migration:

This comes from the Oxford Economics Regional Model, in which forecast net migration of *working age* people into the East of England in any given year is a function of:

- Working age net migration into the UK
- Difference in unemployment rates between the East of England and the UK
- Ratio of the East of England's house prices to those in London
- Ratio of the East of England's average wages to those in London

Total net migration into the region in any given year is forecast as the sum of forecast working age migration, plus a *constant* annual figure for other migrants.

- Local migration:

Migration data is sourced from ONS's population mid-year estimates 'Components of Change' data. The forecasting methodology is more complex, and not the same as the regional forecasting methodology described above. At local authority level, the number of migrants is the sum of two components: *economic migrants* and *non-economic migrants*.

Note: in the EEFM 2014 update, we have re-estimated the coefficients used in the economic migrant equations to reflect recent trends in migration.

The number of *economic migrants* into each area in any given year equals:

- previous year's population
- **multiplied by** $([0.01 - (0.0016 \times \text{previous year's relative unemployment rate differential from the region unemployment rate})])$ where the unemployment rate has working age population as the denominator)

This formula implies that the number of migrants into a district will equate to 1.0% of last year's population if the difference between local and regional unemployment rate then was zero. Unemployment rates below 3% will result in net in-migration, whereas unemployment rates above 3% will lead to net out-migration. To illustrate with a worked example, in an area with 100,000 people and a 0.1pp positive difference in relative unemployment rate, net migration the following year will be $100,000 \times [0.01 - (0.0016 \times 0.1)]$, or $100,000 \times [0.01 - 0.00016]$, or $100,000 \times 0.00984$, or 984.

So any change in employment or population in the EEFM which affects unemployment - whether the change is externally-sourced or internally generated within the Model - will affect net migration.

Non-economic migrants are set as a constant - unique to every area - for all future years. The constant for a given local authority is selected on the basis that it both reflects the actual population trend for the area over 1991-2013 (from ONS) and implies a local employment rate trend consistent with that for the region as a whole.

Housing variables

Households

The total number of households (as defined in official statistics) in an area

Demand for dwellings

The total number of dwellings (as defined in official statistics) in an area

The initial household data are as presented in the official DCLG series. The initial dwellings data are the stock data presented in the official DCLG series (table 125 provides total dwelling stock, whilst table 615 provides vacant stock, the residual between these series therefore represents occupied dwelling stock). The methodology for forecasting households and dwellings has undergone two key changes from that which was applied when the model was originally developed. When the EEFM was first developed, household numbers were originally forecast by projecting both population (using the methodology described earlier) and the ratio of households to population (from the Chelmer forecasts). From this it projected dwellings (using Chelmer forecasts of the number of dwellings per household, allowing for empty dwellings, second homes, etc.).

However, in the EEFM's Autumn 2008 run, Oxford Economics felt the Chelmer-based projections lacked credibility and the process of forecasting these two variables was modified, which became as follows:

First, we forecast the number of *occupied* dwellings directly from population by projecting the ratio of occupied dwellings to population using the linear trend identified by Oxford Economics for the period 1997 – 2007.

Having calculated occupied dwellings, we use a ratio of total to occupied dwellings (calculated by Oxford Economics from the most recent data available) in order to project *total* dwelling stock. We call this “*demand for dwellings*.” It is intended to proxy dwelling stock, but it is not a conventional stock or supply figure. Rather it tries to estimate what stock might be needed to accommodate the projected number of people, using Oxford Economics' occupancy rate assumptions.

Meanwhile, to produce *household forecasts*, we divide the forecast numbers of occupied dwellings by Chelmer estimates of the ratio of occupied dwellings to households. (Note that although there is a separate Chelmer estimate for each local authority, it is a constant, so will not capture possible changes locally over time.)

In the EEFM 2013 update, we made one further adjustment to the forecast for these two variables. In recent years, the occupancy ratio of dwelling stock in the East has stalled its downward trend. This has largely been brought about by the impact of the recession and sluggish economic growth since. We believe that this trend in occupancy rates is due to rising unemployment, falling real incomes and the resulting lower levels of house-building as well as lower rates of mortgage lending. These factors are of course interrelated, but the impact on occupancy rates are clear where young people are staying at home for longer due to the inability to obtain a mortgage. Another factor is the recent influx of migrants who tend to live at higher densities despite the impacts of the recession.

As such, Oxford Economics estimate that occupancy rates are likely to fall at a slower pace for a number of years, before reverting to the pre-recession downward trend over the longer term. We believe that by once the economic recovery is more sustained, unemployment rates will have decreased sufficiently such that banks will be starting to lend at a similar rate to the period prior to the recession and the rate of house-building is likely to pick up again to meet the demand for housing from the local population.

Carbon emissions

Industry, commercial & energy emissions

The amount of CO₂ emissions produced by the industrial, commercial & energy sector in an area in any given year

Data for the amount of CO₂ emissions produced by the industry, commercial & energy sector is published by the Department of Energy and Climate Change (DECC) by local authority.

Local authority CO₂ emissions forecasts within the industry, commercial & energy sectors were produced by first creating UK carbon weights by industrial sector. This was done using sectoral employment and carbon emissions forecasts from the Oxford Economics Industry Model (OEIM) (note that OE UK carbon emissions forecasts are consistent with the DECC projections). By dividing the emissions in a sector by the number of people in employment in that sector, then dividing this by the emissions for the average UK worker (total UK emissions divided by total UK employment), we are able to get weights showing how carbon intensive specific sectors are.

For each local authority, we then calculate a carbon weighted employment figure based on what the employment breakdown in that area is. So a district which employs significantly more of their workforce in the emissions intensive chemicals and processing industries sector would be forecast to have a higher carbon weighted employment figure than a district which had a large agricultural sector.

This carbon weighted figure is then multiplied by the average emissions per UK employee, to give a pre-adjusted industrial & commercial emissions forecast. The pre-adjusted forecast also takes into account emissions from the energy sector. These emissions are forecast from the OEIM, and we have modelled the energy sector as having no employees as such. Otherwise, we could have a problem where a district with a high number of energy sector employees could be a head office and not really emitting much carbon. So we share the energy sector emissions across districts by multiplying UK energy sector emissions by each district's share of total UK employment.

Finally, we adjust our forecasts based on scaling factors capturing the differences between our calculations for 2005-12 and the 2005-12 DECC data.

Domestic emissions

The total number of emissions produced by households in an area in any given year

Data for the amount of CO₂ emissions produced by the domestic sector is published by the Department of Energy and Climate Change (DECC) by local authority.

Local authority CO₂ emissions forecasts within the domestic sector are assumed to be a function of population (for example, more people means more households and therefore more domestic energy use). We have calculated the UK average level of domestic emissions per person by taking the total UK household emissions and dividing by UK total population from the OEIM. Then we applied this UK domestic emissions per person ratio to the local authority population forecasts in the EEFM to estimate a pre-adjusted domestic emissions forecast by local authority. Then we adjusted the forecasts based on scaling factors capturing the differences between our calculations for 2005-12 and the DECC data during the same years.

Transport emissions

The total number of emissions produced by the transport sector in an area in any given year

Data for the amount of CO₂ emissions produced by the transport sector is published by the Department of Energy and Climate Change (DECC) by local authority.

Local authority CO₂ emissions forecasts within the transport sector are assumed to be a function of GVA (for example, more output means more transport use and therefore more emissions from transport). We have calculated the UK average level of transport emissions per unit of GDP by taking the total UK transport emissions and dividing by UK total GDP from the OEIM. Then we applied this UK transport emissions per person ratio to the local authority GVA forecasts in the EEFM to estimate a pre-adjusted transport emissions forecast by local authority. Then we adjusted the forecasts based on scaling factors capturing the differences between our calculations for 2005-12 and the DECC data during the same years.

Land use, land use change and forestry (LULUCF) emissions

The total number of emissions produced via land use (e.g. deforestation, emissions from soils, etc.) in an area in any given year

Data for the amount of CO₂ emissions produced by the LULUCF sector is published by the Department of Energy and Climate Change (DECC) by local authority.

Local authority CO₂ emissions forecasts within the LULUCF sector are assumed to be a function of land area i.e. more land gives more potential for deforestation, emissions from soils, etc. We have taken land area data, measured in hectares, from the UK Standard Area Measurements for 2007, and assumed that these values have not changed over time. Then we took UK LULUCF emissions data from DECC for 2005-12, and DEFRA forecasts for 2010, 2015 and 2020. For the years in between, we assumed a straight line and extrapolated annual data points and beyond 2020 we assumed a continuation of the trend. Then, using data from DECC for 2005-12, we projected the local authority LULUCF emissions by taking the previous year's emissions, and adding the local authority share (calculated by taking each area's share of total UK land area) of the net change in UK LULUCF emissions in each year.

Total emissions

The total number of CO₂ emissions produced in an area in any given year

This is calculated as an aggregate of industry, commercial & energy emissions, domestic emissions, transport emissions and LULUCF emissions.

4: Data used

Labour market

Employees in employment

Description: Annual average employee job estimates

Data: 1991 – 1995 Annual Employment Survey (AES)
1995 – 1997 Annual Employment Survey rescaled to ABI
1998 – 2008 Annual Business Inquiry (ABI)
2008 – 2012 Business Register and Employment Survey (BRES)
2013 – ONS Workforce Jobs (WFJ)

Latest data:

Regional and UK data: 2013
Local authority data: 2012

Next release:

Regional data: BRES 2013 results, available September 2014
ONS Workforce Jobs Q2 2014, available September 2014
Local authority data: BRES 2013 results, available September 2014

There are two key sources for the employee jobs data used in the EEFM – ONS Workforce Jobs (WFJ) and the Business Register and Employment Survey (BRES).

- The WFJ series is reported on a quarterly basis, providing estimates of employee jobs by sector (based on the 2007 Standard Industrial Classification – SIC 2007) for the UK and its constituent government office regions, over the period 1981 Q3 to 2014 Q1.
- The BRES is an employment survey which has replaced the Annual Business Inquiry (ABI). Similar to WFJ, BRES data is based upon the SIC 2007, but it is only published for the years 2008-12. Prior to this, ABI data is available for employee jobs data, however this is based on the old industrial classification (SIC 2003). In contrast with WFJ, BRES data are available at a more disaggregated level of detail – i.e. estimates of employee jobs are available at local authority level and more detailed sector definitions. It is worth noting that the BRES is first and foremost a survey and is therefore subject to volatility, particularly when the level of detail becomes more refined (this is discussed in more detail in Chapter 5). The survey is collected in September of each year and not seasonally adjusted.

UK employee jobs data is taken directly from the ONS WFJ series, where annual averages are estimated from the quarterly data.

There are a number of steps in constructing regional employee jobs, due to changes in sectoral classifications across the various sources, and restrictions on data availability over particular periods of time. Initially, we take employee jobs data for each sector directly from the BRES over the years 2008-12. This relates to September figures and is based upon SIC 2007 sectors.

WFJ data of employee jobs by SIC 2007 sector is available between 1981 Q1 and 2014 Q1. Using this, we are able to construct an annual series of employee jobs by sector for each region over the period 1981-2013 (annual averages are estimated by taking the average of the quarterly data for each year). This, in turn,

enables the backcasting of the 2008 BRES data to 1981. Subsequently, the 2012 BRES data is projected forward for 2013 using growth rates for each sector in the WFJ series to provide a more robust estimate of employee jobs growth in that year.

To ensure the regional series is consistent with the UK employee jobs series, an adjustment factor is applied to all sectors, which converts the data to annual average values (seasonally adjusted).

The final step in estimating employee jobs in each region, government supported trainees (GST) is allocated to each sector. This is published by the ONS on a sectoral basis in the WFJ series. As such GST is simply added to the estimate of employee jobs in each region.

Table 4.1 below shows a comparison between the BRES series of September based employee jobs including GST in 2012, with the level of employee jobs used in the EEFM for the East region in the same year. The percentage difference shows the adjustment made which converts the BRES data to an annual average value.

Table 4.1: Employee jobs (incl. GST), WFJ and EEFM, 2012

	BRES, 2012 (000s)	EEFM 2012 (000s)	% difference
A : Agriculture	27.7	26.1	-5.7%
B : Mining & quarrying	1.3	1.3	-2.8%
C : Manufacturing	235.4	225.1	-4.4%
D : Electricity & gas supply	5.5	5.4	-1.1%
E : Water supply, waste & remediation	19.5	19.4	-0.7%
F : Construction	126.0	126.1	0.1%
G : Wholesale	430.8	436.5	1.3%
H : Transportation & storage	119.7	121.0	1.1%
I : Hotels & restaurants	155.9	155.0	-0.6%
J : Information & communications	83.2	83.9	0.9%
K : Finance	64.3	65.1	1.3%
L : Real estate activities	36.6	36.6	0.0%
M : Professional, scientific & technical activities	181.5	182.0	0.3%
N : Administrative & support service activities	230.3	226.6	-1.6%
O : Public administration & defence	99.2	96.1	-3.2%
P : Education	242.4	236.3	-2.5%
Q : Health	282.5	286.7	1.5%
R : Arts & entertainment	56.1	56.1	-0.1%
S : Other service activities	36.0	39.2	8.8%
Total	2422.6	2424.2	0.1%

Source: ONS Workforce Jobs, BRES, Oxford Economics

For employee jobs data at local authority level, the construction of the series follows a similar method to that applied to constructing the regional series. We take employee jobs by sector over the years 2008-12 from the BRES.

Note that for the agriculture sector, the BRES series excludes employees working in farm agriculture (defined as SIC01000). However, these employees were included in the ABI series published up until 2008, and are also included in the regional WFJ series. In the absence of further information, we take the 2008 ratio of employee jobs in the agriculture sector in each local authority to regional agriculture jobs from the ABI, then hold this constant over the years 2009-12 and apply this ratio to agriculture employee jobs according to WFJ to obtain a reasonable estimate of agriculture employee jobs in each local authority over the period 2009-13.

Prior to 2008, published data on employee jobs is only available based on the 2003 sectoral classifications (from the ABI). Using a data matrix published by the ONS which shows the key changes in sectoral definitions between SIC 2003 and SIC 2007, Oxford Economics have conducted a mapping exercise which has allowed for SIC 2003 sectors to be closely aligned with the new SIC 2007 classification. This has enabled further backcasting of data prior to 2008, resulting in a full time series of employee jobs levels

between 1991-2012, which relates to September based figures (since the BRES series used as the starting point is also September based).

To ensure consistency with the employee jobs series elsewhere in the Oxford Economics suite of models, we adjust the local series to represent annual average values. The percent adjustments applied to the BRES data are shown in table 4.2 below for 2012 allowing model users to see the level of adjustment which has been applied. The adjustments shown here are for the East region and are applied across all local authorities in the East. That is to say that the 0.1% adjustment to construction in 2012 has been applied to the number of construction jobs in each local authority in the East with no exceptions.

Note: for the East Midlands areas, the adjustment factors were estimated in the same way, but using East Midlands data as the basis of the calculation, and a similar method was applied for the South East areas.

Table 4.2: Percentage adjustments applied to BRES data in all local authorities in the East

	BRES 2012 (000s)	EEFM adjusted 2012 (000s)	% difference
Agriculture	27.7	26.1	-5.7%
Mining and Quarrying	1.3	1.3	-2.8%
Food Manufacturing	28.8	29.3	1.8%
General Manufacturing	65.5	65.6	0.1%
Chemicals excl. pharmaceuticals	26.5	26.3	-0.8%
Pharmaceuticals	6.1	6.1	0.3%
Metals manufacturing	32.6	32.8	0.6%
Transport equipment, machinery & equipment, etc	42.2	42.4	0.6%
Electronics	22.6	22.5	-0.1%
Utilities	11.1	11.4	2.8%
Waste and remediation	13.8	13.3	-3.7%
Construction	126.0	126.1	0.1%
Wholesale	164.0	163.8	-0.1%
Retail	266.8	272.7	2.2%
Land Transport	113.9	115.5	1.4%
Water and air transport	5.8	5.5	-4.4%
Hotels and restaurants	155.9	155.0	-0.6%
Publishing and broadcasting	17.3	18.5	6.7%
Telecoms	17.1	17.9	4.9%
Computer related activity	48.8	47.5	-2.7%
Finance	64.3	65.1	1.3%
Real Estate	36.6	36.6	0.0%
Professional services	162.7	162.7	0.0%
Research & development	18.8	19.3	2.9%
Business services	132.4	137.2	3.7%
Employment activities	97.9	89.3	-8.7%
Public administration	99.2	96.1	-3.2%
Education	242.4	236.3	-2.5%
Health and care	282.5	286.7	1.5%
Arts and entertainment	56.1	56.1	-0.1%
Other services	36.0	39.2	8.8%
Total	2422.6	2424.2	0.1%

Source: BRES, ONS Workforce Jobs, EEFM

Full-time/part-time split

Description: Annual average full-time and part-time employee job estimates consistent with the employee job estimates above.

Data: 1991 - 1995 Annual Employment Survey (AES)
1995 - 1997 Annual Employment Survey rescaled to ABI
1998 - 2008 Annual Business Inquiry (ABI)
2008 – 2012 Business Register and Employment Survey (BRES)

Latest data:

Regional data: 2012

Local authority data: 2012

Next release:

Regional data: BRES 2013 results available September 2014
Local authority data: BRES 2013 results available September 2014

The EEFM draws its data on full-time and part-time employees in employment from the BRES over the years 2008-12, and the ABI in earlier years. These figures relate to September, whereas those in the Oxford Regional Model use annual average figures (from WFJ). The proportion of part-time employees within each sector is applied to the scaled employees estimates described above. This produces estimates of part-time employee jobs, and since the employee jobs which the part times shares are applied to are themselves annual averages, this converts the estimates of part time employee jobs to annual average values. Full-time employee jobs are calculated by subtracting the part-time estimates from the total, and are therefore annual average values.

Self-employment

Description: Annual average self-employment job estimates

Data: ONS Workforce Jobs (WFJ)
Census 2001 and 2011 for local area estimates

Latest data: Regional - 2013
Local authorities - 2012

Next release: Regional data: ONS Workforce Jobs Q2 2014, available September 2014
Local authorities: 2013 data available September 2014

Self-employment data at local level is published in the Annual Population Survey. However, due to sampling errors, the data are volatile, and even in cases where moving averages are used to smooth them out, the level of inaccuracy in the series remains a problem. Oxford Economics estimates self-employment at a sectoral level, using regional employee jobs / self-employment ratios, applying them to the local authority employee jobs series, and finally scaling to total self-employment figures from the Census 2001 and 2011 results.

Self-employment data by sector for the UK and its regions is now published by the ONS in its Workforce Jobs series (WFJ) where data is available on a quarterly basis over the period 1996 Q1 until 2014 Q1. Annual average self employment levels are estimated by taking the average of jobs levels in each quarter of each year. Previously this was estimated by Oxford Economics as sectoral level data was not publicly available.

Prior to 1996, Oxford Economics backcast data by applying growth rates in the self employment series which were used previously in the OE Regional Model. Since the previous self employment series was based on SIC 2003 definitions, we apply the growth rates in the sector which is most closely aligned with the new SIC 2007 sector. For example, the professional services and real estate sectors (both SIC 2007 based) are backcast using growth rates in the overall (SIC 2003 based) business services sector.

Self-employment data for local areas in the EEFM is constructed as follows:

1: Using the regional data described above, ratios of self-employment to employees in employment are calculated. These are then applied to local area employees in employment data for all 31 EEFM sectors. This gives an initial estimate of self-employment by sector in local areas.

2: These initial estimates are scaled to the self-employment totals from the 2001 and 2011 Census results. The scaling factor is held constant across all years to produce a time-series estimate of self-employment by sector which is consistent with the Census results.

3: Finally, this self-employment series is scaled again, this time to the regional sector series described above. This converts the data from people-based to jobs-based estimates, and ensures that the EEFM sector data at local level sum to the regional sector data.

Table 4.3 compares self-employment data for 2011 from the Census with the scaled series used in the EEFM.

Table 4.3: Comparison of self-employment data with EEFM data, 2011

	Census data (000s, 2011)	EEFM scaled data (000s, 2011)	Difference 2011
Babergh	7.7	7.2	-5.9%
Basildon	12.3	11.4	-7.4%
Bedford	10.6	10.1	-4.7%
Braintree	11.8	11.2	-5.1%
Breckland	9.3	8.7	-6.5%
Brentwood	6.3	6.0	-3.9%
Broadland	9.4	8.9	-4.9%
Broxbourne	7.4	7.0	-5.4%
Cambridge	8.6	8.3	-3.1%
Castle Point	6.4	6.2	-4.5%
Chelmsford	12.7	12.1	-4.4%
Colchester	12.0	11.6	-3.6%
Dacorum	11.8	11.3	-3.8%
East Cambridgeshire	6.8	6.4	-5.8%
East Hertfordshire	11.6	11.1	-4.3%
Epping Forest	11.8	11.2	-4.9%
Fenland	6.4	6.0	-6.7%
Forest Heath	4.2	3.9	-5.7%
Great Yarmouth	5.8	5.5	-5.1%
Harlow	5.1	4.9	-4.0%
Hertsmere	9.7	9.3	-4.1%
Huntingdonshire	11.7	11.1	-5.0%
Ipswich	7.6	7.3	-4.0%
King's Lynn and West Norfolk	10.6	9.9	-6.9%
Luton	11.7	11.2	-4.2%
Maldon	5.7	5.4	-5.7%
Mid Bedfordshire	10.2	9.7	-4.7%
Mid Suffolk	8.6	8.1	-6.1%
North Hertfordshire	9.8	9.3	-4.7%
North Norfolk	9.4	8.8	-6.3%
Norwich	9.1	8.8	-3.5%
Peterborough	10.3	9.9	-4.2%
Rochford	6.3	6.0	-5.5%
South Bedfordshire	9.4	9.0	-4.8%
South Cambridgeshire	12.0	11.5	-4.4%
South Norfolk	10.2	9.6	-5.8%
Southend-on-Sea	12.3	11.8	-4.0%
St Albans	11.6	11.2	-3.4%
St Edmundsbury	8.0	7.6	-4.6%
Stevenage	5.4	5.2	-4.1%
Suffolk Coastal	10.0	9.4	-5.7%
Tendring	9.3	8.8	-5.8%
Three Rivers	7.5	7.2	-3.9%
Thurrock	9.7	9.2	-5.3%
Uttlesford	8.0	7.6	-5.2%
Watford	7.1	6.8	-3.4%
Waveney	7.3	6.9	-5.5%
Welwyn Hatfield	7.7	7.4	-4.1%
East of England	434.6	413.5	-4.9%

Source: Census, Oxford Economics

Employees in Armed Forces

Description: Annual average estimate of employees in UK regular Armed Forces stationed in the UK

Data: DASA, ONS Workforce Jobs

Latest data: 2012

Next release: 2013

Regional data on employees in UK Armed Forces is taken from the ONS WFJ series. This provides data on a quarterly basis, from which Oxford Economics derive annual averages.

Local authority level data on employees in UK Armed Forces is taken from DASA, which is scaled to ensure that it is consistent with the regional level data from WFJ. The EEFM adds this number to total employment in public administration and defence as a constant in every forecast year. US Armed Forces do not appear in any EEFM employment forecasts. UK civilian employees on UK and USAF bases in the region are included in both total and sector forecasts - under 'public administration and defence' – as are US civilian employees in certain limited circumstances.

Table 4.4 below shows the local authority level data for the East areas for 2012, and the final data published in the EEFM. The difference in all areas represents the adjustment applied which ensures that the local data is fully consistent with the regional and UK data.

Table 4.4: Comparison of employees in forces data with EEFM data, 2012

	DASA data (000s, 2012)	EEFM scaled data (000s, 2012)	Difference (000s)
Babergh	0.0	0.0	0.0
Basildon	0.0	0.0	0.0
Bedford	0.0	0.0	0.0
Braintree	0.0	0.0	0.0
Breckland	0.5	0.5	0.0
Brentwood	0.0	0.0	0.0
Broadland	0.0	0.0	0.0
Broxbourne	0.0	0.0	0.0
Cambridge	0.0	0.0	0.0
Castle Point	0.0	0.0	0.0
Chelmsford	0.0	0.0	0.0
Colchester	3.2	3.2	0.0
Dacorum	0.0	0.0	0.0
East Cambridgeshire	0.0	0.0	0.0
East Hertfordshire	0.0	0.0	0.0
Epping Forest	0.0	0.0	0.0
Fenland	0.0	0.0	0.0
Forest Heath	0.0	0.0	0.0
Great Yarmouth	0.0	0.0	0.0
Harlow	0.0	0.0	0.0
Hertsmere	0.0	0.0	0.0
Huntingdonshire	0.5	0.4	0.0
Ipswich	0.0	0.0	0.0
King's Lynn and West Norfolk	2.6	2.6	0.0
Luton	0.0	0.0	0.0
Maldon	0.0	0.0	0.0
Mid Bedfordshire	1.5	1.5	0.0
Mid Suffolk	1.5	1.5	0.0
North Hertfordshire	0.0	0.0	0.0
North Norfolk	0.0	0.0	0.0
Norwich	0.0	0.0	0.0
Peterborough	1.3	1.3	0.0
Rochford	0.0	0.0	0.0
South Bedfordshire	0.0	0.0	0.0
South Cambridgeshire	1.4	1.4	0.0
South Norfolk	0.0	0.0	0.0
Southend-on-Sea	0.0	0.0	0.0
St Albans	0.0	0.0	0.0
St Edmundsbury	1.8	1.8	0.0
Stevenage	0.0	0.0	0.0
Suffolk Coastal	0.7	0.6	0.0
Tendring	0.0	0.0	0.0
Three Rivers	1.1	1.1	0.0

Thurrock	0.0	0.0	0.0
Uttlesford	0.8	0.8	0.0
Watford	0.0	0.0	0.0
Waveney	0.0	0.0	0.0
Welwyn Hatfield	0.0	0.0	0.0
East of England	17.0	17.0	-0.1

Source: DASA, ONS Workforce Jobs, Oxford Economics

Unemployment

Description: Annual average claimant count unemployment – seasonally adjusted

Data: Local authorities: Nomis – Claimant count with rates and proportions
Region: Nomis – Claimant count with rates and proportions

Latest data: 2013

Next release: 2014, Spring 2015

Note: annual average values are calculated from the monthly data.

Table 4.5 compares the raw unemployment data with the scaled series used in the EEFM.

Table 4.5: Comparison of unemployment data with EEFM data, 2013

	NOMIS data (000s 2013)	EEFM scaled data (000s, 2013)	Difference (000s)
Babergh	1.08	1.09	0.00
Basildon	4.29	4.31	0.02
Bedford	3.89	3.91	0.02
Braintree	2.29	2.30	0.01
Breckland	2.03	2.04	0.01
Brentwood	0.81	0.82	0.00
Broadland	1.28	1.29	0.01
Broxbourne	1.75	1.75	0.01
Cambridge	1.46	1.46	0.01
Castle Point	1.39	1.40	0.01
Chelmsford	2.50	2.51	0.01
Colchester	2.84	2.85	0.01
Dacorum	1.96	1.97	0.01
East Cambridgeshire	0.98	0.98	0.00
East Hertfordshire	1.48	1.48	0.01
Epping Forest	2.02	2.03	0.01
Fenland	1.86	1.87	0.01
Forest Heath	0.79	0.79	0.00
Great Yarmouth	3.38	3.39	0.01
Harlow	2.27	2.28	0.01
Hertsmere	1.39	1.39	0.01
Huntingdonshire	1.99	2.00	0.01
Ipswich	3.56	3.58	0.02
King's Lynn and West Norfolk	2.63	2.65	0.01
Luton	5.30	5.33	0.02
Maldon	0.81	0.81	0.00
Mid Bedfordshire	1.53	1.54	0.01
Mid Suffolk	0.96	0.96	0.00
North Hertfordshire	1.79	1.80	0.01
North Norfolk	1.35	1.35	0.01
Norwich	4.07	4.09	0.02
Peterborough	5.67	5.69	0.02
Rochford	1.00	1.01	0.00
South Bedfordshire	1.99	1.99	0.01
South Cambridgeshire	1.11	1.11	0.00
South Norfolk	1.39	1.39	0.01
Southend-on-Sea	4.49	4.51	0.02
St Albans	1.33	1.34	0.01
St Edmundsbury	1.43	1.44	0.01
Stevenage	1.99	2.00	0.01
Suffolk Coastal	1.09	1.09	0.00
Tendring	3.11	3.12	0.01
Three Rivers	0.99	1.00	0.00
Thurrock	3.96	3.97	0.02
Uttlesford	0.63	0.63	0.00

Watford	1.65	1.66	0.01
Waveney	2.61	2.62	0.01
Welwyn Hatfield	1.62	1.63	0.01
East of England	101.78	102.21	0.43

Source: Nomis, Oxford Economics

Residence-based employment

Description: Number of people resident in an area who are in employment (irrespective of where they work)

Data: Local authorities: Census of Population (2001 and 2011)
Annual Population Survey (APS)
Region: Census of Population (2001 and 2011)
Annual Population Survey (APS)

Latest data: 2013

Next release: 2014, available July 2015

The residence employment data used in the EEFM is based on Census and APS data. The resident employment rate from the 2001 and 2011 Census is the key variable used. Prior to 2001, data are extrapolated back to 1994 and forward beyond 2012 using smoothed growth rates from the APS. A moving average of the residence employment rate from the APS data is used here, as the data is volatile at local level. Table 4.6 compares, for 2011, the data used in the EEFM with Census data, and the two series are of course identical.

Table 4.6: Comparison of Census residence-based employment with EEFM data, 2011

	Census 2011 (000s)	EEFM 2011 (000s)	Difference (000s)
Babergh	42.3	42.3	0.0
Basildon	83.0	83.0	0.0
Bedford	75.8	75.8	0.0
Braintree	74.2	74.2	0.0
Breckland	61.3	61.3	0.0
Brentwood	36.3	36.3	0.0
Broadland	61.5	61.5	0.0
Broxbourne	46.2	46.2	0.0
Cambridge	59.4	59.4	0.0
Castle Point	41.4	41.4	0.0
Chelmsford	86.5	86.5	0.0
Colchester	85.6	85.6	0.0
Dacorum	73.4	73.4	0.0
East Cambridgeshire	43.9	43.9	0.0
East Hertfordshire	72.2	72.2	0.0
Epping Forest	61.6	61.6	0.0
Fenland	44.5	44.5	0.0
Forest Heath	31.5	31.5	0.0
Great Yarmouth	41.3	41.3	0.0
Harlow	40.4	40.4	0.0
Hertsmere	49.4	49.4	0.0
Huntingdonshire	89.0	89.0	0.0
Ipswich	65.5	65.5	0.0
King's Lynn and West Norfolk	67.3	67.3	0.0
Luton	89.2	89.2	0.0
Maldon	30.3	30.3	0.0
Mid Bedfordshire	70.9	70.9	0.0
Mid Suffolk	48.6	48.6	0.0
North Hertfordshire	65.0	65.0	0.0
North Norfolk	43.2	43.2	0.0
Norwich	62.4	62.4	0.0
Peterborough	88.0	88.0	0.0
Rochford	40.7	40.7	0.0
South Bedfordshire	61.2	61.2	0.0
South Cambridgeshire	79.1	79.1	0.0
South Norfolk	60.3	60.3	0.0
Southend-on-Sea	81.3	81.3	0.0
St Albans	71.4	71.4	0.0
St Edmundsbury	56.5	56.5	0.0
Stevenage	42.7	42.7	0.0

Suffolk Coastal	58.3	58.3	0.0
Tendring	54.9	54.9	0.0
Three Rivers	44.0	44.0	0.0
Thurrock	77.4	77.4	0.0
Uttlesford	40.8	40.8	0.0
Watford	47.6	47.6	0.0
Waveney	49.2	49.2	0.0
Welwyn Hatfield	53.0	53.0	0.0
East of England	2,849.5	2,849.5	0.0

Source: Census, Oxford Economics

The resident employment rate is calculated dividing the residence employment data in Table 4.6 by the population of ages 16-74. This age range is selected to maintain consistency with the Census. Table 4.7 compares, for 2013, the residence employment rates used within EEFM (which is scaled to the Census) with the raw unsmoothed rates from the APS. The differences are substantial, mainly because the APS uses a working age (16-64) population denominator whereas the EEFM, which is Census-based, uses a 16-74 population denominator. (See chapter 5, which explores other differences between the Census and APS/LFS resident employment rates.)

Table 4.7: Comparison of APS residence-based employment rate with EEFM data, 2013

	APS data (%, 2013)	EEFM scaled data (%, 2013)	Difference (pp)
Babergh	77.0	70.3	-6.7
Basildon	75.6	68.7	-6.9
Bedford	77.0	67.5	-9.5
Braintree	73.1	66.6	-6.5
Breckland	70.3	62.5	-7.8
Brentwood	76.3	65.9	-10.4
Broadland	80.6	70.6	-10.0
Broxbourne	77.3	69.9	-7.4
Cambridge	75.8	61.9	-13.9
Castle Point	70.6	62.9	-7.7
Chelmsford	78.7	72.0	-6.7
Colchester	72.3	65.5	-6.8
Dacorum	74.0	68.3	-5.7
East Cambridgeshire	75.3	69.5	-5.8
East Hertfordshire	81.8	75.0	-6.8
Epping Forest	76.7	73.4	-3.3
Fenland	61.0	61.4	0.4
Forest Heath	78.9	72.5	-6.4
Great Yarmouth	71.2	60.6	-10.6
Harlow	67.3	65.6	-1.7
Hertsmere	76.1	69.5	-6.6
Huntingdonshire	79.0	73.7	-5.3
Ipswich	74.6	68.6	-6.0
King's Lynn and West Norfolk	69.2	61.0	-8.2
Luton	65.0	60.3	-4.7
Maldon	71.8	69.2	-2.6
Mid Bedfordshire	75.7	68.9	-6.9
Mid Suffolk	78.9	68.9	-10.0
North Hertfordshire	72.1	68.4	-3.7
North Norfolk	75.3	60.8	-14.5
Norwich	72.1	62.3	-9.8
Peterborough	69.5	66.5	-3.0
Rochford	75.7	66.3	-9.4
South Bedfordshire	71.7	68.5	-3.2
South Cambridgeshire	79.3	72.7	-6.6
South Norfolk	86.4	74.6	-11.8
Southend-on-Sea	71.2	65.0	-6.2
St Albans	77.2	72.0	-5.2
St Edmundsbury	84.0	74.5	-9.5
Stevenage	83.4	74.1	-9.3
Suffolk Coastal	79.7	65.8	-13.9
Tendring	64.3	55.3	-9.0
Three Rivers	67.0	68.5	1.5
Thurrock	70.7	67.9	-2.8
Uttlesford	84.3	75.1	-9.2
Watford	84.3	77.7	-6.6
Waveney	67.6	58.5	-9.1
Welwyn Hatfield	74.2	67.6	-6.6
East of England	75.5	67.6	-7.9

Source: Census, APS, Oxford Economics

Total workplace employment (people)

Description: the number of people who work in an area (irrespective of where they live)

Data: Local authorities: Census of Population
Region: Census of Population

Latest data: 2011

This series is constructed on the basis that all full-time employee jobs are filled by one person only, but that one person could have two or more part-time jobs. For this reason, we apply a ratio of 0.75 people per part-time job to the total part-time jobs estimate. In other words, 100 part-time jobs implies 75 people in employment, with the remaining 25 part-time jobs taken by people with other part-time (or full-time) jobs. (This ratio is the one most consistent with Census results.)

We convert the self-employed jobs series to a people-based series in a similar way. In this case, we assume a jobs / people ratio of 0.93 – that is, 100 self-employment jobs equates to 93 (self-employed) people in employment. (This ratio is generated from Census data.)

Finally, these estimates are scaled for 2011 to ensure they are consistent with the Census.

Table 4.8: Comparison of Census employment data with EEFM data, 2011

	Census employment, (000s, 2011)	EEFM data (000s, 2011)	Difference (%)
Babergh	35.7	35.7	0.0%
Basildon	82.8	82.8	0.0%
Bedford	74.5	74.5	0.0%
Braintree	57.6	57.6	0.0%
Breckland	50.5	50.5	0.0%
Brentwood	33.9	33.9	0.0%
Broadland	47.3	47.3	0.0%
Broxbourne	38.9	38.9	0.0%
Cambridge	94.2	94.2	0.0%
Castle Point	25.4	25.4	0.0%
Chelmsford	82.6	82.6	0.0%
Colchester	83.7	83.7	0.0%
Dacorum	66.2	66.2	0.0%
East Cambridgeshire	31.1	31.1	0.0%
East Hertfordshire	58.2	58.2	0.0%
Epping Forest	47.6	47.6	0.0%
Fenland	38.2	38.2	0.0%
Forest Heath	32.9	32.9	0.0%
Great Yarmouth	40.0	40.0	0.0%
Harlow	39.8	39.8	0.0%
Hertsmere	46.4	46.4	0.0%
Huntingdonshire	77.4	77.4	0.0%
Ipswich	71.6	71.6	0.0%
King's Lynn and West Norfolk	63.5	63.5	0.0%
Luton	90.0	90.0	0.0%
Maldon	23.0	23.0	0.0%
Mid Bedfordshire	50.9	50.9	0.0%
Mid Suffolk	41.7	41.7	0.0%
North Hertfordshire	52.4	52.4	0.0%
North Norfolk	39.6	39.6	0.0%
Norwich	89.2	89.2	0.0%
Peterborough	101.2	101.2	0.0%
Rochford	26.7	26.7	0.0%
South Bedfordshire	47.3	47.3	0.0%
South Cambridgeshire	74.4	74.4	0.0%
South Norfolk	54.4	54.4	0.0%
Southend-on-Sea	72.1	72.1	0.0%
St Albans	61.5	61.5	0.0%
St Edmundsbury	58.4	58.4	0.0%
Stevenage	44.8	44.8	0.0%
Suffolk Coastal	54.4	54.4	0.0%
Tendring	44.3	44.3	0.0%
Three Rivers	35.4	35.4	0.0%
Thurrock	64.2	64.2	0.0%
Uttlesford	40.3	40.3	0.0%

Watford	51.5	51.5	0.0%
Waveney	45.0	45.0	0.0%
Welwyn Hatfield	68.4	68.4	0.0%
East of England	2,650.8	2,650.8	0.0%

Source: Census, Oxford Economics

Commuting

Description: The number of people that travel into, and out of, an area for work

Data: Local authorities: Constructed by Oxford Economics
Region: Constructed by Oxford Economics

Latest data: 2011

Net commuting flows in the EEFM are worked out by subtracting residence employment from total workplace employment (people). The net commuting flows for 2011 match those from the Census, as both the residence employment and the total workplace employment (people) series have already been scaled to the Census. Table 4.9 sets out the data.

Table 4.9: Comparison of net commuting flows from the Census with EEFM data, 2011

	Census net commuting, (000s, 2011)	EEFM data (000s, 2011)	Difference (%)
Babergh	-6.5	-6.5	0.0%
Basildon	-0.2	-0.2	0.0%
Bedford	-1.3	-1.3	0.0%
Braintree	-16.6	-16.6	0.0%
Breckland	-10.8	-10.8	0.0%
Brentwood	-2.4	-2.4	0.0%
Broadland	-14.3	-14.3	0.0%
Broxbourne	-7.4	-7.4	0.0%
Cambridge	34.8	34.8	0.0%
Castle Point	-16.1	-16.1	0.0%
Chelmsford	-3.8	-3.8	0.0%
Colchester	-1.9	-1.9	0.0%
Dacorum	-7.2	-7.2	0.0%
East Cambridgeshire	-12.8	-12.8	0.0%
East Hertfordshire	-14.0	-14.0	0.0%
Epping Forest	-14.0	-14.0	0.0%
Fenland	-6.4	-6.4	0.0%
Forest Heath	1.4	1.4	0.0%
Great Yarmouth	-1.3	-1.3	0.0%
Harlow	-0.6	-0.6	0.0%
Hertsmere	-3.1	-3.1	0.0%
Huntingdonshire	-11.6	-11.6	0.0%
Ipswich	6.1	6.1	0.0%
King's Lynn and West Norfolk	-3.8	-3.8	0.0%
Luton	0.8	0.8	0.0%
Maldon	-7.3	-7.3	0.0%
Mid Bedfordshire	-19.9	-19.9	0.0%
Mid Suffolk	-6.9	-6.9	0.0%
North Hertfordshire	-12.5	-12.5	0.0%
North Norfolk	-3.6	-3.6	0.0%
Norwich	26.8	26.8	0.0%
Peterborough	13.1	13.1	0.0%
Rochford	-14.0	-14.0	0.0%
South Bedfordshire	-14.0	-14.0	0.0%
South Cambridgeshire	-4.7	-4.7	0.0%
South Norfolk	-6.0	-6.0	0.0%
Southend-on-Sea	-9.3	-9.3	0.0%
St Albans	-9.8	-9.8	0.0%
St Edmundsbury	1.9	1.9	0.0%
Stevenage	2.1	2.1	0.0%
Suffolk Coastal	-3.9	-3.9	0.0%
Tendring	-10.5	-10.5	0.0%
Three Rivers	-8.6	-8.6	0.0%
Thurrock	-13.2	-13.2	0.0%
Uttlesford	-0.5	-0.5	0.0%
Watford	3.8	3.8	0.0%
Waveney	-4.2	-4.2	0.0%
Welwyn Hatfield	15.4	15.4	0.0%
East of England	-198.7	-198.7	0.0%

Source: Census, Oxford Economics

Demography

Population – total

Description: total population, all ages

Data: Local authorities: National Statistics, mid year population estimates
Region: National Statistics, mid year population estimates

Latest data: 2013

Next release: 2014, available summer 2015

ONS's population mid-year estimates are used directly in the EEFM so, as Table 4.10 shows, there is no difference between them and EEFM input data for most areas. Some areas have been adjusted to reflect US Air Force personnel.

Table 4.10: Comparison of population data with EEFM data, 2013

	Mid year estimates (000s, 2013)	EEFM data (000s, 2013)	Difference (%)
Babergh	88.3	88.3	0.0%
Basildon	178.4	178.3	0.0%
Bedford	161.4	161.4	0.0%
Braintree	149.1	149.1	0.0%
Breckland	132.6	133.0	0.3%
Brentwood	74.5	74.5	0.0%
Broadland	125.5	125.5	0.0%
Broxbourne	95.0	95.0	0.0%
Cambridge	126.5	126.7	0.1%
Castle Point	88.6	88.6	0.0%
Chelmsford	170.3	170.2	0.0%
Colchester	177.6	177.6	0.0%
Dacorum	148.2	148.2	0.0%
East Cambridgeshire	85.4	85.9	0.6%
East Hertfordshire	141.1	141.1	0.0%
Epping Forest	127.2	127.2	0.0%
Fenland	96.7	96.7	0.0%
Forest Heath	63.3	61.3	-3.2%
Great Yarmouth	97.8	97.8	0.0%
Harlow	83.4	83.4	0.0%
Hertsmere	101.3	101.3	0.0%
Huntingdonshire	172.1	172.0	0.0%
Ipswich	134.7	134.7	0.0%
King's Lynn and West Norfolk	148.8	149.2	0.3%
Luton	208.0	208.0	0.0%
Maldon	62.2	62.2	0.0%
Mid Bedfordshire	141.4	141.4	0.0%
Mid Suffolk	98.0	98.0	0.0%
North Hertfordshire	129.3	129.3	0.0%
North Norfolk	102.0	102.0	0.0%
Norwich	135.9	135.9	0.0%
Peterborough	188.4	188.3	0.0%
Rochford	83.9	83.9	0.0%
South Bedfordshire	123.1	123.1	0.0%
South Cambridgeshire	151.4	151.4	0.0%
South Norfolk	127.6	127.6	0.0%
Southend-on-Sea	175.8	175.8	0.0%
St Albans	143.1	143.1	0.0%
St Edmundsbury	111.3	111.8	0.4%
Stevenage	85.5	85.5	0.0%
Suffolk Coastal	124.4	124.4	0.0%
Tendring	138.7	138.7	0.0%
Three Rivers	89.5	89.5	0.0%
Thurrock	160.8	160.8	0.0%
Uttlesford	82.7	82.7	0.0%
Watford	93.7	93.7	0.0%
Waveney	116.0	115.9	0.0%
Welwyn Hatfield	114.1	114.0	0.0%
East of England	5,954.2	5,953.5	0.0%

Source: ONS, Oxford Economics

Working age population

Description: Prior to the EEFM 2013 update, working age population was defined as all people aged 16-retirement age. However, the ONS no longer publishes this series. Therefore, we have changed the definition of working age population to be defined as all people aged 16-64.

Data: Local authorities: National Statistics, mid year population estimates
Region: National Statistics, mid year population estimates

Latest data: 2013
Next release: 2014, available summer 2015

Similar to total population, working age population defined as all people aged 16-64 is used directly within the EEFM. As such, there are no differences between the published data and that used in the EEFM, with the exception of areas adjusted for US Air Force personnel. This is shown in table 4.11 below.

Table 4.11: Comparison of working age population data with EEFM data, 2013

	Mid year estimates (000s, 2013)	EEFM data (000s, 2013)	Difference (%)
Babergh	51.75	51.73	0.0%
Basildon	112.0	112.0	0.0%
Bedford	101.9	101.9	0.0%
Braintree	92.9	92.8	0.0%
Breckland	78.7	79.1	0.5%
Brentwood	45.9	45.9	0.0%
Broadland	74.6	74.6	0.0%
Broxbourne	59.5	59.5	0.0%
Cambridge	92.1	92.3	0.2%
Castle Point	52.9	52.9	0.0%
Chelmsford	107.7	107.7	0.0%
Colchester	114.7	114.7	0.0%
Dacorum	94.3	94.3	0.0%
East Cambridgeshire	52.6	53.1	0.9%
East Hertfordshire	89.8	89.8	0.0%
Epping Forest	79.2	79.2	0.0%
Fenland	59.0	59.0	0.0%
Forest Heath	40.6	38.5	-5.0%
Great Yarmouth	58.6	58.6	0.0%
Harlow	52.8	52.8	0.0%
Hertsmere	63.1	63.1	0.0%
Huntingdonshire	108.9	108.9	0.0%
Ipswich	87.2	87.1	0.0%
King's Lynn and West Norfolk	87.2	87.6	0.6%
Luton	134.7	134.7	0.0%
Maldon	37.6	37.6	0.0%
Mid Bedfordshire	90.3	90.3	0.0%
Mid Suffolk	58.9	58.9	0.0%
North Hertfordshire	80.9	80.9	0.0%
North Norfolk	56.4	56.4	0.0%
Norwich	93.0	92.9	0.0%
Peterborough	120.8	120.7	0.0%
Rochford	50.8	50.8	0.0%
South Bedfordshire	78.6	78.6	0.0%
South Cambridgeshire	94.1	94.1	0.0%
South Norfolk	75.2	75.1	0.0%
Southend-on-Sea	109.5	109.5	0.0%
St Albans	88.6	88.5	0.0%
St Edmundsbury	68.0	68.5	0.7%
Stevenage	55.3	55.3	0.0%
Suffolk Coastal	71.7	71.7	0.0%
Tendring	76.4	76.4	0.0%
Three Rivers	55.7	55.7	0.0%
Thurrock	103.8	103.8	0.0%
Uttlesford	50.8	50.8	0.0%
Watford	61.9	61.9	0.0%
Waveney	66.6	66.6	0.0%
Welwyn Hatfield	75.1	75.0	0.0%
East of England	3,712.5	3,711.8	0.0%

Source: ONS, Oxford Economics

Young population

Description: population aged 0-15

Data:	Local authorities:	National Statistics, mid year population estimates
	Region:	National Statistics, mid year population estimates

Latest data: 2013

Next release: 2014, available summer 2015

Notes: In the Spring 2010 run, the EEFM definition of working age was changed to exclude 15 year-olds.

Young population for the East region in the Model is estimated as the residual between total population, working age population and elderly population. As such, data for young population used in the Model matches up directly with the published source.

Note: the reason that we estimate young population as a residual rather than use the data directly is to allow for the forecasting of these variables, and also to ensure that the identities still hold true (i.e. that total population will be equal to the sum of young, working age and elderly population).

Elderly population

Description: Prior to the EEFM 2013 update, elderly population data was defined as male population aged 65+ plus female population aged retirement age+. However since the EEFM 2013 update, the definition of working age population was changed since ONS no longer publishes the number of people aged 16 to retirement age. Therefore, elderly population is defined as all people aged 65+.

Data:	Local authorities:	National Statistics, mid year population estimates
	Region:	National Statistics, mid year population estimates

Latest data: 2013

Next release: 2014, available summer 2015

Similar to the young and working age population, the elderly population is used directly from the published source. Therefore there are no differences between the final EEFM estimates and the published data.

Net migration and other changes

Description: net migration flows to/from an area, including other changes (e.g. boundary adjustments, prisoner movements, boarding school pupils, etc.)

Data:	Local authorities:	National Statistics, components of change
	Region:	National Statistics, components of change

Latest data: 2013

Next release: 2014, available summer 2015

The net migration figures used in the EEFM are based initially on ONS population mid-year estimates 'components of change' data, specifically the category 'net migration and other changes.' But these are then

scaled upwards to the regional net migration data for the East of England used in the Oxford Regional Model, which are sourced from *Population Trends* and differ slightly from the 'components of change' data due to minor methodological differences. Table 4.12 shows that the difference regionally between the 'components of change' series and the data actually used in the EEFM is only 1,480 migrants in 2013. (The scaling process allocates these to local authorities in accordance with their share of the region's total population.)

Table 4.12: Comparison of 'net migration and other changes' data with EEFM data, 2013

	Net migration and other changes (000s, 2013)	EEFM data (000s, 2013)	Difference (000s)
Babergh	0.50	0.52	0.02
Basildon	1.00	1.04	0.04
Bedford	1.40	1.44	0.04
Braintree	0.40	0.43	0.03
Breckland	0.70	1.13	0.43
Brentwood	0.30	0.32	0.02
Broadland	0.60	0.63	0.03
Broxbourne	0.00	0.02	0.02
Cambridge	0.80	1.03	0.23
Castle Point	0.50	0.52	0.02
Chelmsford	0.40	0.44	0.04
Colchester	0.80	0.84	0.04
Dacorum	0.90	0.93	0.03
East Cambridgeshire	-0.20	0.32	0.52
East Hertfordshire	1.20	1.23	0.03
Epping Forest	0.60	0.63	0.03
Fenland	0.60	0.62	0.02
Forest Heath	2.00	0.01	-1.99
Great Yarmouth	0.30	0.32	0.02
Harlow	0.00	0.02	0.02
Hertsmere	0.20	0.22	0.02
Huntingdonshire	0.30	0.34	0.04
Ipswich	-0.60	-0.57	0.03
King's Lynn and West Norfolk	0.10	0.63	0.53
Luton	0.10	0.15	0.05
Maldon	0.30	0.31	0.01
Mid Bedfordshire	1.76	1.80	0.03
Mid Suffolk	0.40	0.42	0.02
North Hertfordshire	0.50	0.53	0.03
North Norfolk	0.90	0.92	0.02
Norwich	0.80	0.83	0.03
Peterborough	0.20	0.24	0.04
Rochford	0.10	0.12	0.02
South Bedfordshire	1.54	1.56	0.03
South Cambridgeshire	-0.30	-0.26	0.04
South Norfolk	1.50	1.53	0.03
Southend-on-Sea	0.50	0.54	0.04
St Albans	0.40	0.43	0.03
St Edmundsbury	-0.50	0.03	0.53
Stevenage	0.20	0.22	0.02
Suffolk Coastal	0.50	0.53	0.03
Tendring	1.20	1.23	0.03
Three Rivers	0.50	0.52	0.02
Thurrock	0.10	0.14	0.04
Uttlesford	1.20	1.22	0.02
Watford	1.20	1.22	0.02
Waveney	0.50	0.53	0.03
Welwyn Hatfield	1.60	1.63	0.03
East of England	28.00	29.48	1.48

Source: ONS, Oxford Economics

Natural increase

Description: the numbers of births minus deaths

Data: Local authorities: National Statistics, components of change
Region: National Statistics, components of change

Latest data: 2013

Next release: 2014, available summer 2015

The natural increase data used in the EEFM is the residual of the total population in the current year (see above) once total population in the previous year and net migration over the year have both been subtracted. This formula implies that since the net migration data in the EEFM is *higher* than ONS's "components of change" estimate of net migration (Table 4.12 above), the natural increase data in the EEFM should be *lower* than the "components of change" figure. Table 4.13 shows that this is indeed the case, although the size of the difference is not exactly the same.

Table 4.13: Comparison of natural increase data with EEFM data, 2013

	Natural increase, (000s, 2013)	EEFM data (000s, 2013)	Difference (000s)
Babergh	-0.10	-0.15	-0.05
Basildon	0.90	0.85	-0.05
Bedford	0.70	0.74	0.04
Braintree	0.40	0.29	-0.11
Breckland	0.00	0.00	0.00
Brentwood	0.10	0.12	0.02
Broadland	-0.30	-0.35	-0.05
Broxbourne	0.50	0.47	-0.03
Cambridge	0.50	0.49	-0.01
Castle Point	-0.20	-0.17	0.03
Chelmsford	0.50	0.48	-0.02
Colchester	0.90	0.78	-0.12
Dacorum	0.60	0.53	-0.07
East Cambridgeshire	0.50	0.48	-0.02
East Hertfordshire	0.50	0.38	-0.12
Epping Forest	0.40	0.46	0.06
Fenland	0.20	0.11	-0.09
Forest Heath	0.50	0.51	0.01
Great Yarmouth	-0.10	-0.10	0.00
Harlow	0.70	0.68	-0.02
Hertsmere	0.40	0.34	-0.06
Huntingdonshire	0.70	0.69	-0.01
Ipswich	0.80	0.79	-0.01
King's Lynn and West Norfolk	0.00	-0.01	-0.01
Luton	2.00	2.00	0.00
Maldon	0.00	-0.07	-0.07
Mid Bedfordshire	0.70	0.64	-0.06
Mid Suffolk	0.00	-0.06	-0.06
North Hertfordshire	0.40	0.36	-0.04
North Norfolk	-0.60	-0.67	-0.07
Norwich	0.80	0.80	0.00
Peterborough	1.80	1.76	-0.04
Rochford	0.00	-0.08	-0.08
South Bedfordshire	0.60	0.56	-0.05
South Cambridgeshire	0.70	0.63	-0.07
South Norfolk	0.10	0.06	-0.04
Southend-on-Sea	0.50	0.42	-0.08
St Albans	0.80	0.76	-0.04
St Edmundsbury	0.20	0.18	-0.02
Stevenage	0.50	0.46	-0.04
Suffolk Coastal	-0.40	-0.45	-0.05
Tendring	-0.80	-0.80	0.00
Three Rivers	0.20	0.17	-0.03
Thurrock	1.20	1.18	-0.02
Uttlesford	0.30	0.21	-0.09
Watford	0.80	0.78	-0.02
Waveney	-0.20	-0.24	-0.04
Welwyn Hatfield	0.50	0.39	-0.11
East of England	19.20	17.39	-1.81

Source: ONS, Oxford Economics

Output

GVA

Description:	Gross Value Added in real 2010 prices (Note: GVA data were rebased in the EEFM 2014 run of the Model so that the figures presented in the EEFM were consistent with the Blue Book.)	
Data:	Local authorities:	Constructed by Oxford Economics, Regional Accounts
	Region:	National Statistics, Regional Accounts
Latest data:	Regional data: 2012 totals and sector data Local authority data: 2011 totals and sector data	
Next release:	Regional data: 2013 totals and sector data available December 2014 Local authority data: 2012 totals and sector data available December 2014	

Regional GVA data by 19 sectors is taken from “Regional Accounts.” (These are scaled to match the UK National Accounts, as published in the “Blue Book.” Volume indices by sector are taken from the Blue Book to convert the GVA data into real 2010 prices.)

Local authority GVA forecasts are obtained by multiplying forecast regional GVA per job (productivity) in a sector (which comes from the Regional Model) by forecast total workplace employment (jobs) in that sector (from the EEFM) for each local authority. As described earlier, these are then subject to wage differential adjustments and scaling to the NUTS 3 level data published in Regional Accounts. Scaling operations rarely achieve total precision, but as Table 4.14 shows, the differences between the Regional Accounts NUTS 3 data and those used in the EEFM are very small. (Note: the data are presented for 2010 which, as it is the base year, is the only year in which nominal and real GVA will be equal.)

Table 4.14: Comparison of GVA data with EEFM data, 2010 (£m)

	Regional Accounts GVA (£m, 2010)	EEFM GVA (£m, 2010)	Difference (%)
Peterborough	4,242	4,253	0.2%
Cambridgeshire CC	13,788	13,742	-0.3%
Norfolk	14,030	14,066	0.3%
Suffolk	12,820	12,845	0.2%
Luton	4,109	4,093	-0.4%
Bedfordshire CC	6,868	6,876	0.1%
Hertfordshire	26,512	26,474	-0.1%
Southend-on-Sea	2,670	2,672	0.1%
Thurrock	2,470	2,477	0.3%
Essex CC	24,642	24,659	0.1%

Source: Regional Accounts, Oxford Economics

Housing

Demand for dwellings

Description:	Stock of dwellings.	
Data:	Local authorities:	DCLG – dwelling stock estimates
Latest data:	2013	
Next release:	2014, data due in 2015	

The source of data for dwelling stock changed in the EEFM 2013 update. Previously, we took data from the Housing Strategy Statistical Appendix, however this no longer includes estimates of private dwelling stock. Therefore, based on recommendations by DCLG, dwelling stock data are sourced from table 125 which provides estimates of total dwelling stock, and table 615 which provides estimates of vacant dwelling stock. The difference between these two series is therefore occupied dwelling stock.

DCLG data on the stock of dwellings by local authority is used directly in the EEFM, so the two series match exactly, as shown in Table 4.15. The forecast variable “demand for dwellings” seeks to accommodate forecast new households *using Oxford Economics occupancy rate assumptions*.

Table 4.15: Comparison of DCLG dwelling stock data with EEFM data, 2013

	DCLG data (000s, 2013)	EEFM data (000s, 2013)	Difference (%)
Babergh	39.5	39.5	0.0%
Basildon	75.3	75.3	0.0%
Bedford	68.9	68.9	0.0%
Braintree	63.2	63.2	0.0%
Breckland	58.1	58.1	0.0%
Brentwood	32.4	32.4	0.0%
Broadland	55.3	55.3	0.0%
Broxbourne	39.6	39.6	0.0%
Cambridge	49.1	49.1	0.0%
Castle Point	37.9	37.9	0.0%
Chelmsford	71.7	71.7	0.0%
Colchester	76.2	76.2	0.0%
Dacorum	62.6	62.6	0.0%
East Cambridgeshire	36.4	36.4	0.0%
East Hertfordshire	59.4	59.4	0.0%
Epping Forest	54.8	54.8	0.0%
Fenland	42.6	42.6	0.0%
Forest Heath	28.2	28.2	0.0%
Great Yarmouth	44.7	44.7	0.0%
Harlow	36.3	36.3	0.0%
Hertsmere	41.5	41.5	0.0%
Huntingdonshire	72.7	72.7	0.0%
Ipswich	59.7	59.7	0.0%
King's Lynn and West Norfolk	74.9	74.9	0.0%
Luton	76.7	76.7	0.0%
Maldon	27.4	27.4	0.0%
Mid Bedfordshire	58.1	58.1	0.0%
Mid Suffolk	42.6	42.6	0.0%
North Hertfordshire	55.7	55.7	0.0%
North Norfolk	53.8	53.8	0.0%
Norwich	64.0	64.0	0.0%
Peterborough	78.3	78.3	0.0%
Rochford	34.6	34.6	0.0%
South Bedfordshire	52.8	52.8	0.0%
South Cambridgeshire	63.0	63.0	0.0%
South Norfolk	56.0	56.0	0.0%
Southend-on-Sea	79.2	79.2	0.0%
St Albans	58.6	58.6	0.0%
St Edmundsbury	47.5	47.5	0.0%
Stevenage	35.8	35.8	0.0%
Suffolk Coastal	58.9	58.9	0.0%
Tendring	67.4	67.4	0.0%
Three Rivers	36.5	36.5	0.0%
Thurrock	64.5	64.5	0.0%
Uttlesford	33.9	33.9	0.0%
Watford	38.4	38.4	0.0%
Waveney	54.9	54.9	0.0%
Welwyn Hatfield	46.0	46.0	0.0%
East of England	2,565.6	2,565.6	0.0%

Source: DCLG, Oxford Economics

House prices

Description: House prices

Data: Local authorities: DCLG – Land Registry house prices, table 585
Region: DCLG – Mix-adjusted house prices, table 593

Latest data: 2013

Next release: 2014, available 2015

Data on house prices by local authority is taken from DCLG and incorporated into the EEFM, so of course the two series match exactly, as shown in Table 4.16. There is scope to do simple house price forecasts in the EEFM on the basis of these, though this has so far not been used.

Table 4.16: Comparison of DCLG house prices data with EEFM data, 2013

	DCLG data (£000s, 2013)	EEFM data (£000s, 2013)	Difference (%)
Babergh	242.0	242.0	0.0%
Basildon	226.8	226.8	0.0%
Bedford	218.0	218.0	0.0%
Braintree	223.8	223.8	0.0%
Breckland	180.7	180.7	0.0%
Brentwood	346.8	346.8	0.0%
Broadland	199.8	199.8	0.0%
Broxbourne	253.9	253.9	0.0%
Cambridge	333.5	333.5	0.0%
Castle Point	214.2	214.2	0.0%
Chelmsford	270.3	270.3	0.0%
Colchester	211.4	211.4	0.0%
Dacorum	325.9	325.9	0.0%
East Cambridgeshire	214.5	214.5	0.0%
East Hertfordshire	317.0	317.0	0.0%
Epping Forest	359.5	359.5	0.0%
Fenland	151.6	151.6	0.0%
Forest Heath	180.1	180.1	0.0%
Great Yarmouth	155.2	155.2	0.0%
Harlow	196.3	196.3	0.0%
Hertsmere	393.9	393.9	0.0%
Huntingdonshire	210.9	210.9	0.0%
Ipswich	164.1	164.1	0.0%
King's Lynn and West Norfolk	180.2	180.2	0.0%
Luton	167.6	167.6	0.0%
Maldon	243.3	243.3	0.0%
Mid Bedfordshire	248.9	248.9	0.0%
Mid Suffolk	210.8	210.8	0.0%
North Hertfordshire	273.8	273.8	0.0%
North Norfolk	206.0	206.0	0.0%
Norwich	175.6	175.6	0.0%
Peterborough	161.1	161.1	0.0%
Rochford	242.8	242.8	0.0%
South Bedfordshire	216.6	216.6	0.0%
South Cambridgeshire	289.9	289.9	0.0%
South Norfolk	210.5	210.5	0.0%
Southend-on-Sea	221.1	221.1	0.0%
St Albans	439.6	439.6	0.0%
St Edmundsbury	218.0	218.0	0.0%
Stevenage	194.6	194.6	0.0%
Suffolk Coastal	250.4	250.4	0.0%
Tendring	176.7	176.7	0.0%
Three Rivers	415.1	415.1	0.0%
Thurrock	187.0	187.0	0.0%
Uttlesford	341.7	341.7	0.0%
Wattford	268.0	268.0	0.0%
Waveney	180.4	180.4	0.0%
Welwyn Hatfield	315.3	315.3	0.0%
East of England	242.5	242.5	0.0%

Source: DCLG, Oxford Economics

Number of households

Description: Households

Data: Estimated by Oxford Economics

Latest data: 2013

Next release: 2014, data due in 2015

Table 4.17 shows the difference between the most recent DCLG household estimates by local authority, and the household data used in EEFM. At regional level, the series only differ by 0.1%, although the differences can be somewhat greater for individual local authorities.

Table 4.17: Comparison of DCLG household estimates with EEFM data, 2013

	DCLG data (000s, 2013)	EEFM data (000s, 2013)	Difference (%)
Babergh	38.1	38.2	0.2%
Basildon	74.1	73.6	-0.6%
Bedford	65.7	67.0	2.0%
Braintree	62.7	61.6	-1.9%
Breckland	56.1	56.0	-0.2%
Brentwood	31.3	31.4	0.1%
Broadland	54.2	53.8	-0.8%
Broxbourne	38.2	38.5	0.6%
Cambridge	45.9	48.2	5.0%
Castle Point	37.0	37.3	0.9%
Chelmsford	71.0	70.2	-1.0%
Colchester	74.4	74.3	-0.1%
Dacorum	61.0	61.4	0.7%
East Cambridgeshire	36.5	35.5	-2.7%
East Hertfordshire	58.3	58.1	-0.4%
Epping Forest	53.2	53.5	0.7%
Fenland	42.1	41.3	-2.0%
Forest Heath	26.1	26.7	2.5%
Great Yarmouth	43.1	42.8	-0.6%
Harlow	35.3	35.6	0.9%
Hertsmere	40.9	40.6	-0.9%
Huntingdonshire	71.1	70.5	-0.9%
Ipswich	58.5	57.6	-1.6%
King's Lynn and West Norfolk	64.3	69.1	7.4%
Luton	76.5	75.3	-1.6%
Maldon	26.3	26.3	0.0%
Mid Bedfordshire	58.3	56.5	-3.1%
Mid Suffolk	41.6	41.0	-1.3%
North Hertfordshire	54.8	54.5	-0.6%
North Norfolk	47.0	48.4	2.9%
Norwich	61.6	61.3	-0.5%
Peterborough	76.4	74.9	-1.9%
Rochford	34.2	33.8	-1.2%
South Bedfordshire	49.9	51.5	3.1%
South Cambridgeshire	62.6	61.4	-1.9%
South Norfolk	54.2	53.9	-0.5%
Southend-on-Sea	75.9	76.1	0.2%
St Albans	57.3	57.4	0.3%
St Edmundsbury	46.7	45.7	-2.0%
Stevenage	35.4	35.3	-0.2%
Suffolk Coastal	55.1	54.8	-0.4%
Tendring	64.0	64.0	-0.1%
Three Rivers	36.3	35.8	-1.5%
Thurrock	64.4	63.5	-1.3%
Uttlesford	32.5	32.7	0.8%
Watford	37.2	37.4	0.6%
Waveney	51.7	51.6	-0.2%
Welwyn Hatfield	45.6	45.0	-1.2%
East of England	2,484.6	2,480.9	-0.1%

Source: DCLG, Oxford Economics

Carbon emissions

Industry, commercial & energy emissions

Description: CO₂ emissions from the industry, commercial & energy sectors

Data: Local authorities: DECC – Full local CO₂ emissions estimates

Latest data: 2012

Next release: 2013, data due in 2015

DECC data on the CO₂ emissions from the industry, commercial & energy sectors by local authority is used directly in the EEFM, so the two series match exactly, as shown in Table 4.18.

Table 4.18: Comparison of DECC CO₂ industry, commercial & energy emissions with EEFM data, 2012

	DECC data (k tonnes 2012)	EEFM data (k tonnes, 2012)	Difference (%)
Babergh	209.4	209.4	0.0%
Basildon	374.2	374.2	0.0%
Bedford	329.1	329.1	0.0%
Braintree	286.3	286.3	0.0%
Breckland	287.1	287.1	0.0%
Brentwood	128.8	128.8	0.0%
Broadland	392.3	392.3	0.0%
Broxbourne	182.7	182.7	0.0%
Cambridge	436.8	436.8	0.0%
Castle Point	76.3	76.3	0.0%
Chelmsford	348.1	348.1	0.0%
Colchester	310.3	310.3	0.0%
Dacorum	238.1	238.1	0.0%
East Cambridgeshire	193.8	193.8	0.0%
East Hertfordshire	260.9	260.9	0.0%
Epping Forest	212.8	212.8	0.0%
Fenland	459.2	459.2	0.0%
Forest Heath	193.4	193.4	0.0%
Great Yarmouth	154.3	154.3	0.0%
Harlow	286.1	286.1	0.0%
Hertsmere	220.5	220.5	0.0%
Huntingdonshire	453.6	453.6	0.0%
Ipswich	227.2	227.2	0.0%
King's Lynn and West Norfolk	1,033.8	1,033.8	0.0%
Luton	337.0	337.0	0.0%
Maldon	116.1	116.1	0.0%
Mid Bedfordshire	230.9	230.9	0.0%
Mid Suffolk	237.6	237.6	0.0%
North Hertfordshire	265.6	265.6	0.0%
North Norfolk	256.6	256.6	0.0%
Norwich	344.2	344.2	0.0%
Peterborough	467.9	467.9	0.0%
Rochford	107.7	107.7	0.0%
South Bedfordshire	208.3	208.3	0.0%
South Cambridgeshire	475.7	475.7	0.0%
South Norfolk	294.9	294.9	0.0%
Southend-on-Sea	247.5	247.5	0.0%
St Albans	202.8	202.8	0.0%
St Edmundsbury	835.2	835.2	0.0%
Stevenage	222.6	222.6	0.0%
Suffolk Coastal	256.8	256.8	0.0%
Tendring	206.5	206.5	0.0%
Three Rivers	129.5	129.5	0.0%
Thurrock	612.2	612.2	0.0%
Uttlesford	188.2	188.2	0.0%
Wattford	232.0	232.0	0.0%
Waveney	288.1	288.1	0.0%
Welwyn Hatfield	315.8	315.8	0.0%
East of England	14,374.7	14,374.7	0.0%

Source: DECC, Oxford Economics

Domestic emissions

Description: CO2 emissions from the domestic sector

Data: Local authorities: DECC – Full local CO2 emissions estimates

Latest data: 2012

Next release: 2013, data due in 2015

DECC data on the CO2 emissions from the domestic sector by local authority is used directly in the EEFM, so the two series match exactly, as shown in Table 4.19.

Table 4.19: Comparison of DECC CO2 domestic emissions with EEFM data, 2012

	DECC data (k tonnes, 2012)	EEFM data (k tonnes, 2012)	Difference (%)
Babergh	212.8	212.8	0.0%
Basildon	372.0	372.0	0.0%
Bedford	344.1	344.1	0.0%
Braintree	325.8	325.8	0.0%
Breckland	303.6	303.6	0.0%
Brentwood	191.5	191.5	0.0%
Broadland	290.2	290.2	0.0%
Broxbourne	201.0	201.0	0.0%
Cambridge	231.4	231.4	0.0%
Castle Point	206.2	206.2	0.0%
Chelmsford	382.0	382.0	0.0%
Colchester	374.9	374.9	0.0%
Dacorum	333.3	333.3	0.0%
East Cambridgeshire	193.9	193.9	0.0%
East Hertfordshire	333.6	333.6	0.0%
Epping Forest	320.6	320.6	0.0%
Fenland	220.1	220.1	0.0%
Forest Heath	143.8	143.8	0.0%
Great Yarmouth	210.2	210.2	0.0%
Harlow	161.8	161.8	0.0%
Hertsmere	242.1	242.1	0.0%
Huntingdonshire	377.5	377.5	0.0%
Ipswich	259.2	259.2	0.0%
King's Lynn and West Norfolk	377.7	377.7	0.0%
Luton	378.1	378.1	0.0%
Maldon	152.2	152.2	0.0%
Mid Bedfordshire	300.5	300.5	0.0%
Mid Suffolk	230.3	230.3	0.0%
North Hertfordshire	291.6	291.6	0.0%
North Norfolk	277.5	277.5	0.0%
Norwich	261.2	261.2	0.0%
Peterborough	370.2	370.2	0.0%
Rochford	193.7	193.7	0.0%
South Bedfordshire	274.4	274.4	0.0%
South Cambridgeshire	352.1	352.1	0.0%
South Norfolk	302.2	302.2	0.0%
Southend-on-Sea	397.6	397.6	0.0%
St Albans	339.9	339.9	0.0%
St Edmundsbury	238.8	238.8	0.0%
Stevenage	162.2	162.2	0.0%
Suffolk Coastal	306.7	306.7	0.0%
Tendring	325.6	325.6	0.0%
Three Rivers	222.0	222.0	0.0%
Thurrock	311.5	311.5	0.0%
Uttlesford	202.7	202.7	0.0%
Watford	188.4	188.4	0.0%
Waveney	257.3	257.3	0.0%
Welwyn Hatfield	239.5	239.5	0.0%
East of England	13,185.7	13,185.7	0.0%

Source: DECC, Oxford Economics

Transport emissions

Description: CO₂ emissions from the transport sector

Data: Local authorities: DECC – Full local CO₂ emissions estimates

Latest data: 2012

Next release: 2013, data due in 2015

DECC data on the CO₂ emissions from the transport sector by local authority is used directly in the EEFM, so the two series match exactly, as shown in Table 4.20.

Table 4.20: Comparison of DECC CO₂ transport emissions with EEFM data, 2012

	DECC data (k tonnes, 2012)	EEFM data (k tonnes, 2012)	Difference (%)
Babergh	229.8	229.8	0.0%
Basildon	275.4	275.4	0.0%
Bedford	313.5	313.5	0.0%
Braintree	342.9	342.9	0.0%
Breckland	380.8	380.8	0.0%
Brentwood	264.9	264.9	0.0%
Broadland	238.5	238.5	0.0%
Broxbourne	118.1	118.1	0.0%
Cambridge	107.3	107.3	0.0%
Castle Point	105.6	105.6	0.0%
Chelmsford	367.4	367.4	0.0%
Colchester	338.2	338.2	0.0%
Dacorum	266.9	266.9	0.0%
East Cambridgeshire	258.2	258.2	0.0%
East Hertfordshire	271.6	271.6	0.0%
Epping Forest	592.7	592.7	0.0%
Fenland	188.6	188.6	0.0%
Forest Heath	183.5	183.5	0.0%
Great Yarmouth	137.2	137.2	0.0%
Harlow	97.3	97.3	0.0%
Hertsmere	363.9	363.9	0.0%
Huntingdonshire	709.5	709.5	0.0%
Ipswich	113.4	113.4	0.0%
King's Lynn and West Norfolk	397.3	397.3	0.0%
Luton	206.1	206.1	0.0%
Maldon	78.5	78.5	0.0%
Mid Bedfordshire	410.9	410.9	0.0%
Mid Suffolk	273.9	273.9	0.0%
North Hertfordshire	278.2	278.2	0.0%
North Norfolk	221.4	221.4	0.0%
Norwich	139.4	139.4	0.0%
Peterborough	411.3	411.3	0.0%
Rochford	98.4	98.4	0.0%
South Bedfordshire	319.5	319.5	0.0%
South Cambridgeshire	586.6	586.6	0.0%
South Norfolk	396.2	396.2	0.0%
Southend-on-Sea	162.0	162.0	0.0%
St Albans	486.8	486.8	0.0%
St Edmundsbury	252.5	252.5	0.0%
Stevenage	128.5	128.5	0.0%
Suffolk Coastal	260.6	260.6	0.0%
Tendring	234.9	234.9	0.0%
Three Rivers	321.3	321.3	0.0%
Thurrock	410.8	410.8	0.0%
Uttlesford	463.6	463.6	0.0%
Watford	96.8	96.8	0.0%
Waveney	152.5	152.5	0.0%
Welwyn Hatfield	268.9	268.9	0.0%
East of England	13,321.8	13,321.8	0.0%

Source: DECC, Oxford Economics

LULUCF emissions

Description: CO₂ emissions from the land use, land use change and forestry (LULUCF) sector

Data: Local authorities: DECC – Full local CO₂ emissions estimates

Latest data: 2012

Next release: 2013, data due in 2015

DECC data on the CO₂ emissions from the LULUCF sector by local authority is used directly in the EEFM, so the two series match exactly, as shown in Table 4.21.

Table 4.21: Comparison of DECC CO₂ LULUCF emissions with EEFM data, 2012

	DECC data (k tonnes, 2012)	EEFM data (k tonnes, 2012)	Difference (%)
Babergh	5.9	5.9	0.0%
Basildon	1.7	1.7	0.0%
Bedford	5.6	5.6	0.0%
Braintree	5.8	5.8	0.0%
Breckland	-169.9	-169.9	0.0%
Brentwood	2.5	2.5	0.0%
Broadland	8.1	8.1	0.0%
Broxbourne	0.8	0.8	0.0%
Cambridge	0.3	0.3	0.0%
Castle Point	0.7	0.7	0.0%
Chelmsford	4.2	4.2	0.0%
Colchester	4.1	4.1	0.0%
Dacorum	2.3	2.3	0.0%
East Cambridgeshire	142.2	142.2	0.0%
East Hertfordshire	5.8	5.8	0.0%
Epping Forest	4.4	4.4	0.0%
Fenland	142.3	142.3	0.0%
Forest Heath	-7.4	-7.4	0.0%
Great Yarmouth	3.3	3.3	0.0%
Harlow	0.3	0.3	0.0%
Hertsmere	2.2	2.2	0.0%
Huntingdonshire	117.4	117.4	0.0%
Ipswich	0.1	0.1	0.0%
King's Lynn and West Norfolk	70.2	70.2	0.0%
Luton	0.7	0.7	0.0%
Maldon	5.7	5.7	0.0%
Mid Bedfordshire	7.2	7.2	0.0%
Mid Suffolk	-1.8	-1.8	0.0%
North Hertfordshire	5.0	5.0	0.0%
North Norfolk	12.3	12.3	0.0%
Norwich	0.7	0.7	0.0%
Peterborough	0.9	0.9	0.0%
Rochford	3.3	3.3	0.0%
South Bedfordshire	2.4	2.4	0.0%
South Cambridgeshire	21.4	21.4	0.0%
South Norfolk	10.4	10.4	0.0%
Southend-on-Sea	0.8	0.8	0.0%
St Albans	3.3	3.3	0.0%
St Edmundsbury	-32.3	-32.3	0.0%
Stevenage	0.3	0.3	0.0%
Suffolk Coastal	-102.7	-102.7	0.0%
Tendring	5.2	5.2	0.0%
Three Rivers	1.7	1.7	0.0%
Thurrock	3.0	3.0	0.0%
Uttlesford	5.9	5.9	0.0%
Watford	0.4	0.4	0.0%
Waveney	2.8	2.8	0.0%
Welwyn Hatfield	2.0	2.0	0.0%
East of England	311.7	311.7	0.0%

Source: DECC, Oxford Economics

Total emissions

Description: Total CO₂ emissions

Data: Local authorities: DECC – Full local CO₂ emissions estimates

Latest data: 2012

Next release: 2013, data due in 2015

DECC data on the total CO₂ emissions by local authority is used directly in the EEFM, so the two series match exactly, as shown in Table 4.22.

Table 4.22: Comparison of DECC total CO₂ emissions with EEFM data, 2012

	DECC data (k tonnes, 2012)	EEFM data (k tonnes, 2012)	Difference (%)
Babergh	657.8	657.8	0.0%
Basildon	1,023.3	1,023.3	0.0%
Bedford	992.3	992.3	0.0%
Braintree	960.8	960.8	0.0%
Breckland	801.5	801.5	0.0%
Brentwood	587.6	587.6	0.0%
Broadland	929.1	929.1	0.0%
Broxbourne	502.6	502.6	0.0%
Cambridge	775.8	775.8	0.0%
Castle Point	388.8	388.8	0.0%
Chelmsford	1,101.6	1,101.6	0.0%
Colchester	1,027.5	1,027.5	0.0%
Dacorum	840.6	840.6	0.0%
East Cambridgeshire	788.2	788.2	0.0%
East Hertfordshire	872.0	872.0	0.0%
Epping Forest	1,130.5	1,130.5	0.0%
Fenland	1,010.2	1,010.2	0.0%
Forest Heath	513.2	513.2	0.0%
Great Yarmouth	505.0	505.0	0.0%
Harlow	545.5	545.5	0.0%
Hertsmere	828.7	828.7	0.0%
Huntingdonshire	1,658.1	1,658.1	0.0%
Ipswich	599.9	599.9	0.0%
King's Lynn and West Norfolk	1,879.0	1,879.0	0.0%
Luton	922.0	922.0	0.0%
Maldon	352.6	352.6	0.0%
Mid Bedfordshire	949.5	949.5	0.0%
Mid Suffolk	740.0	740.0	0.0%
North Hertfordshire	840.4	840.4	0.0%
North Norfolk	767.7	767.7	0.0%
Norwich	745.5	745.5	0.0%
Peterborough	1,250.3	1,250.3	0.0%
Rochford	403.1	403.1	0.0%
South Bedfordshire	804.7	804.7	0.0%
South Cambridgeshire	1,435.7	1,435.7	0.0%
South Norfolk	1,003.7	1,003.7	0.0%
Southend-on-Sea	807.9	807.9	0.0%
St Albans	1,032.7	1,032.7	0.0%
St Edmundsbury	1,294.2	1,294.2	0.0%
Stevenage	513.6	513.6	0.0%
Suffolk Coastal	721.4	721.4	0.0%
Tendring	772.2	772.2	0.0%
Three Rivers	674.4	674.4	0.0%
Thurrock	1,337.6	1,337.6	0.0%
Uttlesford	860.4	860.4	0.0%
Watford	517.7	517.7	0.0%
Waveney	700.9	700.9	0.0%
Welwyn Hatfield	826.1	826.1	0.0%
East of England	41,193.9	41,193.9	0.0%

Source: DECC, Oxford Economics

5: Outliers and data validity

Oxford Economics adheres to the principle of incorporating published data unchanged into the EEFM as the crucial starting point upon which local economic data are founded. Data is then adjusted to be consistent with key regional and national series which offer more timely information around recent economic trends (see section 4 for further detail). This process allows Model users to reference key variables at the published source, however as data are adjusted this means that users cannot reference data directly, although the broad levels will remain consistent with the published source. Tables published in section 4 are provided to give a sense of the level of adjustment made to the published data.

However, in some cases the data can be anomalous - so-called “outliers.” This could be because of errors in measuring or recording it. Or perhaps the data is “true” but reflects an unusual circumstance and so does not accurately represent the local situation or local trends. Because of the smaller numbers of observations, data-reporting errors or unusual “outlier” values can be a particular problem at more detailed levels of analysis - for example, when looking at individual sectors in individual local authorities.

This section explores these issues in respect of the BRES (note: prior to 2008, ABI data is used and subject to similar levels of volatility), and outlines Oxford Economics’ approach to BRES data outliers. In summary, this is to keep them unchanged within the EEFM spreadsheets, but to adjust them when making forecasts such that the first year of a forecast would incorporate a correction for an outlier value in the BRES data in a previous year.

BRES outliers

The latest published BRES data is for 2012 and was released in September 2013. Since BRES data is collected by survey whereby individuals / firms complete the questionnaires, there can sometimes be significant discontinuities in the sector data at local level from year to year. Such discontinuities may - or may not - reflect real events. Consider the effects on the data series of an incomplete return from a firm - or an error interpreting or recording it - in one year preceded (or followed) by a complete or correct return in the previous (or subsequent) year. Any recorded change in employees associated with this would be fictitious, and any trend extrapolated from it into the future would be misleading. But equally, a dramatic change could reflect the opening, expansion, contraction or closure of a major business in an area (with potential longer-term effects on other local businesses).

If a discontinuity occurred in say 2008, but was corrected in 2009, producing a “spike” in the time-series data, it can essentially be ignored as it will not affect the forecasting process. Equally, if it were confirmed the following year, it would suggest a ‘real’ change in the local economy has indeed taken place. In the meantime, local authorities’ input is vital to identify whether discontinuities in the data reflect ‘real’ events or not.

Focussing on the 2 digit SIC 2007 sectors for employee jobs at local authority level, we identified discontinuities showing **more than a 10% change in number of employees in a single year where this change involved more than 1,000 employees**. These outliers were sent to appropriate local authority representatives for their reaction and input.

Oxford Economics’ response to this consultation was as follows: where we were satisfied that a discontinuity genuinely reflected the opening or closure of a firm, or major expansion or contraction, we accepted the change as the correct starting point for the EEFM forecasts. But if we were given evidence by the steering group that there was an error in the BRES data or that an outlier gave a misleading picture of the local

situation in some way, we corrected for the discontinuity in the first year of the forecast. (In the absence of any information about a discontinuity, we accepted it, in line with our working principle outlined above.)

In addition, Oxford Economics made further adjustments to LQs in 2013 where data 'spikes' occurred in 2012 which fell outside of the criteria used in the validation exercise, and were deemed implausible.

Table 5.1 sets out those local authorities and sectors where adjustments were made to 2012 BRES data, showing the size and direction of the correction. Areas formatted in italics are those which were identified in the data validation process carried out with local authorities, and areas formatted in non-italics are those which Oxford Economics identified that were not identified under the criteria used in the validation exercise.

Table 5.1: Adjustments to 2012 BRES data used in setting forecasts

Local authority	Sector	Correction
Mid Bedfordshire	Construction	Down by approximately 3,000 employee jobs
<i>Luton</i>	Real estate	Up by approximately 500 employee jobs
<i>Luton</i>	Employment activities	Up by approximately 1,600 employee jobs
Huntingdonshire	Transport manufacturing	Up by approximately 300 employee jobs
<i>Huntingdonshire</i>	Land Transport	Down by approximately 100 employee jobs
<i>Colchester</i>	Publishing and broadcasting	Down by approximately 700 employee jobs
Maldon	Land Transport	Down by approximately 300 employee jobs
<i>Maldon</i>	Health and care	Down by approximately 900 employee jobs
Thurrock	Chemicals manufacturing	Up by approximately 600 employee jobs
Dacorum	Food manufacturing	Down by approximately 200 employee jobs
<i>East Hertfordshire</i>	Professional services	Down by approximately 1,400 employee jobs
Hertsmere	Wholesale	Down by approximately 1,200 employee jobs
Watford	Real estate	Down by approximately 300 employee jobs
Welwyn Hatfield	Construction	Down by approximately 1,600 employee jobs
Breckland	Real estate	Up by approximately 200 employee jobs
Norwich	Waste and remediation	Down by approximately 200 employee jobs
<i>St Edmundsbury</i>	Business services	Down by approximately 4,500 employee jobs
<i>Ashford</i>	Construction	Up by approximately 1,200 employee jobs
<i>Ashford</i>	Land transport	Up by approximately 1,300 employee jobs
<i>Canterbury</i>	Health and care	Up by approximately 1,300 employee jobs
<i>Dartford</i>	Business services	Down by approximately 3,200 employee jobs

Note: The amount of jobs by which a sector has been adjusted does not necessarily reflect the size of the observed anomaly in the BRES data, as the 2013 adjusted value also includes an element of the trend employee growth that would have occurred if the correction had not been made

Census vs APS / LFS employment rates

EEFM uses resident employment rates which are anchored to the 2001 Census and since the EEFM 2013 update 2011 Census data has been incorporated on resident employment rates, with the denominator defined as population aged 16-74. The main annual source of resident employment data is the Labour Force Survey / Annual Population Survey, and this is used to calculate annual changes in employment rates.

However, in both 2001 and 2011, there are significant differences between these two data sources. Table 5.2 shows, for all authorities, the 2011 resident employment rates from the Census and the APS / LFS. Percentage point differences are shown in the third column. Note that, for consistency, the denominator in both cases is all people aged 16-64.

No clear reason for these differences has been found. There does not appear to be a consistent pattern to them. Cambridge shows the biggest positive difference, with an APS / LFS employment rate 11.6 percentage points higher than the Census rate. In the 2001 Census the difference is around 13.6 percentage points. It is possible that the difference is related to University students, who are normally counted at their term-time address in the Census but may not have been present on Census day due to their shorter terms, and who are also exempt from taking up employment during term-time but may take up employment during the rest of the year. A similar pattern is evident in Norwich which also has a substantial student population, where the APS / LFS employment rate is 8.1 percentage points higher. However when we compared the APS / LFS with the Census in 2001, there was little difference between the two measures. Maldon shows the largest

negative difference, where the APS / LFS 2011 resident employment rate is 12.1 percentage points lower than the Census estimate.

In the Model, resident employment rates are estimated as equal to the Census rates in 2001 and 2011 (with the 16-74 population as denominator), but increased every year in line with the growth in the LFS/APS employment rate (with the working-age population as denominator). This methodology was chosen to satisfy the request by the Model Steering Group that the EEFM's underlying data be consistent with the Census whenever possible. So although these discrepancies between the Census and LFS/APS employment rates are acknowledged here, they are not adjusted for in the EEFM.

Table 5.2: Census vs LFS employment rates

	Census 2011	LFS / APS 2011	Difference (pp)
Babergh	79.8	73.0	-6.8
Basildon	74.5	72.2	-2.3
Bedford	75.0	75.8	0.8
Braintree	79.1	77.2	-1.9
Breckland	77.0	75.0	-2.0
Brentwood	78.5	81.5	3.0
Broadland	81.2	77.9	-3.3
Broxbourne	77.6	78.7	1.1
Cambridge	65.8	72.1	6.3
Castle Point	76.9	72.7	-4.2
Chelmsford	79.4	74.7	-4.7
Colchester	74.9	74.9	0.0
Dacorum	78.7	76.6	-2.1
East Cambridgeshire	82.4	78.1	-4.3
East Hertfordshire	81.0	74.6	-6.4
Epping Forest	77.9	67.7	-10.2
Fenland	75.2	63.6	-11.6
Forest Heath	80.7	78.3	-2.4
Great Yarmouth	69.4	67.5	-1.9
Harlow	76.5	72.0	-4.5
Hertsmere	77.7	75.9	-1.8
Huntingdonshire	80.9	75.0	-5.9
Ipswich	74.6	73.3	-1.3
King's Lynn and West Norfolk	75.6	74.6	-1.0
Luton	67.2	64.9	-2.3
Maldon	79.0	64.8	-14.2
Mid Bedfordshire	80.1	77.6	-2.5
Mid Suffolk	81.4	79.7	-1.7
North Hertfordshire	80.4	75.5	-4.9
North Norfolk	75.0	74.4	-0.6
Norwich	68.6	72.1	3.5
Peterborough	73.3	70.5	-2.8
Rochford	78.9	76.8	-2.1
South Bedfordshire	79.5	76.9	-2.6
South Cambridgeshire	83.1	82.9	-0.2
South Norfolk	80.1	75.3	-4.8
Southend-on-Sea	73.9	69.7	-4.2
St Albans	80.1	78.9	-1.2
St Edmundsbury	80.8	76.8	-4.0
Stevenage	77.5	72.7	-4.8
Suffolk Coastal	79.0	81.9	2.9
Tendring	70.3	66.0	-4.3
Three Rivers	79.3	68.5	-10.8
Thurrock	74.7	70.1	-4.6
Uttlesford	81.1	79.1	-2.0
Watford	78.4	77.6	-0.8
Waveney	72.6	71.5	-1.1
Welwyn Hatfield	72.0	68.0	-4.0
East of England	76.6	73.9	-2.7

Note: The denominator used for the Census is all people aged 16-64. This is to ensure consistency with the LFS / APS

Data checking and validity procedures

A vital foundation of any economic modelling and forecasting work is ensuring that data is correctly sourced and accurately fed into the model. Oxford Economics has a policy of meticulously summing checking variables and carrying out visual checks throughout the process of updating the EEFM to ensure that the data is fully internally consistent.

Data is entered electronically from original official sources and is checked automatically to make sure identities are maintained. It is also checked visually to assess whether trends look plausible and magnitudes are correct.

There are a number of key identities in the EEFM which must hold for the Model to be fully realised, and we have a spreadsheet within it designed specifically to check that this is the case. These identities are:

- Employee jobs by sector = total employee jobs
- Self-employed jobs by sector = total self-employed jobs
- Employment by sector = total employment
- All indicators in each local authority = Eastern totals (note that this does not apply to house prices, productivity, and unemployment / resident employment rates)
- Total employment = employee jobs + self employed jobs + HM Armed Forces
- Total population = working age population + young population + elderly population
- Change in population = net migration + natural increase
- People-based employment = net commuting + resident-based employment
- Labour force = employment + unemployment

There are two principal methods that we apply to our models to ensure variables add up correctly over the forecast period:

1. **Scaling:** it is often the case that model input or output variables which are theoretically identical actually have different values. This is usually due to errors or incompleteness in the underlying data or methodological differences in gathering them. Scaling is the process by which two such variables are made equal by raising one to the value of the other, and the procedure can either be multiplicative or additive. Additive scaling takes the difference between the variables and adds it pro rata to the components of the lower of the two (for example, to local authority values when the total of these is less than a regional value to which it should theoretically be equal). Multiplicative scaling takes the ratio of the “target” total to the actual total, and multiplies each component of the actual total by that ratio. In this way, the actual total is shifted upwards (or downwards) to meet a target total which it should theoretically equal.
2. **Residual:** this procedure is used when the value of one component (or a small number of them) can be approximately deduced from the known values of other components and a known total. For example, estimating full time jobs as the residual between total jobs and part time jobs.

6: Performance monitoring

The following section outlines changes to key indicators since EEFM 2013 run, and includes comparison tables of each of the Model runs.

What's changed

Since the last EEFM update was in 2013, new data has been released for every variable in the model. Table 6.1 summarises the changes to the key data assumed for 2012 and 2013 (some arise from new data releases, some from updated estimates/forecasts, others from a mixture of the two). The largest change since the last update of the model is the incorporation of the Census 2011 commuting matrix.

Table 6.1: Changes to East of England data between the EEFM 2013 and EEFM 2014 runs

	EEFM 2013		EEFM 2014		Differences	
	2012	2013	2012	2013	2012	2013
Population (000s)	5920	5979	5907	5954	-14	-25
Employment (000s)	2864	2850	2868	2944	4	94
Resident employment (000s)	2792	2780	2878	2903	87	124
Resident employment rate (%)	65.2	64.4	67.4	67.6	2.2	3.1
Unemployment (000s)	115.2	114.5	115.2	102.2	0.0	-12.3
GVA (% growth)	-0.5	0.5	0.0	2.2	0.5	1.7
Dwellings (000s)	2550	2575	2550	2566	0	-9
Households (000s)	2466	2490	2466	2481	0	-9

Source: ONS, BRES, APS, Claimant Count (Nomis), Regional Accounts, DCLG

Note: GVA and resident employment rate differences are percentage point changes. All other differences are in thousands

In these EEFM 2014 forecasts, the level of **total employment** (the sum of employee jobs and self-employment jobs) in the East of England in 2012 is higher by 4,000 jobs than the equivalent figure in the EEFM 2013 forecasts. The 2013 level of employment in the East according to ONS Workforce Jobs is higher by an estimated 94,000 jobs compared to the estimate in the EEFM 2013 update.

Table 6.2: Changes to East of England sectoral data between the EEFM 2013 and EEFM 2014 runs
(000s)

	EEFM 2013		EEFM 2014		Differences	
	2012	2013	2012	2013	2012	2013
Agriculture	39.2	36.6	37.0	35.4	-2.2	-1.2
Mining and Quarrying	1.4	1.4	1.9	1.7	0.4	0.3
Food Manufacturing	33.0	33.0	30.5	30.4	-2.5	-2.6
General Manufacturing	71.9	71.5	77.2	78.1	5.3	6.6
Chemicals	35.9	35.5	27.8	27.4	-8.1	-8.2
Pharma	7.2	7.2	6.4	6.4	-0.8	-0.8
Metals	29.1	28.9	34.8	34.4	5.8	5.6
Transport	45.4	45.1	44.0	43.5	-1.4	-1.6
Electronics	26.3	26.1	23.4	23.2	-2.9	-2.9
Utilities	14.7	12.5	12.6	13.6	-2.1	1.1
Waste and remediation	10.1	10.4	15.3	16.1	5.2	5.7
Construction	206.3	200.7	218.2	222.3	11.9	21.6
Wholesale	192.6	191.7	179.0	181.1	-13.7	-10.6
Retail	315.4	314.2	292.8	294.9	-22.6	-19.3
Land Transport	143.2	140.5	140.7	137.6	-2.6	-2.9
Water and air transport	5.9	6.0	5.8	5.7	0.0	-0.3
Hotels and restaurants	151.9	154.7	167.7	170.4	15.8	15.7
Publishing and broadcasting	25.0	25.6	24.2	26.0	-0.8	0.3
Telecoms	17.8	18.1	18.5	20.2	0.7	2.1
Computer related activity	57.8	59.3	55.8	60.8	-2.1	1.5
Finance	76.4	76.9	77.5	74.7	1.1	-2.1
Real Estate	41.3	41.9	42.1	44.8	0.7	2.8
Professional services	191.6	199.1	216.0	232.6	24.3	33.5
R+D	20.2	21.9	21.3	23.2	1.1	1.3
Business services	161.7	162.1	173.0	184.5	11.3	22.5
Employment activities	82.9	80.9	91.4	100.8	8.5	19.9
Public Administration incl land forces	111.3	109.9	116.3	114.8	5.1	4.8
Education	267.6	263.8	259.5	260.0	-8.2	-3.8
Health and care	314.4	307.5	320.6	337.4	6.2	29.8
Arts and entertainment	82.0	82.2	70.9	71.9	-11.1	-10.2
Other services	84.6	84.4	65.9	69.5	-18.8	-14.9
Total	2864.4	2849.7	2868.1	2943.5	3.7	93.8

Source: Oxford Economics, ONS Workforce Jobs

The largest of the downward revisions in 2012 between the EEFM 2013 and EEFM 2014 results occurred in retail, other services, wholesale and arts & entertainment. The largest upward revisions to 2012 data were in professional services, hotels and restaurants, construction and business services. Total jobs are 3,700 higher in the EEFM 2014 than in the 2013 model release.

Total jobs have been revised up by 93,800 jobs in 2013 in the EEFM2014. On a sectoral basis, the largest upward revisions occurred in professional services, health and care, business services and construction. The largest downward revisions were evident in retail, other services, wholesale and arts & entertainment (consistent with the downgrades to 2012 data).

In the EEFM 2014 run, the latest data available for **resident employment** was for 2013 from the APS. In 2012, resident employment levels are estimated to have been higher by around 87,000 jobs. In 2013, resident employment is 124,000 higher.

Claimant unemployment data for all of 2013 is now available for the East. This shows that unemployment is 12,300 claimants fewer than estimated in the EEFM 2013 run. The 2012 estimate of unemployment is unchanged since we had all 12 months of data available for 2012 at the time of the EEFM 2013 update.

GVA data in the EEFM 2014 run has been rebased from 2009 prices to 2010 prices, preserving consistency with the Blue Book. In addition, new regional data (2012) has been released since the EEFM 2013 run, with the growth rate revised up by 0.5pp.

Monitoring the forecasts

This section compares five-year forecasts across all of the EEFM runs. Each review table contains an 'outturn' column for 2008-13.

Population

Table 6.3 shows population growth over 2008-2013 in the Autumn 2007, Autumn 2008, Spring 2009, Autumn 2009, Spring 2010, Autumn 2010, EEFM 2012, EEFM 2013 and EEFM 2014 runs. Overall, we estimate an additional 245,100 people in the East over 2008-13. This outturn is almost 25,000 lower than anticipated in the EEFM 2013. The spread of the forecast change varies across districts, but is guided by the direction of change arising from the 2011 Census population figure published for each district. Peterborough enjoyed the highest upward revision of 5,600 people whilst Norwich suffered the biggest reduction.

Table 6.3: Comparison of projected population growth 2008-2013 (000s)

	Aut 07 2008-13	Aut 08 2008-13	Spr 09 2008-13	Aut 09 2008-13	Spr 10 2008-13	Aut 10 2008-13	EEFM 2012 2008-13	EEFM 2013 2008-13	EEFM 2014 2008-13	Outturn 2008-13
Babergh	2.3	4.2	4.0	3.4	3.1	2.7	0.5	1.6	1.0	1.0
Basildon	3.8	6.2	4.3	4.1	3.7	4.1	5.4	5.2	5.9	5.9
Bedford	7.3	7.8	6.7	5.5	5.8	4.9	8.0	6.5	7.2	7.2
Braintree	8.0	6.3	5.0	4.8	4.7	4.0	5.4	6.7	5.2	5.2
Breckland	5.5	6.4	5.9	4.8	4.9	5.0	6.6	4.6	4.0	4.0
Brentwood	3.9	2.6	1.1	1.8	1.7	3.1	5.2	2.9	2.5	2.5
Broadland	3.5	9.0	8.1	8.7	8.6	7.8	4.3	2.8	2.1	2.1
Broxbourne	1.8	3.8	2.6	2.9	3.2	3.3	2.2	4.0	3.3	3.3
Cambridge	5.6	14.0	12.3	11.2	10.3	12.3	15.2	9.7	10.5	10.5
Castle Point	1.9	2.4	1.3	1.0	0.8	0.6	2.0	0.9	0.5	0.5
Chelmsford	4.6	8.5	7.0	8.0	7.4	9.2	10.2	6.4	5.2	5.2
Colchester	6.0	9.2	8.8	8.6	6.7	8.7	15.9	10.1	9.7	9.7
Dacorum	4.3	5.4	4.3	5.9	5.8	6.7	6.1	6.8	7.4	7.4
East Cambridgeshire	4.6	5.2	4.4	4.0	3.1	4.9	7.4	6.4	4.9	4.9
East Hertfordshire	6.9	5.3	4.0	7.2	8.2	8.4	7.9	6.4	6.2	6.2
Epping Forest	3.4	4.4	2.3	2.9	2.9	3.4	3.2	3.0	3.8	3.8
Fenland	3.7	4.5	3.7	2.8	2.4	1.9	3.3	4.5	3.1	3.1
Forest Heath	1.6	3.6	3.4	3.2	3.2	4.4	6.6	4.0	3.7	3.7
Great Yarmouth	2.0	1.0	0.3	0.3	-0.3	0.0	1.5	3.2	1.9	1.9
Harlow	2.8	1.7	1.0	0.9	0.9	0.9	3.2	4.0	3.4	3.4
Hertsmere	2.9	4.8	2.8	3.5	3.5	3.6	5.5	4.9	3.6	3.6
Huntingdonshire	4.4	10.8	9.2	9.8	9.6	8.7	6.3	6.9	5.7	5.7
Ipswich	4.1	4.7	4.2	3.3	3.1	4.1	6.8	9.7	7.3	7.3
King's Lynn and West Norfolk	1.8	5.6	4.8	5.6	5.1	4.8	4.0	5.3	3.7	3.7
Luton	4.5	3.2	1.9	3.3	4.0	5.8	14.2	15.6	15.9	15.9
Maldon	1.7	2.2	1.9	2.3	2.3	3.2	2.2	0.9	0.5	0.5
Mid Bedfordshire	8.2	7.5	6.8	6.5	6.7	5.9	8.8	6.2	7.5	7.5
Mid Suffolk	4.2	3.3	3.4	5.3	4.7	5.0	5.7	4.9	3.4	3.4
North Hertfordshire	5.4	9.3	4.6	4.9	4.4	5.0	6.4	6.1	4.9	4.9
North Norfolk	4.0	1.7	1.3	0.8	0.6	0.0	2.0	2.2	1.1	1.1
Norwich	3.8	8.0	7.1	7.7	6.5	9.1	14.8	7.0	7.8	7.8
Peterborough	5.7	4.3	2.5	2.1	2.3	2.7	6.8	12.4	12.3	12.3
Rochford	1.6	2.9	2.3	3.2	3.0	2.5	2.9	1.5	0.8	0.8
South Bedfordshire	4.0	8.1	5.4	5.2	4.9	4.6	3.6	6.0	8.0	8.0
South Cambridgeshire	9.0	9.9	8.6	11.8	11.0	12.7	12.7	9.9	7.8	7.8
South Norfolk	4.2	7.2	6.5	7.2	6.9	7.8	10.4	9.7	8.8	8.8
Southend-on-Sea	0.7	8.0	5.9	5.3	5.0	4.1	3.6	8.4	7.6	7.6
St Albans	5.8	6.8	5.9	8.9	8.1	10.0	9.2	7.9	7.0	7.0
St Edmundsbury	3.1	6.3	5.8	5.5	5.6	5.5	4.3	6.7	4.3	4.3
Stevenage	5.4	1.8	0.8	2.0	1.8	1.5	2.4	3.8	3.8	3.8
Suffolk Coastal	0.3	7.3	5.9	6.7	5.6	4.6	5.1	3.7	0.5	0.5
Tendring	4.2	6.3	5.0	3.6	2.6	2.1	4.8	-0.8	-1.7	-1.7
Three Rivers	1.6	3.3	2.7	3.7	3.5	3.7	4.5	3.0	3.3	3.3
Thurrock	9.4	7.9	6.6	5.7	5.4	6.4	10.0	8.5	7.2	7.2
Uttlesford	3.6	2.5	2.2	2.5	2.6	3.1	5.8	6.2	7.2	7.2
Watford	3.3	3.6	0.6	1.7	1.3	2.4	6.0	8.0	8.9	8.9
Waveney	3.2	0.3	0.7	-0.4	-0.6	-0.6	-1.1	0.0	-0.4	-0.4
Welwyn Hatfield	4.1	5.3	5.2	4.4	4.1	4.5	8.5	6.1	6.6	6.6
East	197.4	264.7	210.7	223.9	210.2	228.9	296.4	270.2	245.1	245.1

Source: Oxford Economics

Employment

Table 6.4 shows five-year data/forecasts for jobs growth over 2008-13 in the Autumn 2007, Autumn 2008, Spring 2009, Autumn 2009, Spring 2010, Autumn 2010, EEFM 2012, EEFM 2013 and EEFM 2014 runs. Between the Autumn 2007 and Spring 2009 runs, the jobs growth forecast had gradually reduced, echoing the downward revisions being made by Oxford Economics to its UK forecasts as more information about the developing recession became available. However, by the time of the Autumn 2009 run, the employment data was showing that the impact of the recession on the labour market was mild in comparison with previous recessions, perhaps reflecting changes in the structure of the economy since then. Consequently, the Autumn 2009, Spring 2010 and Autumn 2010 EEFM runs all showed an improved position on 2008-13 jobs change relative to the previous forecasts, particularly as new published data had constantly been subject to upward revisions for the East. In the EEFM 2012 update, revisions to published data by the ONS resulted in a downward revision to the medium term outlook of jobs growth. This also reflected ongoing problems in the Eurozone and the continued impact of spending cuts. In the EEFM 2013 update, a contraction in jobs levels over the period 2008-13 was forecast of around 28,900 jobs. This is due to persistent problems in the Eurozone which appeared to be stalling the export led recovery. In the 2014 update, we have incorporated 2013 data at the regional level, which suggests a much faster labour market recovery than previously expected. Over the 2008-13 period, the number of jobs in the East of England are estimated to have risen by 77,000.

The areas estimated to have witnessed the largest gains during this 2008-13 period include South Norfolk, Hertsmere, Broxbourne, Basildon and Watford. The areas with the weakest job gains during this period include Norwich, Ipswich, Harlow and Bedford. The pace of recovery in each area ultimately depends on its sector mix, and in areas with more industry and manufacturing the recovery is likely to be weaker, with more positive outlooks in areas with a bigger professional services sector.

Over the 2008-13 period, the largest upward revisions to employment gains between the EEFM 2013 update and EEFM 2014 release are evident in Peterborough, Basildon and Hertsmere. Conversely, Welwyn Hatfield, South Cambridgeshire and Chelmsford have experienced the largest downgrades.

GVA

Table 6.5 shows five-year data/forecasts for GVA growth over 2008-13 in the Autumn 2007, Autumn 2008, Spring 2009, Autumn 2009, Spring 2010, Autumn 2010, EEFM 2012, EEFM 2013 and EEFM 2014 runs. As with employment, the five-year estimates became more negative as the recession gathered pace. In the EEFM 2014 run, we estimate that GVA growth contracted by 0.3% per annum over the period 2008-13.

Table 6.4: Comparison of employment growth between EEFM updates, 2008-2013 (000s)

	Aut 07 2008-13	Aut 08 2008-13	Spr 09 2008-13	Aut 09 2008-13	Spr 10 2008-13	Aut 10 2008-13	EEFM 2012 2008-13	EEFM 2013 2008-13	EEFM 2014 2008-13	Outturn 2008-13
Babergh	1.6	1.7	0.0	0.2	-0.1	0.6	-0.9	-1.3	0.4	-
Basildon	1.0	0.7	-4.1	-1.4	-1.9	-1.2	-5.5	-2.8	5.0	-
Bedford	3.1	1.6	-2.2	-2.0	-0.1	0.1	-3.9	-6.2	-1.5	-
Braintree	5.6	1.2	-2.9	-2.1	-0.8	-0.5	-3.5	-0.6	0.4	-
Breckland	3.2	2.8	0.4	-0.3	0.1	1.3	-0.5	0.0	1.5	-
Brentwood	3.3	1.2	-2.3	-1.4	-0.7	1.3	-3.0	1.2	4.6	-
Broadland	1.9	2.2	-1.1	-0.8	0.5	1.4	8.8	2.3	2.5	-
Broxbourne	0.7	0.9	-1.6	-1.6	-0.5	-0.6	-0.3	3.8	5.5	-
Cambridge	3.9	10.6	8.0	10.1	6.9	8.9	2.4	-0.4	4.3	-
Castle Point	1.2	0.5	-1.1	-0.8	-0.3	-0.3	0.2	-0.5	3.1	-
Chelmsford	4.4	3.5	-0.7	0.9	0.6	2.5	6.7	6.4	4.3	-
Colchester	4.1	3.0	-1.0	1.3	1.2	2.6	6.4	2.9	3.7	-
Dacorum	4.7	1.1	-2.9	-0.5	0.0	1.6	-0.9	-3.9	2.2	-
East Cambridgeshire	3.1	1.2	-0.6	0.2	0.6	2.2	2.9	3.1	2.6	-
East Hertfordshire	4.9	-0.6	-3.4	-1.9	-0.4	0.9	-4.0	-1.3	-1.1	-
Epping Forest	3.4	0.6	-2.5	-2.6	-0.3	1.1	4.4	1.2	3.1	-
Fenland	2.3	1.4	-0.1	0.0	2.2	2.9	1.6	0.4	-0.8	-
Forest Heath	0.6	1.3	-0.3	0.0	0.5	1.3	2.2	0.7	0.9	-
Great Yarmouth	2.4	-1.1	-2.7	-1.8	-1.2	-0.8	0.7	-0.5	2.0	-
Harlow	0.4	0.4	-2.4	-1.4	-4.6	-4.6	-4.0	-6.7	-2.3	-
Hertsmere	4.1	3.8	0.4	1.6	1.8	3.0	-3.2	-1.4	5.7	-
Huntingdonshire	2.2	2.3	-2.0	-1.0	-1.1	-0.3	-2.3	-5.6	-0.3	-
Ipswich	0.7	1.6	-1.0	-1.1	-0.4	0.2	-0.9	-5.0	-4.2	-
King's Lynn and West Norfolk	0.9	0.7	-2.3	-0.1	-0.5	1.1	-1.6	-1.7	2.7	-
Luton	2.6	0.7	-3.7	-2.9	2.9	3.5	2.6	-3.5	-1.4	-
Maldon	0.8	0.7	-0.3	0.3	1.1	1.6	-0.2	-1.0	0.5	-
Mid Bedfordshire	6.6	2.0	-0.7	0.3	0.9	1.6	7.0	-1.1	1.5	-
Mid Suffolk	1.6	0.2	-1.6	1.1	0.9	2.3	1.7	0.7	1.5	-
North Hertfordshire	4.4	3.4	-0.6	-1.1	-1.2	-0.3	-1.4	-2.8	1.3	-
North Norfolk	2.4	-0.7	-2.0	-1.0	-0.3	0.1	0.9	1.3	0.7	-
Norwich	2.0	0.8	-4.2	-3.1	-4.2	-3.5	-6.9	-9.1	-6.8	-
Peterborough	4.0	-1.4	-6.4	-6.3	-0.3	0.5	-2.4	-10.1	-1.2	-
Rochford	1.9	0.3	-0.9	-0.3	-0.2	0.0	-0.1	0.4	3.0	-
South Bedfordshire	2.5	2.2	-2.0	-1.4	-0.9	-0.6	1.1	-0.8	4.5	-
South Cambridgeshire	5.5	2.5	-2.2	3.0	1.0	3.3	5.5	3.6	0.5	-
South Norfolk	2.5	2.9	0.3	2.0	2.9	4.8	7.8	6.0	7.7	-
Southend-on-Sea	1.3	2.3	-2.5	-1.3	-3.0	-3.0	-6.4	-4.0	0.3	-
St Albans	5.2	3.2	-0.9	1.8	-4.9	-3.9	-1.1	-3.1	-1.3	-
St Edmundsbury	1.9	2.5	-0.3	-0.1	0.8	1.3	5.9	5.7	4.6	-
Stevenage	4.4	2.6	-0.8	1.2	1.6	1.9	2.9	2.7	3.2	-
Suffolk Coastal	1.7	2.4	-0.9	0.1	1.9	3.2	0.7	0.6	1.5	-
Tendring	2.1	1.0	-1.4	-0.7	-0.2	0.0	-0.1	-0.8	2.2	-
Three Rivers	1.2	0.9	-0.8	0.3	0.5	1.4	-2.5	-2.7	0.6	-
Thurrock	3.4	2.6	-0.2	-0.3	0.9	-0.5	4.5	2.4	1.1	-
Uttlesford	3.2	0.1	-0.9	-0.4	0.1	0.7	0.4	0.1	2.0	-
Watford	1.6	0.5	-4.1	-3.0	-1.0	0.9	1.2	-1.2	4.8	-
Waveney	1.6	-1.7	-2.5	-2.0	-1.1	-1.0	-1.4	-3.2	-1.4	-
Welwyn Hatfield	5.0	1.2	-1.9	-1.3	0.4	1.7	4.2	7.0	3.4	-
East	133.2	73.7	-69.7	-21.9	0.1	41.1	25.8	-28.9	77.0	-

Source: Oxford Economics

Table 6.5: Comparison of GVA growth per annum between EEFM updates, 2008-2013 (avg%pa)

	Aut 07 2008-13	Aut 08 2008-13	Spr 09 2008-13	Aut 09 2008-13	Spr 10 2008-13	Aut 10 2008-13	EEFM 2012 2008-13	EEFM 2013 2008-13	EEFM 2014 2008-13	Outturn 2008-13
Babergh	-0.9	3.0	1.2	1.4	0.9	1.1	-0.7	-1.2	-0.9	-
Basildon	-0.2	2.9	1.2	1.6	0.9	1.2	-1.6	-1.0	-0.2	-
Bedford	0.3	2.4	0.8	0.8	1.1	1.3	-0.3	-0.9	0.3	-
Braintree	0.1	2.6	0.7	1.0	0.6	0.9	-0.3	0.8	0.1	-
Breckland	0.5	2.9	1.5	1.5	1.4	1.8	0.0	1.0	0.5	-
Brentwood	1.0	3.4	1.2	1.4	1.0	1.9	-2.7	0.6	1.0	-
Broadland	2.0	3.1	0.8	1.5	1.7	1.9	4.6	3.1	2.0	-
Broxbourne	1.5	2.8	0.8	0.9	1.1	1.2	1.6	2.0	1.5	-
Cambridge	-0.5	4.3	3.4	3.4	3.4	3.7	-0.6	-1.3	-0.5	-
Castle Point	2.2	2.5	0.5	0.8	1.6	1.8	0.5	-0.3	2.2	-
Chelmsford	0.0	3.1	1.7	1.9	0.8	1.3	1.5	1.8	0.0	-
Colchester	-1.0	3.2	1.4	1.9	1.1	1.5	1.9	1.1	-1.0	-
Dacorum	-0.8	2.7	0.7	1.1	0.5	1.1	0.5	-1.7	-0.8	-
East Cambridgeshire	0.7	3.0	0.7	1.4	1.3	2.1	2.8	2.5	0.7	-
East Hertfordshire	-1.2	2.4	0.6	1.0	1.4	1.7	-0.1	-0.4	-1.2	-
Epping Forest	0.7	2.1	0.4	0.3	0.8	1.4	0.3	0.2	0.7	-
Fenland	0.3	2.9	1.5	1.5	2.3	2.6	2.2	1.9	0.3	-
Forest Heath	-0.3	2.7	1.5	1.5	0.9	1.5	1.6	0.8	-0.3	-
Great Yarmouth	1.3	1.8	0.5	0.7	0.7	1.1	1.0	0.1	1.3	-
Harlow	-5.2	2.7	1.0	1.2	-1.7	-1.5	-4.6	-6.7	-5.2	-
Hertsmere	0.8	4.0	1.8	2.1	2.5	3.0	0.9	-0.3	0.8	-
Huntingdonshire	0.1	2.7	1.0	1.3	1.1	1.4	0.9	-0.5	0.1	-
Ipswich	-2.1	2.8	1.6	1.5	1.1	1.3	-0.7	-1.5	-2.1	-
King's Lynn and West Norfolk	1.2	2.3	0.9	1.5	0.7	1.0	0.9	0.9	1.2	-
Luton	-2.1	2.7	1.1	1.0	2.0	2.2	0.0	-2.1	-2.1	-
Maldon	1.6	2.7	1.6	1.7	1.8	2.2	1.8	1.1	1.6	-
Mid Bedfordshire	-0.3	2.8	1.2	1.5	0.8	1.1	3.6	-0.9	-0.3	-
Mid Suffolk	-1.9	2.1	0.5	1.8	1.6	2.2	0.3	-1.1	-1.9	-
North Hertfordshire	2.8	3.5	1.6	1.4	0.9	1.3	2.6	1.2	2.8	-
North Norfolk	0.5	1.7	0.2	0.9	1.0	1.1	0.7	1.9	0.5	-
Norwich	-3.7	2.9	1.4	1.7	0.4	0.7	-2.6	-3.3	-3.7	-
Peterborough	-1.0	2.3	0.8	0.9	1.3	1.4	0.3	-1.8	-1.0	-
Rochford	-0.1	2.6	1.4	1.6	0.2	0.4	-1.8	-1.3	-0.1	-
South Bedfordshire	3.1	3.1	0.7	0.8	-0.8	-0.5	0.5	0.7	3.1	-
South Cambridgeshire	0.3	3.3	1.3	2.4	1.3	2.1	1.8	1.6	0.3	-
South Norfolk	2.7	3.0	1.4	2.1	2.8	3.2	3.6	3.4	2.7	-
Southend-on-Sea	-1.0	2.7	0.7	1.1	0.2	0.4	-1.6	-1.4	-1.0	-
St Albans	-1.3	3.5	1.8	2.2	1.3	1.6	0.1	-0.7	-1.3	-
St Edmundsbury	1.9	2.7	1.1	1.4	2.0	2.2	4.3	3.6	1.9	-
Stevenage	1.8	4.0	2.2	2.4	2.1	2.5	2.2	2.7	1.8	-
Suffolk Coastal	-0.8	3.1	0.9	0.8	1.4	1.9	-0.2	-0.5	-0.8	-
Tendring	0.5	2.3	0.8	0.9	0.8	1.1	-0.3	-0.5	0.5	-
Three Rivers	-2.4	2.9	1.6	2.1	1.3	1.8	-1.1	-2.7	-2.4	-
Thurrock	-1.6	2.9	1.5	1.1	1.0	1.0	-0.3	-1.2	-1.6	-
Uttlesford	1.2	2.6	1.5	1.2	1.5	1.9	-0.3	0.0	1.2	-
Watford	-0.8	2.9	0.2	0.6	1.9	2.6	-2.0	-2.4	-0.8	-
Waveney	-1.2	1.5	0.4	0.7	0.9	1.1	0.4	-1.1	-1.2	-
Welwyn Hatfield	-0.6	2.9	1.3	1.2	1.1	1.6	-0.2	1.1	-0.6	-
Eastern	-0.3	2.9	1.2	1.4	1.2	1.6	0.4	-0.2	-0.3	-

Source: Oxford Economics

Monitoring the long-term forecasts

This section includes tables which compare long term change to population, employment and GVA forecasts across each of the model releases. This follows on from requests from the Model Steering Group. However, the long term outlook is based on a complexity of assumptions with each model run, each of which has been outlined in the report which accompanies each model release. As such, these tables are not accompanied by a recap of the assumptions as this information can be found by looking at previous reports.

Table 6.6: Comparison of population growth between EEFM updates, 2011-2031 (000s)

	Aut 08 2011-31 (000s)	Spr 09 2011-31 (000s)	Aut 09 2011-31 (000s)	Spr 10 2011-31 (000s)	Aut 10 2011-31 (000s)	EEFM 2012 2011-31 (000s)	EEFM 2013 2011-31 (000s)	EEFM 2014 2011-31 (000s)
Babergh	14.8	11.8	12.9	12.8	13.8	7.5	5.8	8.4
Basildon	20.3	12.7	14.1	14.0	13.6	19.2	21.8	27.9
Bedford	31.4	21.8	23.8	22.4	16.5	25.7	23.7	24.9
Braintree	20.7	14.9	15.3	14.6	12.7	21.3	27.0	26.0
Breckland	18.5	13.4	17.0	18.2	16.5	25.6	21.3	18.3
Brentwood	13.2	6.2	5.2	4.8	6.5	7.9	7.4	9.0
Broadland	32.1	30.7	31.1	31.0	30.4	15.3	10.4	7.8
Broxbourne	15.4	10.5	12.1	12.8	13.4	11.0	16.2	14.2
Cambridge	59.0	57.7	33.9	32.0	37.2	27.0	28.0	28.5
Castle Point	7.4	2.9	3.5	2.2	2.3	10.0	6.1	2.5
Chelmsford	27.3	21.8	23.9	22.0	25.2	34.0	24.9	21.8
Colchester	29.2	21.5	22.5	18.4	15.7	30.5	39.6	37.1
Dacorum	25.1	20.9	19.9	18.7	19.0	15.6	18.3	13.1
East Cambridgeshire	24.4	24.6	21.4	16.3	23.0	28.0	28.3	23.0
East Hertfordshire	29.6	28.4	31.7	31.7	31.8	25.0	26.6	26.4
Epping Forest	16.4	11.4	13.9	11.7	13.0	13.1	11.5	13.4
Fenland	11.4	7.4	11.0	11.8	10.0	21.3	23.9	13.3
Forest Heath	12.0	5.8	5.9	6.6	6.4	13.7	11.8	9.2
Great Yarmouth	12.4	6.4	7.5	7.0	6.4	12.5	14.1	12.8
Harlow	12.7	6.6	7.7	6.7	3.7	12.8	14.0	9.6
Hertsmere	21.1	11.7	11.5	10.6	12.2	13.1	18.0	17.2
Huntingdonshire	40.5	33.5	30.9	27.7	27.0	23.2	27.3	22.6
Ipswich	22.4	16.0	16.9	15.3	13.0	25.4	29.6	29.0
King's Lynn and West Norfolk	15.2	10.5	25.4	30.3	27.8	22.5	24.6	22.3
Luton	8.4	-6.6	9.8	17.3	12.9	37.8	34.5	34.1
Maldon	10.2	7.8	8.4	7.9	8.6	8.7	5.4	5.9
Mid Bedfordshire	37.1	34.8	29.8	29.9	31.8	40.6	30.1	29.1
Mid Suffolk	10.9	7.9	18.5	17.2	19.4	21.3	21.0	18.2
North Hertfordshire	42.8	16.3	16.1	16.0	17.8	22.2	25.7	20.7
North Norfolk	4.0	1.9	2.2	3.2	3.3	12.3	10.4	7.0
Norwich	28.0	17.0	17.9	19.7	15.2	31.9	24.8	23.8
Peterborough	17.1	11.5	14.9	12.7	10.7	32.6	34.7	42.2
Rochford	6.0	2.2	6.2	4.7	4.7	11.0	9.4	9.2
South Bedfordshire	32.4	14.3	16.2	19.0	18.2	17.1	17.7	17.5
South Cambridgeshire	47.2	46.9	39.9	39.5	48.9	43.0	43.6	38.3
South Norfolk	28.9	26.9	29.2	29.5	30.9	31.7	36.5	29.4
Southend-on-Sea	25.3	14.7	16.3	17.0	14.8	9.4	17.5	17.5
St Albans	34.8	30.3	23.9	23.3	28.5	25.3	23.2	22.8
St Edmundsbury	24.4	20.8	20.7	19.1	18.7	13.8	23.0	21.3
Stevenage	13.1	9.1	10.2	10.7	10.3	10.0	8.2	13.5
Suffolk Coastal	25.8	18.9	20.5	19.1	20.0	26.0	25.6	17.0
Tendring	32.8	20.4	20.4	19.7	12.5	28.0	11.8	11.8
Three Rivers	14.4	10.7	9.2	8.5	11.9	10.8	9.7	8.9
Thurrock	33.1	22.5	25.9	23.0	21.1	39.7	34.8	32.2
Uttlesford	9.0	12.4	11.3	9.5	11.2	9.4	13.2	13.8
Watford	19.3	6.9	5.1	4.1	8.4	12.6	17.3	19.5
Waveney	4.4	5.2	5.9	6.1	4.2	8.3	5.5	8.9
Welwyn Hatfield	28.5	24.0	17.5	19.2	23.1	25.9	24.3	27.2
Eastern	1070.4	786.1	815.3	796.0	803.9	990.7	988.4	928.4

Source: Oxford Economics

Table 6.7: Comparison of employment growth between EEFM updates, 2011-2031 (000s)

	Aut 08 2011-31 (000s)	Spr 09 2011-31 (000s)	Aut 09 2011-31 (000s)	Spr 10 2011-31 (000s)	Aut 10 2011-31 (000s)	EEFM 2012 2011-31 (000s)	EEFM 2013 2011-31 (000s)	EEFM 2014 2011-31 (000s)
Babergh	13.3	9.3	9.7	9.6	9.7	5.1	2.5	5.3
Basildon	14.6	9.5	11.4	4.1	4.2	-0.3	5.9	17.1
Bedford	18.6	10.6	11.2	8.4	2.8	9.3	3.8	9.4
Braintree	10.9	5.1	5.9	4.9	2.7	7.0	8.6	13.5
Breckland	14.0	11.5	6.9	6.3	4.5	4.3	4.0	6.4
Brentwood	12.8	3.9	3.7	1.2	2.8	3.5	7.0	12.3
Broadland	9.8	9.6	10.0	10.5	7.4	8.3	1.7	0.8
Broxbourne	10.2	5.6	6.2	2.9	2.5	3.7	6.4	11.3
Cambridge	57.5	53.6	40.3	32.7	35.9	22.1	20.3	24.2
Castle Point	5.9	3.1	3.5	1.3	0.6	2.0	0.1	4.8
Chelmsford	22.4	18.6	21.3	14.2	13.6	35.9	21.6	21.3
Colchester	15.7	11.7	14.1	12.9	8.7	18.1	14.1	13.4
Dacorum	23.3	15.6	16.5	12.9	11.0	10.5	7.8	9.4
East Cambridgeshire	13.2	11.6	11.0	7.7	8.2	7.7	9.4	8.2
East Hertfordshire	11.1	11.9	13.6	8.1	6.8	9.6	12.3	9.5
Epping Forest	9.4	7.5	9.1	4.2	3.2	11.2	8.5	9.7
Fenland	6.0	5.8	5.9	7.5	5.4	4.9	8.4	7.3
Forest Heath	9.1	4.0	3.9	3.8	3.2	3.3	3.4	3.1
Great Yarmouth	5.5	3.0	3.5	0.7	-1.1	4.0	4.1	5.4
Harlow	13.0	0.1	0.3	0.0	-2.2	3.9	4.2	7.5
Hertsmere	31.0	18.7	19.8	15.3	15.7	7.0	8.3	19.5
Huntingdonshire	19.3	11.7	10.8	6.3	3.4	5.0	4.5	10.0
Ipswich	17.3	12.9	12.8	8.0	4.6	12.7	11.4	12.4
King's Lynn and West Norfolk	1.9	1.1	11.6	16.2	12.7	3.6	2.0	8.4
Luton	14.4	5.0	9.5	22.2	17.7	16.1	9.3	11.3
Maldon	6.1	4.1	4.4	2.5	2.5	4.0	2.4	4.7
Mid Bedfordshire	16.6	15.9	14.4	11.2	10.3	13.2	9.0	13.1
Mid Suffolk	3.0	0.5	11.1	9.8	9.1	4.4	4.4	5.7
North Hertfordshire	26.7	10.5	5.5	5.3	4.4	5.5	4.3	7.0
North Norfolk	1.0	1.1	1.1	2.5	0.9	2.4	2.1	1.0
Norwich	14.3	11.3	11.9	12.5	8.7	16.5	17.1	16.5
Peterborough	9.2	10.9	11.7	6.2	3.7	17.6	11.0	32.0
Rochford	2.2	1.5	2.5	1.7	1.0	3.4	1.4	5.2
South Bedfordshire	19.3	5.0	5.7	3.9	3.1	4.8	6.0	13.7
South Cambridgeshire	29.0	21.3	21.2	25.2	27.6	24.8	16.2	19.3
South Norfolk	19.8	15.7	17.9	15.2	12.8	9.3	12.2	15.4
Southend-on-Sea	16.4	10.3	10.8	6.4	3.3	3.8	7.3	12.6
St Albans	27.7	18.1	17.1	16.7	16.9	16.8	18.2	18.1
St Edmundsbury	16.5	12.8	12.6	8.8	6.6	5.5	4.5	4.8
Stevenage	17.7	10.1	11.4	11.5	10.7	3.5	5.0	4.4
Suffolk Coastal	12.9	11.0	11.7	9.6	8.6	6.1	9.5	9.4
Tendring	10.4	5.5	5.1	4.7	1.0	5.6	3.6	5.8
Three Rivers	7.2	4.4	4.3	3.6	3.9	4.7	5.3	9.9
Thurrock	19.5	13.3	13.6	9.9	6.7	29.7	19.2	19.8
Uttlesford	4.2	8.9	8.0	5.6	4.2	3.9	6.4	7.0
Watford	23.5	10.6	10.7	3.2	6.2	21.9	16.0	24.0
Waveney	-1.2	2.2	2.3	2.7	0.5	0.4	0.4	3.2
Welwyn Hatfield	17.0	9.7	7.1	13.1	13.6	19.6	22.7	17.0
Eastern	699.3	475.7	494.5	413.5	350.2	445.8	393.7	531.1

Source: Oxford Economics

Table 6.8: Comparison of GVA growth per annum between EEFM updates, 2011-2031 (% pa)

	Aut 08 2011-31 (% pa)	Spr 09 2011-31 (% pa)	Aut 09 2011-31 (% pa)	Spr 10 2011-31 (% pa)	Aut 10 2011-31 (% pa)	EEFM 2012 2011-31 (% pa)	EEFM 2013 2011-31 (% pa)	EEFM 2014 2011-31 (% pa)
Babergh	2.9	2.8	2.7	2.9	3.0	2.7	2.3	2.3
Basildon	2.8	3.0	2.9	2.2	2.2	1.9	2.4	2.7
Bedford	2.5	2.5	2.3	2.2	2.0	2.4	2.1	2.2
Braintree	2.5	2.6	2.4	2.0	2.0	2.4	2.6	2.5
Breckland	2.6	2.9	2.4	2.2	2.2	2.2	2.3	2.2
Brentwood	3.3	3.1	2.6	2.1	2.2	2.4	2.9	3.1
Broadland	2.7	2.8	2.8	2.6	2.6	2.8	2.1	1.8
Broxbourne	2.7	2.8	2.5	2.1	2.2	2.4	2.6	2.6
Cambridge	3.9	4.6	3.6	3.3	3.2	2.8	2.9	2.9
Castle Point	2.7	2.7	2.4	1.8	1.9	2.0	1.8	2.5
Chelmsford	2.9	3.2	3.0	2.3	2.3	3.2	2.9	2.3
Colchester	2.8	2.7	2.5	2.3	2.2	2.7	2.7	2.0
Dacorum	3.0	3.0	2.6	2.5	2.5	2.7	2.6	2.2
East Cambridgeshire	3.4	3.4	3.3	2.8	3.1	3.0	3.1	2.5
East Hertfordshire	2.5	2.8	2.5	2.4	2.4	2.6	2.7	2.2
Epping Forest	2.2	2.5	2.3	1.9	2.0	2.7	2.7	2.5
Fenland	2.5	2.8	2.5	2.5	2.4	2.5	2.9	2.5
Forest Heath	2.8	2.8	2.3	2.3	2.3	2.5	2.6	2.2
Great Yarmouth	2.5	2.6	2.2	1.8	1.7	2.1	2.1	2.3
Harlow	3.0	2.6	2.4	1.9	1.7	2.2	2.3	2.4
Hertsmere	4.0	3.7	3.5	3.2	3.3	2.7	2.5	2.7
Huntingdonshire	2.7	2.7	2.5	2.0	2.0	2.2	2.2	2.2
Ipswich	2.8	2.9	2.8	2.3	2.1	2.6	2.6	2.3
King's Lynn and West Norfolk	2.0	2.3	2.7	2.8	2.7	2.0	2.0	2.1
Luton	2.4	2.5	2.4	2.9	2.8	2.7	2.3	1.7
Maldon	2.6	2.9	2.5	2.1	2.2	2.7	2.4	2.5
Mid Bedfordshire	2.9	3.2	2.8	2.7	2.7	2.8	2.4	2.5
Mid Suffolk	2.0	1.9	2.9	2.8	2.9	2.3	2.2	1.9
North Hertfordshire	3.5	3.1	2.5	2.3	2.4	2.5	2.3	2.3
North Norfolk	1.8	1.9	1.8	1.9	1.9	2.1	2.2	1.6
Norwich	2.5	2.9	2.8	2.5	2.4	2.7	2.8	2.3
Peterborough	2.2	2.9	2.8	2.4	2.2	2.7	2.5	3.1
Rochford	2.4	2.9	2.5	2.0	2.1	2.4	2.0	2.4
South Bedfordshire	3.2	2.6	2.3	2.0	2.0	2.4	2.8	3.3
South Cambridgeshire	3.4	3.6	3.4	3.5	3.5	3.2	3.0	2.9
South Norfolk	3.2	3.2	3.1	2.9	2.8	2.5	2.9	2.7
Southend-on-Sea	2.7	2.8	2.5	2.2	2.0	2.0	2.3	2.4
St Albans	3.4	3.6	3.1	3.0	2.9	2.9	3.1	2.6
St Edmundsbury	2.7	2.8	2.6	2.4	2.3	2.3	2.3	1.8
Stevenage	3.6	3.7	3.4	3.0	2.9	2.2	2.6	2.1
Suffolk Coastal	2.7	2.5	2.4	2.4	2.4	2.4	2.5	2.3
Tendring	2.6	2.4	2.1	1.9	1.9	2.2	2.1	2.1
Three Rivers	2.7	3.0	2.7	2.3	2.4	2.6	2.5	2.3
Thurrock	2.9	3.0	2.7	2.3	2.3	3.9	3.1	2.9
Uttlesford	2.3	3.2	2.8	2.4	2.4	2.3	2.5	2.4
Watford	3.4	3.1	2.8	2.2	2.4	3.3	3.1	3.4
Waveney	1.8	2.3	2.0	2.0	2.0	1.9	1.8	1.7
Welwyn Hatfield	2.9	2.9	2.4	2.7	2.8	3.0	3.1	2.3
Eastern	2.8	3.0	2.7	2.5	2.5	2.6	2.6	2.4

Source: Oxford Economics

7: Employment land use methodology

This chapter outlines our methodology for calculating employment land use forecasts under the 2014 update of the East of England Forecasting Model (EEFM).

Key outputs

The summary outputs under the employment land module for EEFM 2014 for the East of England and each district include:

- Industrial floorspace (B1c/B2), thousands m²
- Warehouse floorspace (B8), thousands m²
- Office floorspace (B1a/b), thousands m²

Detailed outputs including the variables above split by sector are available on the website.

Measure of employment

The employment forecasts used in the calculation to estimate employment land requirements are:

- Jobs-based
- Workplace-based
- Full-time equivalents (estimated as the number of full-time employed, plus 75% of the number of part-time employed)

Employment densities

The employment densities used within the EEFM are based on the Employment Densities Guide, published in 2010¹, which provides guidelines on employment densities by use class. The guide presents densities on a range of different floorspace measures: gross external area (GEA), gross internal area (GIA) or net internal area (NIA). Therefore, it has been necessary to convert all employment densities to the same measure – GIA.

¹ Employment Densities Guide, Homes & Communities Agency, 2010

Table 7.1: Employment densities by use, 2010 guide

Use	Use class	Use Type	Area per FTE (m ²)	Floor Area Basis	Comment on potential variation
Industrial	B2	General	36	GIA	Range of 18 -60m ²
Industrial	B1 (c)	Light Industry (Business Park)	47	NIA	
Warehouse & Distribution	B8	General	70	GEA	Range of 25 -115 m ²
Warehouse & Distribution	B8	Large Scale and High Bay Warehousing	80	GEA	
Office	B1 (a)	General Office	12	NIA	
Office	B1 (a)	Call Centres	8	NIA	
Office	B1 (a)	IT/ Data Centres	47	NIA	
Office	B1 (a)	Business Park	10	NIA	
Office	B1 (a)	Serviced Office	10	NIA	

The following employment densities have been adopted for Industry and Warehousing, based on the general use types. The GEA for warehousing has been converted to GIA by using the CLG's Regional Spatial Strategy and Local Development Framework Core Output Indicators – Update 2/2008 guidance² which assumes a 3.75% difference.

For office use, the HCA guidance states that the GIA is typically 15-20% higher than net internal space. Using this figure this provides an employment density range for general office of 13.8 m² - 14.4 m².

Table 7.2: Employment densities – industry, warehousing and office (GIA)

Use	Use type	Density: Area per FTE (m ²)	Notes:
Industry	B1c/B2	36	Uses General Industry
Warehousing	B8	67	Uses General Warehousing
Offices	B1	14 (based on the average of the range 13.8- 14.4)	Uses General Office

For detailed office uses the same process has been followed for call centres, business parks and serviced office whilst office headquarters are assumed to follow the general employment land density. As the guidance does not provide densities for R&D, science parks and small businesses uses these are assumed to follow the original densities from the 2001 guide. An alternative could be to use the B1c density, given the

² <https://www.gov.uk/government/publications/employment-densities-guide>

earlier employment land density guide showed densities for these uses similar to light industry. However, this would result in an overall density of around 60m², which seems very high when compared to the 2001 densities and is very close to the warehousing density.

Overall the following employment densities for detailed office use are used.

Table 7.3: Employment densities detailed office use

Use	Sub-use	Density: Area per FTE (m ²)	Notes:
Office	<i>B1b use split:</i>		
	Science park & Small business units	32	Based on 2001 density guide
	High tech R&D	29	
	<i>B1a split:</i>		
	General Office	14	Based on NIA densities adjusted to GIA (average range of 15-20%)
	Serviced business centre & Business park	13	
	Call centre	10	

Allocating employment sectors to use classes

In order to forecast employment land it is necessary to convert the employment sector forecasts into office, warehousing and industrial uses. As the model provides employment sector forecasts by 31 sectors in total (comprising one or several 2 digit SIC codes) we have allocated each sector across the use classes in differing proportions. This analysis has been largely based on reviewing each SIC code in detail and judging the overall proportion that could be expected to be in industry, warehousing or office uses based on our knowledge of the East of England's economy. This is not an exact science as the classification of economic activities does not always lend itself to a straightforward allocation.

The EEFM sectors are mapped to use classes in differing proportions, as outlined in Table 7.4. Those sectors marked with a * need careful consideration given the nature of the activities undertaken, namely:

- **Waste and remediation** - we have allocated 97% of these activities to industry use to capture waste treatment activities (based on the 2012 employee share in BRES by detailed SIC codes).
- **Construction** - we have not included construction in B-use, however, we are aware that often this is classified as industry use.
- **Wholesale trade and repair of motor vehicles and motorcycles** - we have allocated 75% of this sector to warehousing based on the share of wholesale warehousing activities in the 2012 BRES numbers. The remaining 25% associated with the repair of motor vehicles has been allocated to industry.

- **Land transport** - we have allocated 39% of this sector to warehousing based on the share of warehousing and support activities for transportation in the 2012 employee BRES numbers.
- **Professional services** - we have allocated 96% of this sector to offices. We have excluded veterinary activities based on the share of employees in the 2012 BRES numbers.
- **Business services** - we have allocated 93% of this sector to offices. We have excluded travel agency, tour operator and other reservation services based on the share of employees in the 2012 BRES numbers.
- **Employment activities** - given that this sector includes temporary workers that may work in any industry we have allocated employment based on the weighted shares of all the other sectors' allocations to industry, warehousing and offices.
- **Publishing & broadcasting activities** - we have allocated all publishing activity to industry. For motion picture, video and television programme production, sound recording and music publishing activities which captures the production side of film and TV we have assigned 80% to warehousing given the large scale production sets often required and 20% to office use. For programming and broadcasting activities which incorporates broadcasting activities which are most likely to be studio based we have assigned 80% of these activities to office use and 20% to warehousing use. The proportions are then scaled depending on the relative employment shares in the 2012 BRES data.
- **Telecoms** - we have allocated 80% of telecoms to warehousing and the remaining 20% to offices.
- **Public administration** - we have allocated 61% of this sector to offices to take account of the share of general public administration activities; regulation of the activities of providing health care, education, cultural services and other social services, excluding social security; regulation of and contribution to more efficient operation of businesses; and foreign affairs. We have excluded defence activities; justice and judicial activities; public order and safety activities; fire service activities; and compulsory social security activities. The shares are based on the 2012 BRES data.

We would appreciate feedback on these sectors or any others, bearing in mind that a simple calculation is applied across the East of England. Densities and allocations are static across the decades in the spreadsheets, as we have made no assumptions about the impacts of changing working practices. We have applied assumptions across the whole region, rather than reflecting any local circumstances. An interactive version of the spreadsheets is available so that users can apply their own assumptions to reflect any specific local circumstances. Please see the Cambridgeshire Insight website for more information.

Table 7.4: Allocation of employment sectors by use class, SIC 07

SIC code	SIC description	Industry	Warehousing	Offices
		B1c/B2	B8	B1
01-03	Agriculture			
05-09	Mining and Quarrying			
10-12	Food Manufacturing	100%		
13-18, 31-33	General Manufacturing	100%		
19-23 excl. 21	Chemicals excl. pharmaceuticals	100%		
21	Pharmaceuticals	100%		
24-25	Metals manufacturing	100%		
28-30	Transport equipment, machinery & equipment	100%		
26-27	Electronics	100%		
35-37	Utilities			
38-39*	Waste and remediation	97%		
41-43*	Construction			
45-46*	Wholesale	25%	75%	
47	Retail			
49,52-53*	Land Transport		39%	
50-51	Water and air transport			
55-56	Hotels and restaurants			
58-60*	Publishing and broadcasting	66%	23%	11%
61*	Telecoms		80%	20%
62-63	Computer related activity			100%
64-66	Finance			100%
68	Real Estate			100%
69-75 excl 72*	Professional services			96%
72	Research & development			100%
77-82 excl 78*	Business services			93%
78*	Employment activities	12%	8%	22%
84*	Public administration			61%
85	Education			
86-88	Health and care			
90-93	Arts and entertainment			
94-99	Other services			

Detailed office uses

The sectors with some element of office use have also been assigned into the more detailed breakdown of office uses as shown in Table 7.5 below. Again, we would appreciate any feedback on these allocations.

Table 7.5: Allocation of office employment sectors by detailed office use classes, SIC 07

SIC code	SIC description	Offices	Split by:				
		B1	B1b Science Park & Small business units	B1b Tech/ R&D	B1a General Office	B1a Business Centre & Business Park	B1a Serviced Business Centre
58-60	Publishing and broadcasting	11%	0%	0%	11%	0%	0%
61	Telecoms	20%	0%	0%	20%	0%	0%
62-63	Computer related activity	100%	0%	0%	30%	60%	10%
64-66	Finance	100%	0%	0%	100%	0%	0%
68	Real Estate	100%	0%	0%	90%	10%	0%
69-75 excl 72	Professional services	96%	7%	7%	79%	2%	1%
72	Research & development	100%	20%	60%	10%	10%	0%
77-82 excl 78	Business services	93%	71%	1%	9%	4%	9%
78	Employment activities	22%	5%	1%	13%	2%	1%
84	Public administration	61%	0%	0%	61%	0%	0%

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MATTER 3 (ISSUE 5)

HOUSING LAND SUPPLY

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1.0 Introduction

1.1 Background

- 1.1.1 Bidwells LLP have been instructed by Persimmon Homes/Charles Church Midlands (PHM) to provide the Inspector examining the Milton Keynes Local Plan ('Plan:MK', MKSUB001) with a hearing statement in relation his Matter 3 Issue 5 "*Housing Land Supply*". (specifically, Inspectors Question Q3.26 to Q.41).

2.0 Housing Land Supply

2.1 Q 3.26 Overall, will the submitted allocations in Plan:MK provide sufficient flexibility to help deliver the spatial strategy?

- 2.1.1 Whilst the Plan:MK has a range of allocations contained within it, some are reliant on other events before they can come forward. As some events are yet to occur (i.e. the NIC Report and preferred Expressway scheme announcement; outcome of funding bids) there is no certainty that the spatial strategy can be delivered as planned by 2031 at the time of the examination of the plan. Of those larger allocations, the SEMK poses the most risk of delay. The Council has identified delivery issues for SEMK in its SA, Policy SD13 and supporting text which are reinforced in its recent housing topic paper [MK/TOP/002]. These combine to demonstrate that the spatial strategy is not sound, all stemming from the lack of an appropriate assessment at the outset which did not properly take account of fundamental issues to delivery.
- 2.1.2 The preferred route of the Expressway is due to be set out in Summer 2018 with consultation during Autumn 2019 and the chosen route announced in Autumn 2020. A review of the Plan:Mk could start immediately and allocations that may be affected by the preferred route could be considered at that stage. There needs to be greater certainty over the route and funding for other roads infrastructure improvements that affect MKE before the evidence base can be considered reliable.

2.2 Q3.27 having regard to the Housing Land Supply topic paper (MK/TOP/002) and proposed trajectory and accompanying spreadsheet of sites submitted in the schedule of proposed modifications (SUB/MK/004) is the housing implementation strategy in Policy DS2 sufficiently clear? In particular, is the submitted plan clear on:

- i) What comprises and justifies the housing trajectory.
- ii) What is the anticipated deliverable and developable supply of housing land over the plan period, including any contingency for resilience (for example: the submitted 9.7% buffer)?
- iii) How decision makers should calculate a five-year deliverable supply?
- iv) what contingency measures would be called upon were monitoring to identify a deficiency in the deliverable supply prior to a plan review?

- 2.2.1 Policy DS2 is clear that the housing requirement for the plan period is 29,000 dwellings (unless substituted for a different figure following examination of the OAN). The stated figure in DS2 should be the basis for calculating 5YHLS.
- 2.2.2 The contingency measure (should supply be deficient at any time) appears to be the allocation MKE and bringing that forward during the plan period. Putting aside our concerns with the identification of this site *per se* in terms of pre-judging the next local plan in terms of quantum and direction of growth, a site of this scale and location is not capable of being brought forward promptly to address any supply shortfall trend that may occur.

As a first principle, we consider additional or alternative land should be allocated now to reduce the likelihood of a shortfall of delivery against plan targets occurring. Otherwise if it remains necessary to include reserve land to be called upon to make up the shortfall, sites which are available, deliverable and have the ability to be flexible on scale depending on the level of shortfall identified through monitoring, should be included now.

2.3 Q3.28 Should Plan:MK include a policy to ensure that sufficient housing is delivered if monitoring identifies that any of the strategic sites would be appreciably delayed? If so, what action would be appropriate and how and when would it be triggered?

- 2.3.1 This brings into question the reliability of SEMK for delivery in this plan period. The strategic reserve at MKE is not appropriate to rely upon early delivery if SEMK or any other site becomes appreciably delayed.
- 2.3.2 There are other sites that have been shown to be available immediately, such as Shenley Dens, that are capable of having an early phase of delivery direct onto the existing grid road network, owned by a PLC Housebuilder, and with no unsurmountable technical difficulties in bringing the site forward. It is these sites that should be identified for development now to ensure sufficient housing is delivered.

Alternatively, if the Inspector is minded to recommend the plan is sound based on current sites selected for delivery within the plan period, other deliverable sites would be more appropriate to be held as strategic reserves than MKE as they are quick to start (given existence of infrastructure and the ability to phase without requiring major works to bring an early phase forward) and in locations that are unlikely to impact upon the wider concerns of the NIC and MK Futures 2050.

2.4 Q3.30 Does the evidence indicate that reasonable conclusions have been drawn about site capacities, having regard to density assumptions and any specific viability, infrastructure or other barriers to delivery?

- 2.4.1 We have not seen any clear evidence to underpin the anticipated site capacities for the allocated site areas for MKE (noting that MKE does not contain any specific quantum in the Plan:MK and varying quantum's are stated in the Housing Land Supply Topic Paper [MK/TOP/002]).

2.5 Q3.33 Is there robust, credible evidence demonstrating the capacity of the development sector to complete and sell this quantity of housing in the Borough in the next 5 or so years?

2.5.1 We consider there is capacity within the development sector to complete and sell at least this quantity of housing (our Matter 3 Statement refers). This is further evidenced by the demand for an MK site if put to tender/sale. Bidwells has been involved in selling and advising on several sites over the first 2 years of the plan period and demand remains strong, including due to lack of supply coming forward. Historically and now, many developers are still unable to access the MK market due to the nature of the land ownership of many consented or allocated sites, being the Council or large sites under the control of promoters that are on a staged release basis. Persimmon Homes/Charles Church Midlands is a major house builder and can deliver if the right sites are available.

2.5.2 The 2016/17 stated completions are 1,247 homes, representing a shortfall of 519 homes against the 1,766 annual target (Note this differs from the Council's response to the Inspectors initial observations where it states the shortfall is 537 dwellings at MK/TOP/002). For the 2017/2018 year we are aware of the Q2,2017-Q4 2017 completions according the office of national statistics of 390 Q2,2017; 340 Q3,2017 and 540 Q4,2017 totalling 1,270 homes. It is entirely possible that the balance of 496 is capable of being delivered in Q1,2018 based on the previous quarter's performance, indicating that a higher annual target is entirely realistic and achievable if the land supply assumptions are robust.

2.6 Q3.34 What has inhibited the achievement of comparable annual housing delivery targets in the 2013 Core Strategy? Is Plan:MK's approach to strategic sites at risk of repeating a similar performance? If so, what measures have been considered to de-risk delivery of the Plan?

2.6.1 The ability to achieve comparable annual housing delivery targets to the 2013 Core Strategy has been in part due to a lack of land supply coming to the market on key sites. The current strategy includes land which is also at risk of being delayed in coming forward, acknowledged by the Council in its Housing Land Supply Topic Paper [MK/TOP/002]. It is not the identification of a strategic expansion site *per se* that has caused this issue, more the characteristics of the specific sites opted for which have had inherent difficulties in achieving early delivery.

2.6.2 It is this mistake that the Council is in danger of repeating. For example, the SA assessed 8 'screened-in' sites informally of which 7 were considered to have issues around delivery including the two sites opted for at SEMK and MKE. The only site which was concluded by the Council to be deliverable under that exercise was at Shenley Dens. On this issue alone the current strategy risks repeating the past performance.

- 2.7 Q3.35 is there a sufficient range of housing supply sources (and sites) in Plan:MK to bolster delivery? To achieve significant growth in a sustainable way (including critical mass to support infrastructure) are there realistic, reasonable and sustainable alternatives in a MK context other than sustainable urban extensions? How have the SHLAA and SA processes considered small and medium housing sites?**
- 2.7.1 We do not consider that SUEs as a spatial strategy are the issue here. It is the specific nature of the existing SUE's that have held back delivery. A sustainable SUE in a location that is not constrained due to infrastructure or ownership and that can be phased to enable an early release of a small to medium site as a first phase is equally capable of providing a realistic, reasonable and sustainable source of housing land. It has the benefit of being capable of delivering more at a time when additional land is required to prop up delivery rates and/or would be capable of continuing on to support the early stages of a future plan period whilst the wider growth strategy is being formulated.
- 2.8 Q3.36 Is the proposed buffer in the housing land supply (29,000 homes to meet the need for 26,500 homes equivalent to the 9.7%) justified and positively prepared? Does this provide a sufficient and robust approach for potential uncertainties over capacity at SEMK? Would a 9.7% buffer in supply provide reasonable resilience?**
- 2.8.1 In addition to our specific comments raised on these points in our Reg 19 representations, we wish to restate that the fact a buffer is deemed necessary by the Council highlights the flaws with the spatial strategy and site selection.
- 2.9 Q3.37 Will there be a five-year supply of deliverable housing land on adoption of Plan:MK?**
- 2.9.1 The Council's 2017 AMR trajectory does not currently indicate that a 5YHLS is likely to be achievable upon adoption, based either on its OAN (at 1,766 dpa) or the housing requirement under Policy DS2 of 29,000 (at 1,933 dpa) plus the necessary buffers. We await the Council's updated position statement.
- 2.10 Q3.39 Is there likely to be a sufficient supply of developable housing land throughout the lifetime of the plan?**
- 2.10.1 The trajectory data is overly optimistic for several sites, including SEMK. Slippage in the anticipated start dates has been the subject of considerable debate on appeal in 2018 where Inspectors have concluded that a 5YHLS does not currently exist using either Sedgefield or Liverpool methods. The nature of the known issues relating to the sites proposed for allocation that are not yet 'committed' do not give confidence that this will not continue throughout the lifetime of the plan. The Housing Land Supply Topic Paper [MK/TOP/002] reinforces this concern. Any deviation in the assumed housing trajectory will threaten the supply level and the plan's over-reliance on SEMK and MKE is likely to create further pressure.

2.11 Q3.40 Is there appropriate consistency and totalling between the figures for various sources of supply within Chapter 4 of Plan:MK (Tables 4.1 and 4.2) and between figures in Chapter 4 and Appendix A of the Plan (Table 18.2)?

2.11.1 We have raised this matter at the Regulation 19 stage and await the response to these questions.

2.12 Q3.41 For those who submit the Plan would be unsound in terms of housing delivery, how should Plan:MK be changed to ensure that it is deliverable and therefore effective?

2.12.1 The Plan:MK should be robust and include sufficient sites that are capable of being brought forward within the plan period based on information that is available now. Any uncertainty caused by other strategies and projects is a firm indicator that the proposed spatial strategy is not effective.

2.12.2 Those sites which are likely to be affected by the wider growth initiative should be delayed in being brought forward until such time as those unknowns become fixed. NPPF Paragraph 158 requires integrated strategies that take full account of relevant market and economic signals. It should meet household and population projections, not show a potential to meet these. Upon adoption, the plan should be capable of being relied upon during the plan period. As it is not yet possible to understand the cross-boundary impacts of the future growth agenda in this area and to rely on sites that are within the areas likely to be affected by projected future levels of development. It is premature to include the MKE allocation in its proposed form as the Council is not in a position to confirm that this will not prejudice the proper planning of the growth agenda. There has been no collaborative working in this regard with adjoining LPA's evidenced by the Plan:MK and the emerging Central Bedfordshire Council's preferred options strategy which are currently not aligned regarding this south-eastern edge of MK and development beyond the M1 to the East.

2.12.3 These cross-boundary impacts and strategies should be considered as part of the future review of Plan:MK in whatever guise and governance arrangement that may ultimately have.

2.12.4 For current purposes the Plan:MK should be changed to remove the sites which are currently causing this uncertainty and allocate a reliable housing supply on a site (in isolation or in combination) which is equally or more sustainable and with no constraints to delivery. This should not rule out identifying an SUE that is capable of being phased to be flexible and ensure delivery. There are six omission sites identified within the SA and Housing Topic Paper that are considered by the Council as "*potentially having merit*" [para 9.7 of MK/TOP/002]. The topic paper highlights the fact that these six sites – along with the two opted for at SEMK and MKE - have not been assessed on a comparative basis in terms of overall suitability and sustainability within the SA. Our fundamental concerns with this approach will be dealt with under Matter 1 but this shows that the evidence base for the current spatial strategy has not been properly formed.