# POPULATION ANALYSIS FOR GUILDFORD

0. Introduction

0.1.   The Local Plan consultation and development has generated substantial concerns about the various housing numbers.

0.2.   No housing number has yet been adopted by Guildford Borough Council but the indications are that this is likely to be much bigger than (and perhaps even multiples of) the previously adopted figure which was, itself, arrived at as a result of a legal challenge by Guildford Borough Council to the proposed 'need' suggested by the now-scrapped South East Regional Plan.

0.3.   In its draft Strategic Housing Market Assessment (SHMA), the Council's consultants GL Hearn have relied upon ONS population projection figures in their assessment of need, suggesting a baseline figure of 671 homes are required.

0.4.   The Guildford Society determined a figure of 345 per year as an adoptable number following analysis of the Council's "How Many New Homes?" document (based on research by Edge Consulting) which formed part of the pre-Local Plan consultation (The Guildford Society paper is attached to this document).

0.5.   Why are these figures so different?

0.6.   The Guildford Society has argued that the population figures are skewed by the numbers of students (particularly overseas students) whose presence is not well catered for in census data and consequently in population projections.

0.7.   This paper, therefore, sets out to question the validity of projections based on the Office for National Statistics (ONS) Population Projections and the Department for Communities and Local Government (CLG) Housing Predictions which, together, form the basis of the SHMA

1. Analysis of the Population Data

1.1.   It is very clear from the publications of the Office for National Statistics that the 2011 census shows a very substantial population peak at aged 21.
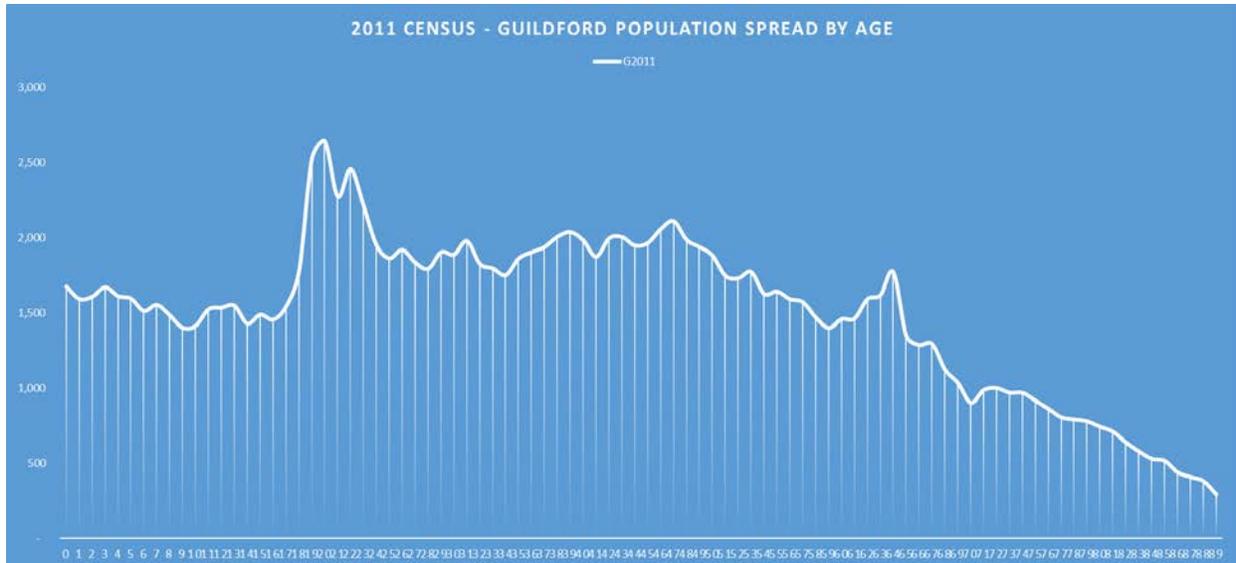
1.2.   The data actually show a bulge in population around the typical age of Undergraduate or Masters students.

The 2011 Census

1.3.   The 2011 census showed Guildford as having a 5.8% rate of growth, adding 7,500 additional heads to its population over the ten year period from the previous census.

1.4.   The percentages of 2011 census population who were UK-born were:

- England 86.2%
- South East 87.9%
- SURREY 85.8%
- Guildford 84.5%
- Waverley 89.4%
- Woking 80.1%

1.5.   It is worth noting that the census data shows that Guildford had 21,277 people in its regular population in 2011 who were non-UK born, and there were 12,982 people who did not hold a UK passport.

1.6.   When we look at the ward data, there appears to be an anomaly in the Onslow Ward, which includes the University.

1.7.   Only 63.8% of people living in Onslow Ward were born in England (Guildford 81.0%, Westborough, *neighbouring Onslow*, 81.0%). The median age in Onslow is 23 (average 31) versus Guildford at 38 (39) and Westborough at 32 (36).

1.8.   The equivalent figures for Friary & St Nicholas – which also includes a fairly significant student population – are that 72.9% were born in England and the median age is 32 (average age 36)

1.9.   From our knowledge of the area and of Onslow Ward itself, **this anomaly seems to be highly significant and demonstrative of a significant student population** which, for the purposes of the census has given its usual residence in Guildford.

1.10.   It is worth considering the treatment of students (and their inconsistencies) in the censuses of 2001 and 2011.

How are students treated in the census?

1.11.   It seems, therefore, appropriate to consider how students were treated in both the 2011 and particularly the 2011 censuses.

1.12.   In 2001, the Census was designed to measure the usually resident population, with **students being counted at their term-time address**. People were treated as usually resident at the place where they lived for the majority of the time, or at their current address if they had no usual residence.

1.13.   The ONS Census quality assessment noted that there was broad comparability at a national level with the resident count from the 1991 Census, when students were counted at their home address. However, local results were not entirely consistent with 1991 because of the movement of students to schools and university towns in term-time.

1.14.   There is some confusion in the 2011 census data. The ONS document prior to the census (Final Population Definitions for the 2011 Census) noted:

> **2.4.3 Further clarification on place of usual residence**
>
> **Students**
>
> Students, and children at boarding school, should be counted as usually resident at their term-time address.
>
> They should also be counted as usually resident at their permanent/family address (if different), but only limited information will be collected.

1.15.   Furthermore, Any UK resident who was staying in a communal establishment (such as a University Hall of residence) on 27 March 2011 and had no usual address in the UK is counted as usually resident at the communal establishment (regardless of how long they have stayed or intend to stay there). This would apply to overseas students living in Courts at the University.

1.16.   The key questions in the 2011 Census as it related to the 2001 Census were questions 5 to 8 (reproduced below with the 2001 comparator alongside).

1.17.   The next key challenge is to understand how the information has been used.

1.18.   It seems that published data attempts to remove term-time students from the datasets – hence the 10,714 students in Guildford in the Census data falls substantially short of the

University's figures and fails to take account, therefore, of the other Further Education institutions in Guildford.

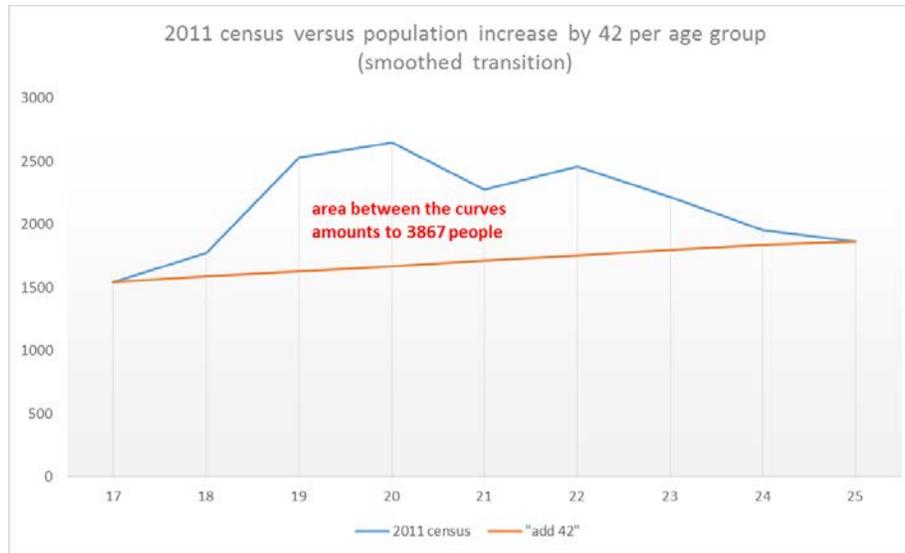| 2011 Question	2001 Question
5 Do you stay at another address for more than 30 days a year? ☐ No ➡ Go to **7** ☐ Yes, write in other UK address below [address boxes] Postcode [boxes] **OR** ☐ Yes, outside the UK, write in country [boxes] **6** What is that address? ☐ Armed forces base address ☐ Another address when working away from home ☐ Student's home address ☐ Student's term time address ☐ Another parent or guardian's address ☐ Holiday home ☐ Other	**New question in 2011** Imagine you are the nominated head of a student household charged with filling this form in for yourself and four other students. How should you respond to this question – you are only given one option for an address to fill in? The responses to this question would very probably lead to exaggeration of the student-age population under such circumstances.

2011 Question	2001 Question
7 Are you a schoolchild or student in full-time education? ☐ Yes ☐ No ➡ Go to **9**	**5** Are you a schoolchild or student in full-time education? ☐ Yes ▶ Go to **6** ☐ No ▶ Go to **7**

2011 Question	2001 Question
8 During term time, do you live: ☐ at the address on the front of this questionnaire? ☐ at the address in question 5? ➡ Go to **43** ☐ at another address? ➡ Go to **43**	**6** Do you live at the address shown on the front of this form during the school, college or university term? ♦ Only answer this question if you have answered 'Yes' to Question 5. ☐ Yes, I live at this address during the school/college/university term ▶ Go to **7** ☐ No, I live elsewhere during the school/college/university term ▶ Go to **36**

1.19. An analysis of the proportion of the Surrey population in the 2011 Census who are aged between 18 and 74 and who are in full time education shows that Runnymede (London University, Royal Holloway) and Guildford (University of Surrey) – both of which have significant proportions of overseas students – have a substantially greater percentage of their census populations (usual residences) in full time education:

Percentage of Population aged 18 to 74 and in full-time education (2011 Census)
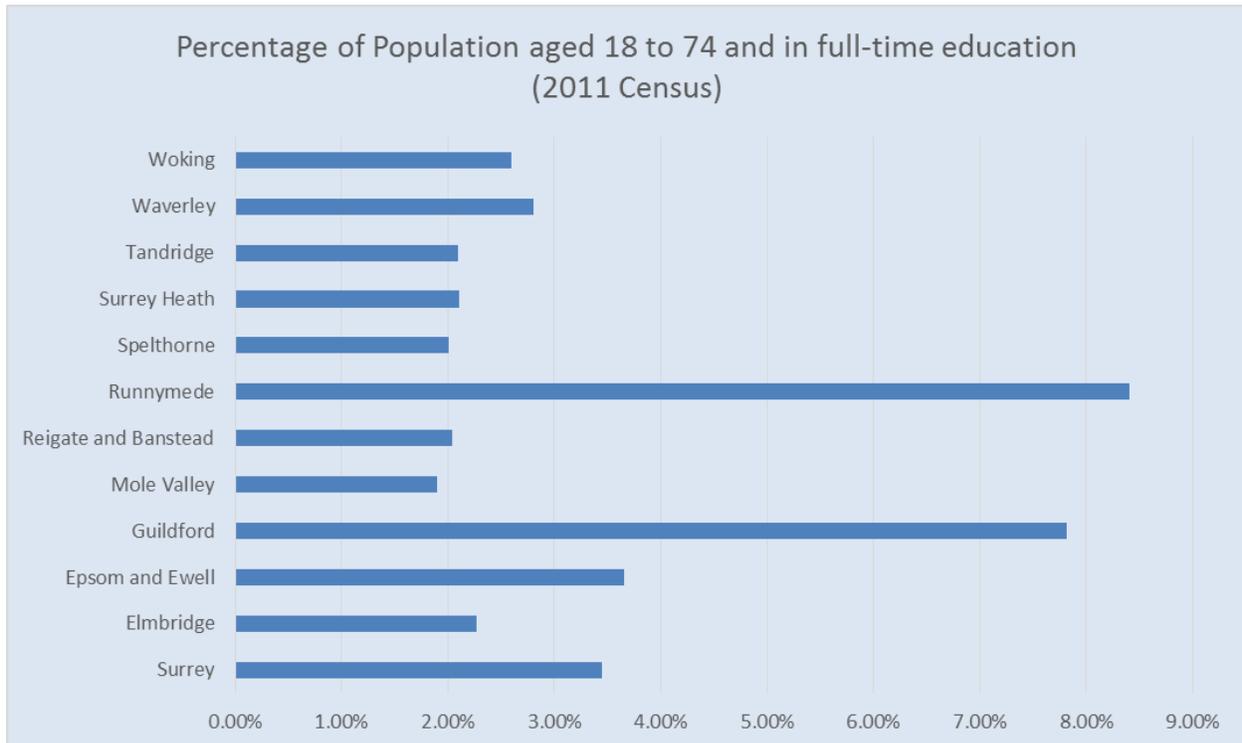
1.20. Applying the average of all other Surrey Local Authorities for this age group (2.363% of total census population) to the populations of Runnymede and Guildford shows a marked reduction in the numbers of full time students (reflecting the home addresses of the local population and, arguably, screening out the overseas students whose 'usual' addresses are in the Runnymede and Guildford boroughs.

1.21. Guildford's adjusted full-time student population would fall from 10,714 to 3,242 – a reduction of 7,472 in the census population of 2011 for Guildford.

2011 census versus population increase by 42 per age group (smoothed transition)

area between the curves amounts to 3867 people

1.22.   If the 2011 census data is smoothed between ages 18 and 24, this accounts for only 3,867 people and so perhaps the full-time student adjustment needs to either cover more age-groups or to be more scientifically calibrated (or both).

1.23.   At the time of the 2011 census, the University of Surrey student numbers (source: HESA) were 13,575 full time students of which 4,005 were post-graduates, possibly supporting the contraction of population numbers from the 2011 census across a wider age range.

2011 census versus population increase by 20 per age group (smoothed transition)

area between the curves amounts to 5331 people
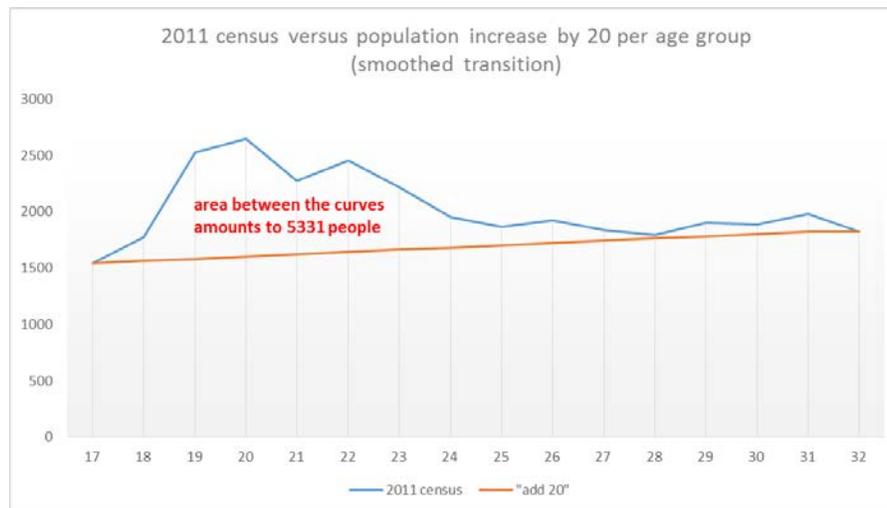
1.24.   This over-simplistic analysis merely demonstrates that an apparent population bulge could be explained by reference to the presence of (and method of counting) students, particularly from overseas, in the 2011 census, and the subsequent adoption of a population anomaly into consequently inflated population projections.

1.25.   Another potential Census anomaly (or another symptom of the student anomaly) is that Guildford and Runnymede have higher than county average numbers of second addresses (given the Census questions) running at more than double the average for the remaining boroughs of Surrey.

1.26.   Furthermore, Guildford census data for 2011 shows 2.1 times the number of people living in communal housing (which includes student courts) relative to the South East and 2.5 times the national average – again indicative of a higher student count that needs to be adjusted.

1.27.   It cannot, therefore, have helped that the 2011 census date (27th March) fell on the Saturday night after university terms had typically ended on the Friday.

1.28.   **These characteristics of the Census data, and the potential skew in data caused by the failure to fully count university students within or outside of the census, provide ample reason for these data to be forensically re-examined and for the anomalies to be tested and screened out.**

How are interim Population Statistics derived?

1.29.   Historically, population data derive from two main sources:

    1.29.1   The resident populations from the decennial national census (2001 and 2011, for example); and

    1.29.2   The general practice registered populations from the Exeter system (the Family Health Services registration system).

1.30.   The figures from the GP registrations are backward looking as is the census data, but it provides a useful proxy for population migration, especially where people moving from one area to another register reasonably promptly with a new local GP – whereupon their records (and consequently their demographic data) is shown to have migrated with them.

1.31.   The Office for National Statistics (ONS) estimates mid-year resident populations each year, using the most recent census data, and adjusts the population according to the estimated number of births, deaths and migrations.

1.32.   Population projections are produced by ONS every 3-5 years using the mid-year estimates and project population change over 25 years using predicted birth rates, death rates, migration and ageing based on the trends observed over the previous 5 years. The Chelmer Population and Housing Model (CPHM) makes allowance for local housing developments.

1.33.   The GP Registered Population Estimates (The Attribution Data Set: Exeter System) uses The Attribution Data Set (ADS), which is the national count of patients on GP registers (the Exeter system). This is constantly updated. The data are used for Department of Health estimates and by ONS for estimates of migration.

1.34.   There are issues with this system and, in Surrey, for example, the Exeter registered-resident population in 2006 was larger than the ONS resident estimate by 24,400 (2.3%).

1.35.   This may be associated with delays in practice lists being updated when patients re-locate (list inflation) – a particular issue with student populations – but could also be that people living close to Surrey may tend to register with Surrey GPs. The weighted capitation population estimate is typically lower than the GP relevant population figure.

GP registrations

1.36. For Guildford there is a rising trend in registrations by around 40 or so per year.

1.37. One of the known limitations of relying on GP registration data is that young people, particularly young men, can be slow to change their registration when they move. One of the most common reasons for migration among young people is to attend a course at a higher education establishment, so this limitation of the current internal migration estimation process is a key issue in the estimation of internal migration for this population sub-group.

1.38. In May 2010, ONS introduced an additional adjustment for students based on HESA data to improve this undercount. HESA data contains records for students registered at higher education establishments and includes both term-time and domicile address variables. An adjustment is made to both first year students moving to higher education establishments and moves made by students at the end of their studies. These data are not complete for overseas students particularly when the students live in multiple occupation (eg., in halls of residence) and may result in overseas students being counted as immigrants whereas they should be tracked as students.

1.39. Student halls of residence are usually reserved for first-year undergraduates. Students living in halls at census time would therefore be most likely to have registered with a GP in their university town in the year preceding census, 2010. The chart below shows (nationally) the proportions of students living in student halls in a university town, by year of acceptance on the local Patient Register.

1.40. People registering as far back as 2007 would be in their fourth year at the university, and few of these would be expected to be living in halls. However, the graphs show that over a quarter (27.1 per cent) of men and almost a fifth (18.6 per cent) of women in halls were accepted on the Patient Register in 2007. This, alongside evidence that there are many more patient registrations giving student halls as their term time address than the premises could accommodate, suggests that the Patient Register includes people, particularly men, who have left the area.
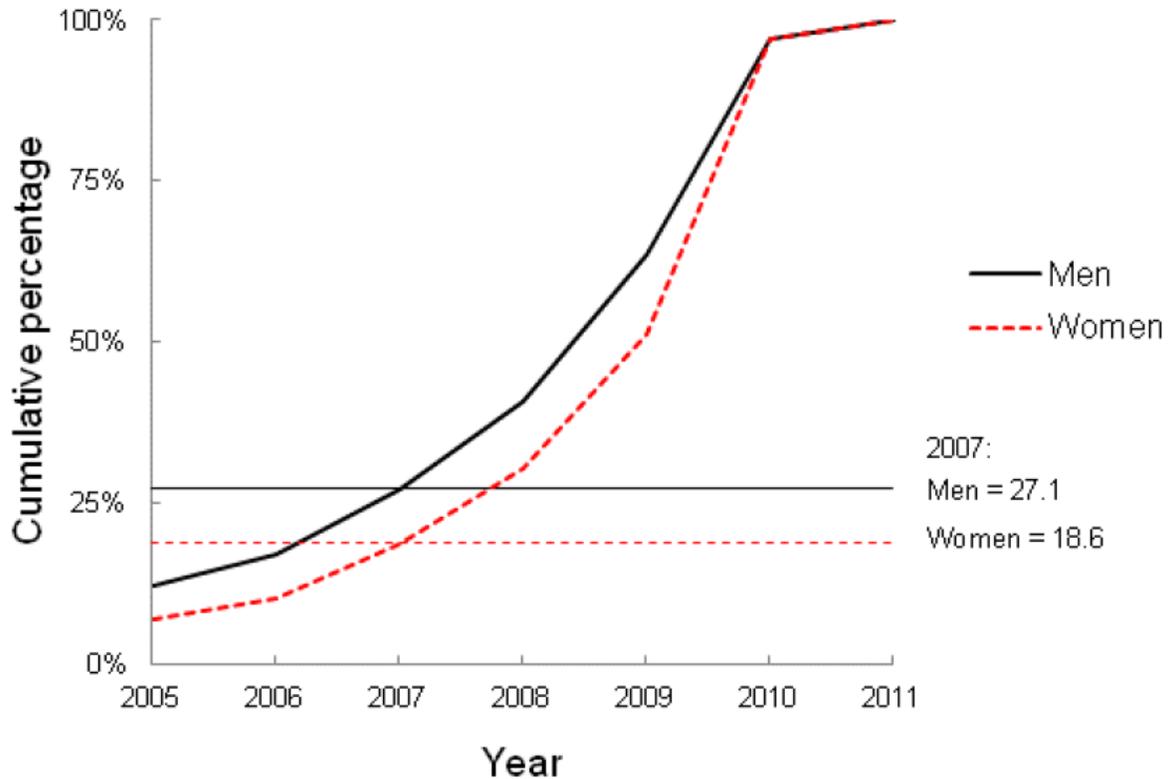
1.41. On the above chart, the left hand axis shows the cumulative percentage of students registered with the GP as living in halls of residence (nationally) against (on the horizontal axis) the year in which they first registered with the GP. In other words, of the 100% of male students registered with a GP who were listed as living in halls of residence, around 95% had registered in 2010 or earlier, around 62.5% had registered in 2009 or earlier, around 40% had registered in 2008 or earlier, 27.1% had registered in 2007 or earlier, around 15% in 2006 or earlier and around 12% in 2005 or earlier.

1.42. The graphic demonstrates clearly the issues with estimating student populations and of maintaining accurate assessments of the impact of demographics on the need for housing. Typically students spend only their first year in hall and yet the GP registration evidence would suggest otherwise.

1.43. Interestingly the NHS GP-registrations modelling data shows a similar unaccounted for anomaly around student age – and this example, taken from the ONS document (Results from using routinely-collected government information for 2011 Census quality assurance) which may well relate to a university town or city – the report does not specify which.
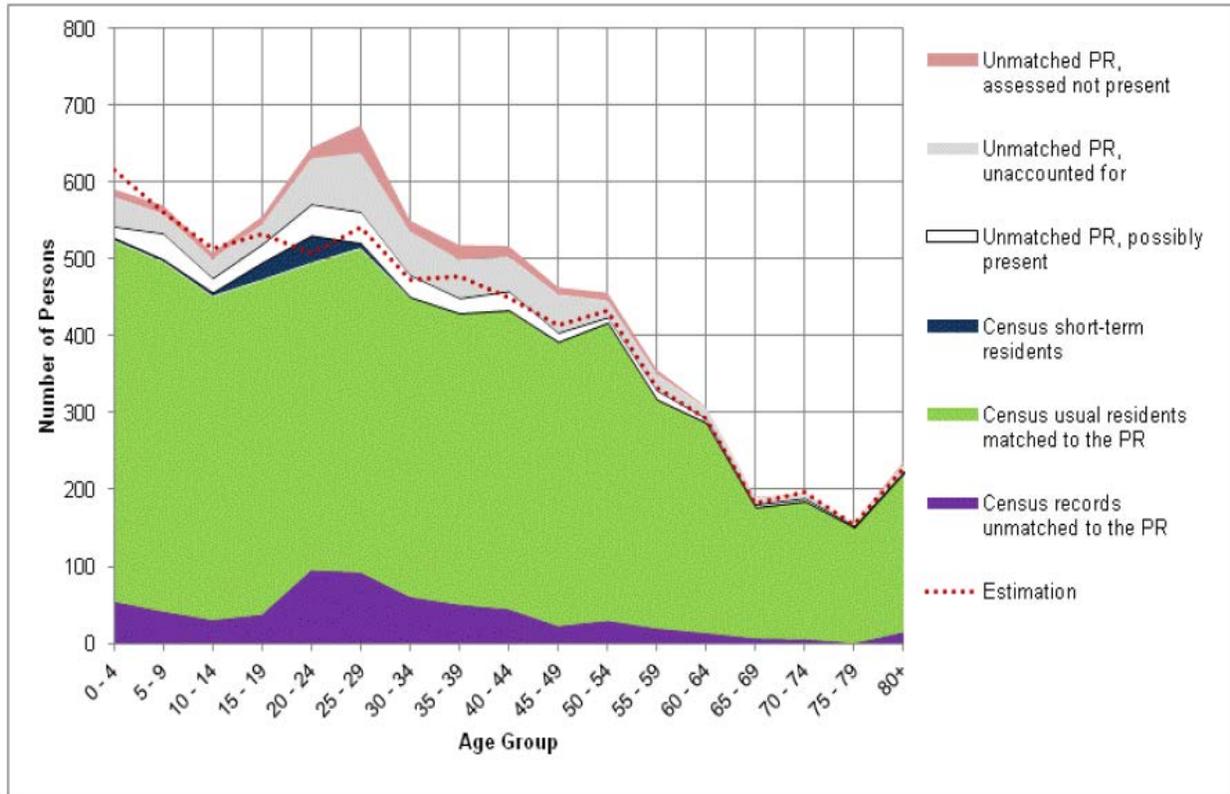
Patient registrations and census estimates, by age, in a metropolitan area outside London

How does Guildford's 2011 population profile compare with England?

1.44.   Broadly, for most age-groups, the demographics are similar.

1.45.   The stand-out anomaly is the peak at student ages (Guildford is in blue and England in red).
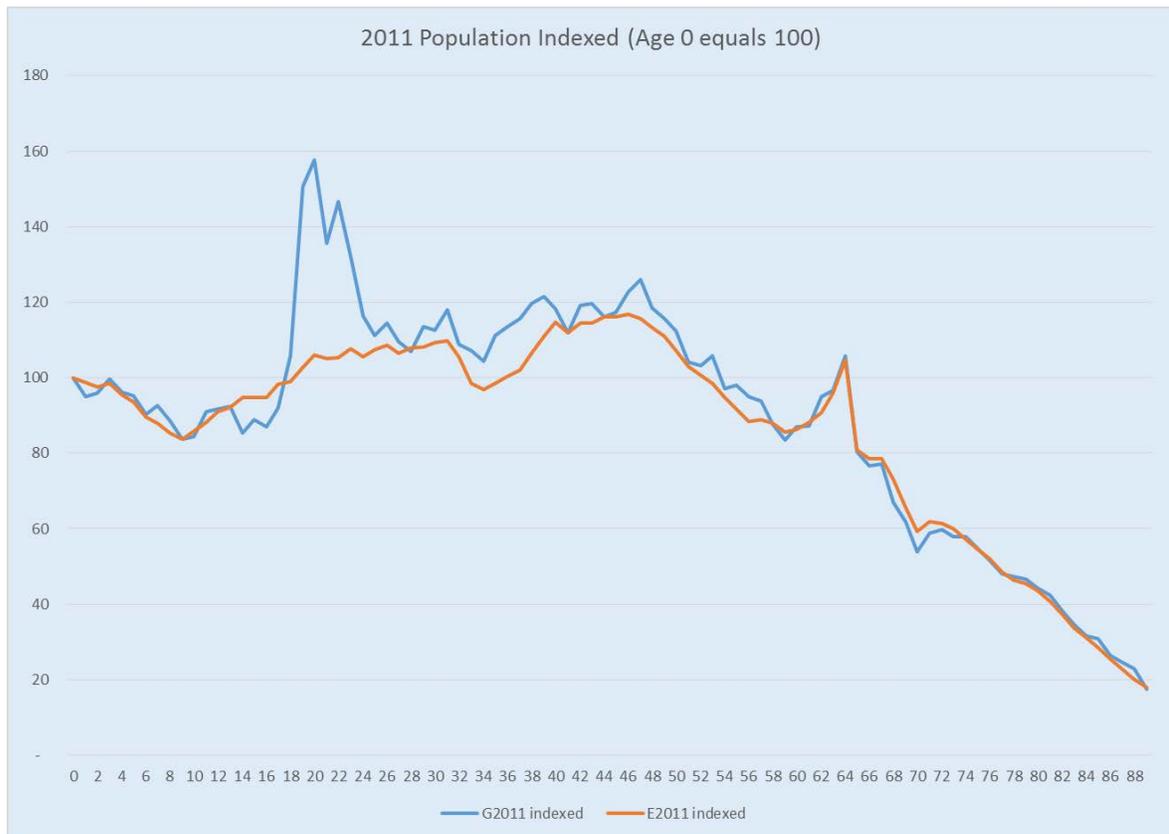
1.46.   The above chart has been set with an index of 100 representing the population at below one year of age. Subsequent ages have been stated by reference to the index.

1.47.   The data sets for England and for Guildford are very similar (including the small population peak at age of around 65) with the exception of the student-age anomaly.

1.48.   Note the broad similarity between the England curve and that for Guildford. It is perfectly plausible that the removal of the student effect could cause Guildford's population profile to converge with England.

How have ONS reflected the changes between 2011 and 2021?

1.49.   The equivalent chart for 2021 is shown below and shows the bulge has broadened as it has been carried over into the successive years from 2011.

1.50.   The charts below demonstrate a similar visual correlation between England and Guildford with the exception of the student anomaly – again showing a similar small peak, but this time in the mid-seventies.

2021 Population Projection Indexed (Age 0 equals 100)
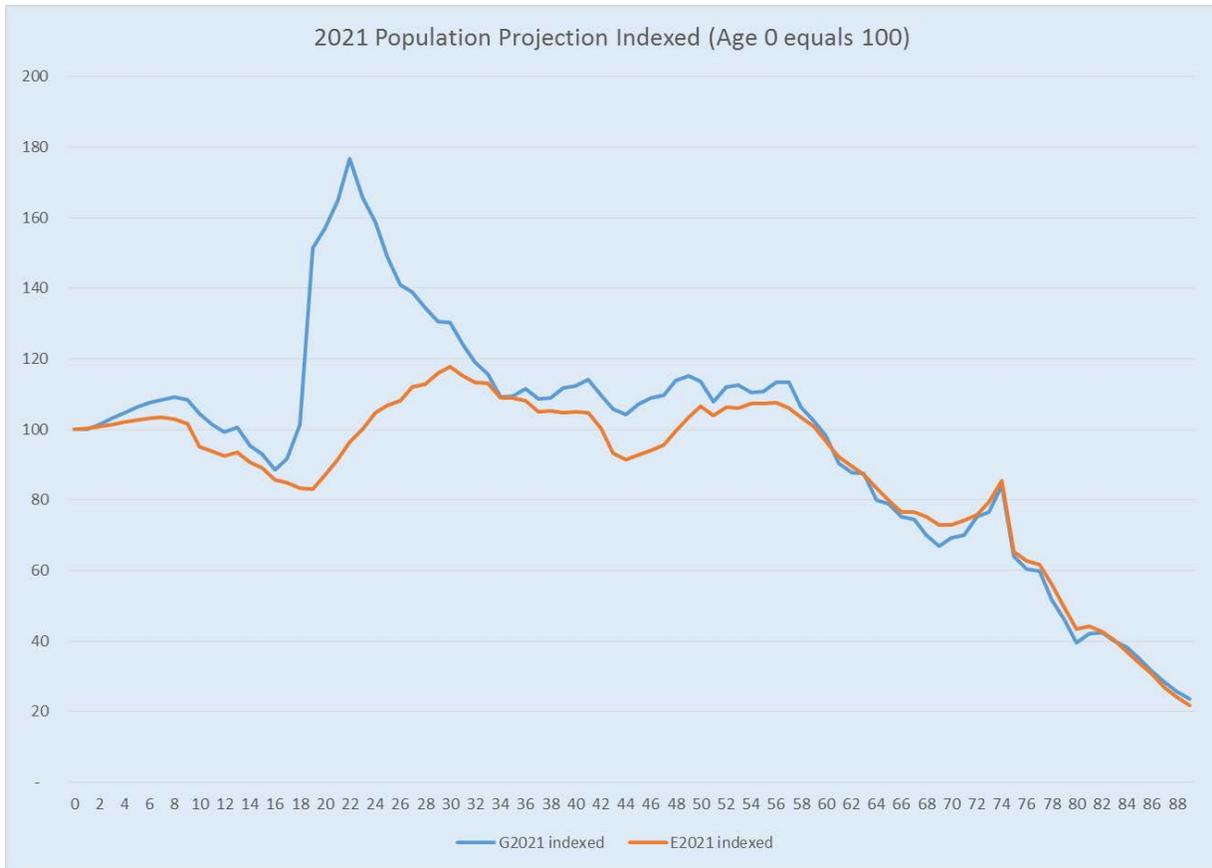
1.51.   Shown together, these indexed lines are clear evidence of an anomaly in population figures that will need to be addressed before assessing the 'OBJECTIVELY ASSESSED NEED' for new homes in Guildford.

2021 versus 2011
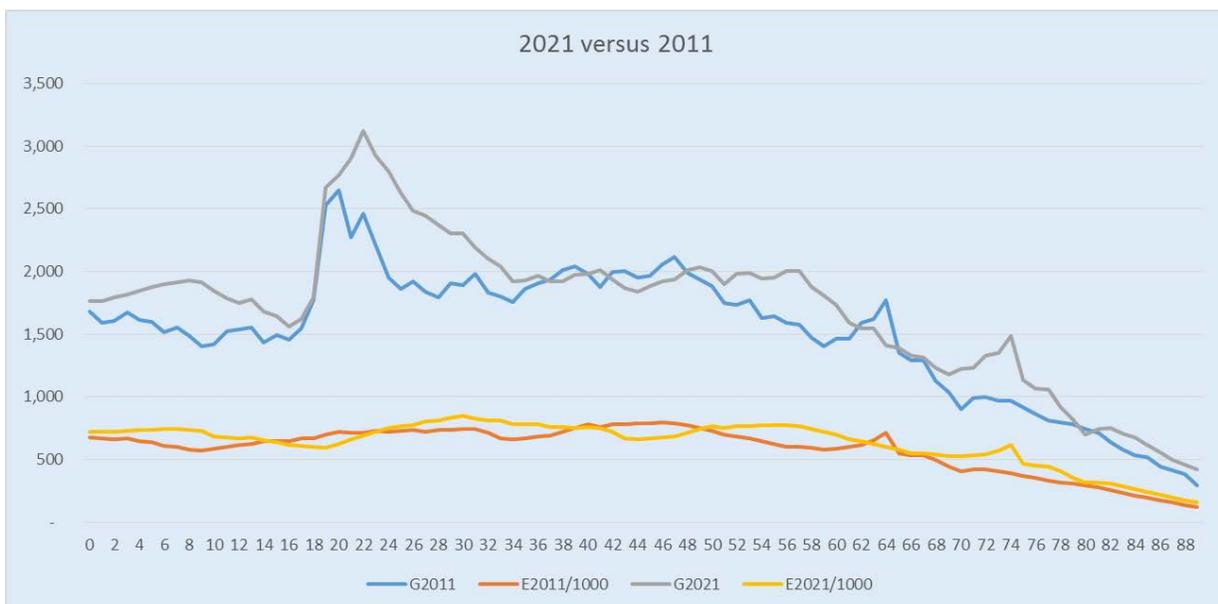
1.52.   Note again the broad similarity between the 2021 projected England indexed data curve and that for Guildford. It is again perfectly plausible that the removal of the cumulative student effect could cause Guildford's population profile to converge with England.

Comparison with other University Towns

1.53.   We have viewed the data against Exeter and Cambridge and this shows a similar spike in population at undergraduate age but the effect does not linger in the same way as the Guildford projections suggest (the charts are set out below).

1.54.   We have also done a similar exercise with Rushmoor, Waverley and Woking to assess whether there is a similar pattern in those local authorities. Again, the charts are set out below.

Cambridge Population Projections profile for 2011 (blue) and 2021 (red) by age-group

Exeter Population Projections profile for 2011 (blue) and 2021 (red) by age-group
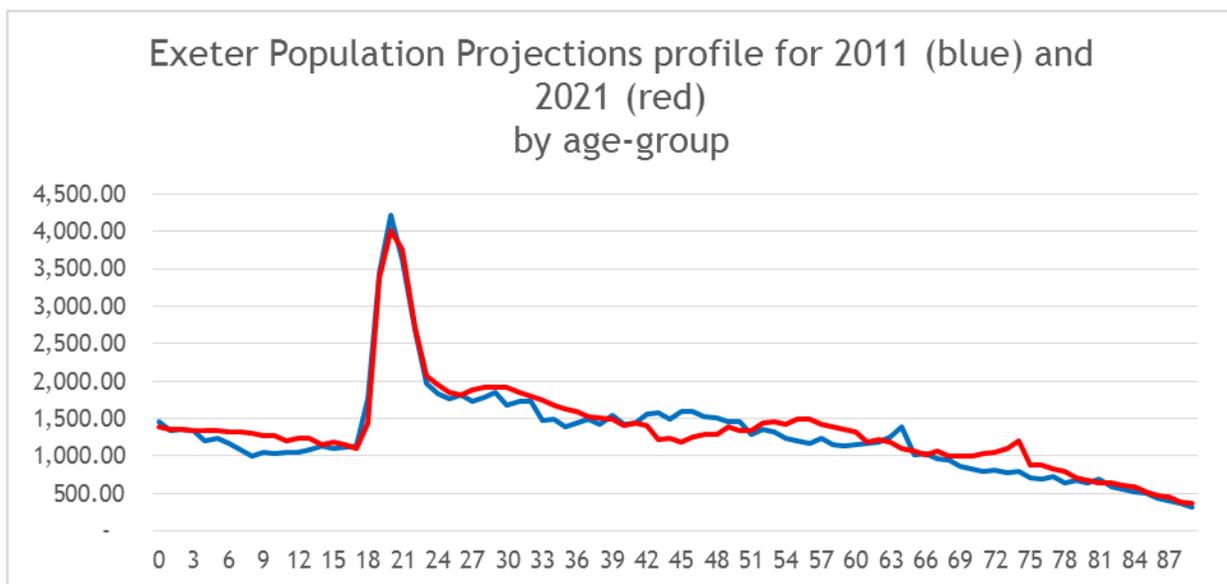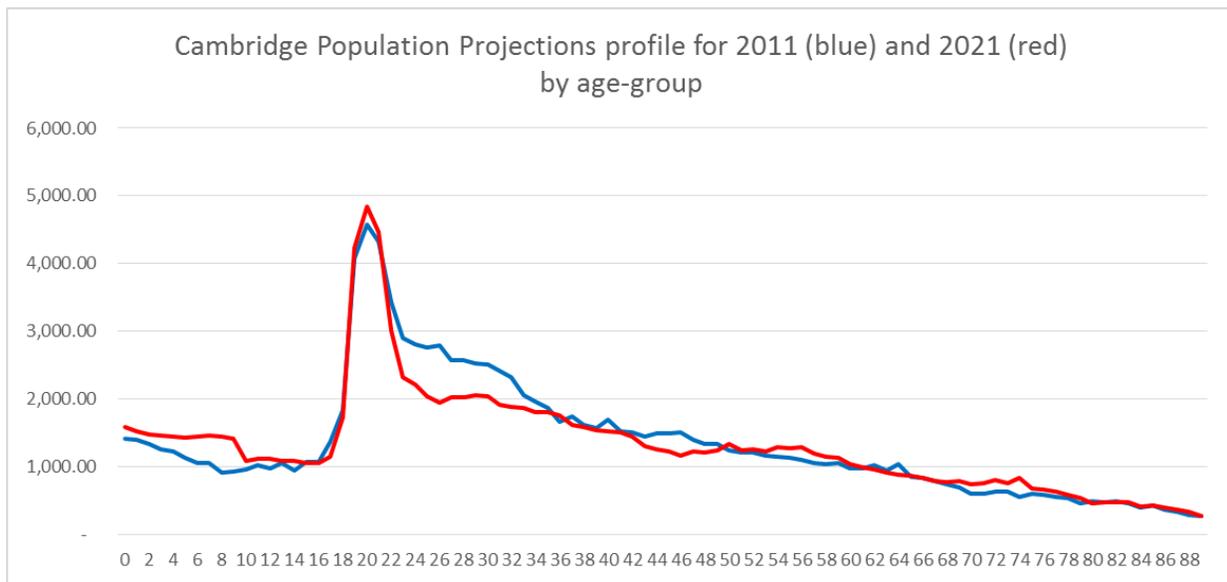
1.55. The University towns are certainly distinctive and the effect can be seen for other university towns and cities.

1.56. Here, the effect is short-lived and, whilst it may inform the demographer that there is a larger population of student age, it does not seem to linger through the projection period.

Rushmoor Population Projections profile for 2011 (blue) and 2021 (red) by age-group

Waverley Population Projections profile for 2011 (blue) and 2021 (red) by age-group

Woking Population Projections profile for 2011 (blue) and 2021 (red) by age-group
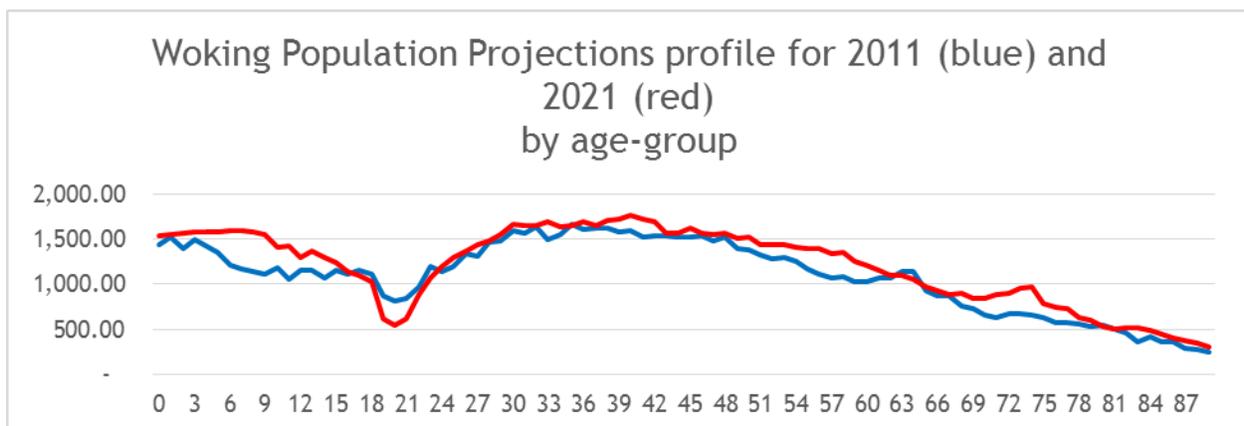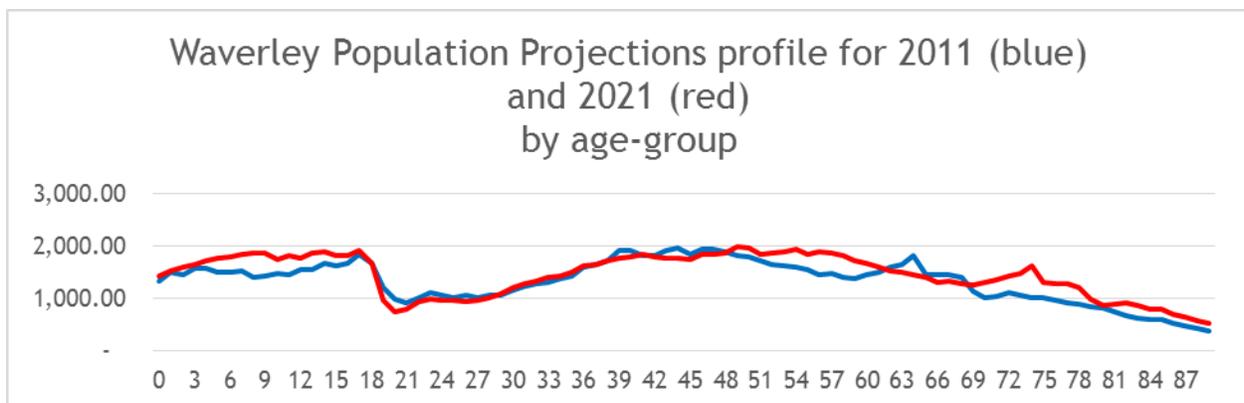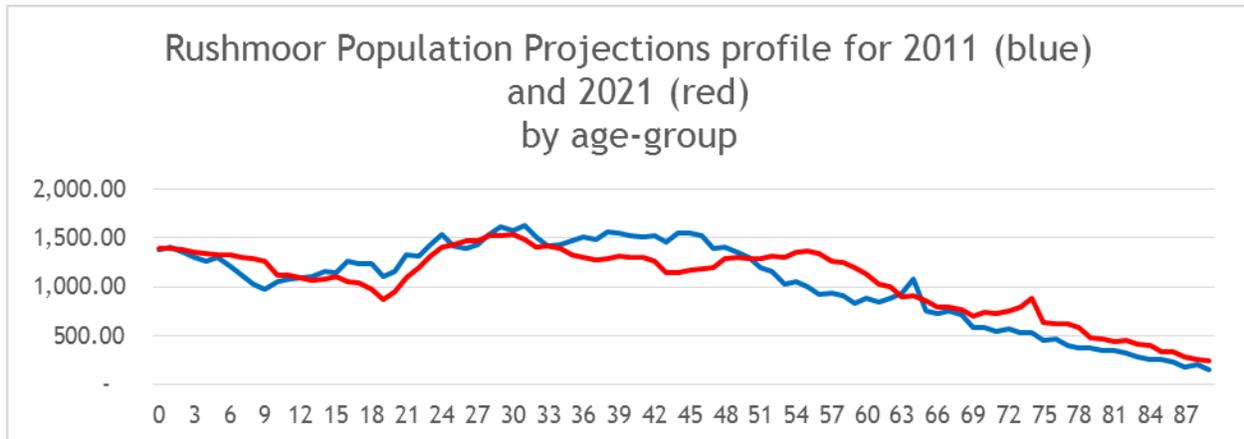
1.57. The three neighbouring Local Authorities have no such spike – in fact they all seem to lose population of student age.

CLG Housing Projections

1.58. The household formation models used by CLG are complex and are based on the ONS population projections.

1.59. The data from the ONS SNPP(2011) has clearly influenced the CLG Household projections for Guildford as shown below.

Household Formations and Compositions

1.60. The ONS has collected data for household formations which summarise the composition of households based on the Census data from 2011 and then the ONS projects forward based on population composition how many households are likely to be required and of what size or accommodation.

1.61. The household types are given as:

One person households: Male
One person households: Female
One family and no others: Couple: No dependent children
One family and no others: Couple: 1 dependent child
One family and no others: Couple: 2 dependent children
One family and no others: Couple: 3+ dependent children
One family and no others: Lone parent: 1 dependent child
One family and no others: Lone parent: 2 dependent children
One family and no others: Lone parent: 3+ dependent children
A couple and one or more other adults: No dependent children
A couple and one or more other adults: 1 dependent child
A couple and one or more other adults: 2 dependent children
A couple and one or more other adults: 3+ dependent children
A lone parent and one or more other adults: 1 dependent child
A lone parent and one or more other adults: 2 dependent children
A lone parent and one or more other adults: 3+ dependent children
Other households

1.62. For Woking, for example, the households falling into the 'other households' category are around 6.3% (2011) to 6.6% (2021) of all households. Of people between the age of 15 and 24 years old in Woking, the numbers living in 'other' accommodation are 19.2% (2011) to 19.9% (2021).

1.63. For Guildford, however, the overall totals in 'other households' are 7.8% (2011) rising to 8.7% (2021) of which (and substantially affected by the assertion that) of 15 to 24 year-olds, 54.2% (2011) projected to rise to 64.1% (2021) are living in 'other households'.

1.64. This is consistent with the Guildford student anomaly highlighted earlier and there is a continuing effect in the 25 to 34 age group who show as 15.6% (2011) rising to 20.6% (2021).

1.65. These would seem to echo the demographic trends shown in ONS SNPP(2011).

So what adjustment should Guildford make to its housing targets?

1.66.   In pure arithmetical terms (which does not take account of the idiosyncrasies of population modelling), the impact of the population numbers at student age has been assessed as follows:

1.67.   For each year group it is possible to view the data diagonally down the page to the right to see the change in population numbers of each age-group cohort.

AGE	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
7	1,555	1,526	1,629	1,668	1,742	1,707	1,734	1,800	1,863	1,900	1,911
8	1,485	1,577	1,550	1,653	1,692	1,766	1,730	1,759	1,823	1,889	1,926
9	1,402	1,504	1,596	1,571	1,673	1,714	1,787	1,751	1,781	1,844	1,914
10	1,415	1,408	1,508	1,598	1,575	1,676	1,717	1,789	1,754	1,785	1,845
11	1,525	1,422	1,413	1,511	1,600	1,578	1,678	1,719	1,791	1,756	1,788
12	1,536	1,522	1,423	1,412	1,507	1,595	1,575	1,674	1,715	1,786	1,751
13	1,550	1,530	1,515	1,420	1,408	1,501	1,587	1,569	1,666	1,707	1,776
14	1,430	1,527	1,506	1,491	1,402	1,390	1,477	1,561	1,546	1,640	1,681
15	1,490	1,436	1,529	1,509	1,493	1,406	1,393	1,479	1,561	1,547	1,640
16	1,457	1,506	1,454	1,544	1,525	1,506	1,422	1,408	1,492	1,574	1,561
17	1,543	1,510	1,556	1,507	1,591	1,573	1,552	1,470	1,454	1,537	1,618
18	1,774	1,826	1,788	1,830	1,784	1,856	1,838	1,810	1,729	1,707	1,790
19	2,526	2,866	2,924	2,857	2,890	2,856	2,890	2,869	2,811	2,720	2,670
20	2,645	2,694	2,934	2,985	2,917	2,943	2,913	2,930	2,913	2,851	2,768
21	2,275	2,787	2,818	3,007	3,050	2,981	3,000	2,976	2,982	2,966	2,904
22	2,458	2,585	3,009	3,031	3,182	3,217	3,143	3,159	3,141	3,135	3,118
23	2,215	2,430	2,536	2,862	2,874	2,979	3,004	2,937	2,950	2,937	2,922
24	1,951	2,240	2,407	2,500	2,768	2,768	2,841	2,862	2,799	2,810	2,800
25	1,864	1,928	2,174	2,308	2,391	2,614	2,605	2,656	2,675	2,616	2,625
26	1,921	1,869	1,924	2,134	2,242	2,315	2,503	2,490	2,524	2,540	2,485
27	1,836	1,928	1,884	1,931	2,114	2,201	2,268	2,431	2,414	2,435	2,449
28	1,795	1,850	1,934	1,895	1,938	2,101	2,173	2,236	2,380	2,361	2,371
29	1,905	1,808	1,848	1,924	1,892	1,929	2,075	2,136	2,196	2,324	2,303
30	1,889	1,917	1,830	1,860	1,931	1,903	1,936	2,072	2,125	2,183	2,300
31	1,979	1,918	1,940	1,863	1,884	1,952	1,926	1,957	2,085	2,132	2,188
32	1,827	1,960	1,905	1,924	1,854	1,869	1,933	1,911	1,940	2,062	2,103
33	1,797	1,817	1,941	1,892	1,907	1,843	1,852	1,915	1,897	1,924	2,039
34	1,752	1,792	1,821	1,938	1,893	1,904	1,846	1,852	1,913	1,898	1,924
35	1,863	1,781	1,820	1,855	1,966	1,925	1,933	1,880	1,884	1,943	1,930
36	1,905	1,878	1,801	1,838	1,879	1,986	1,948	1,955	1,905	1,907	1,966
37	1,939	1,909	1,881	1,809	1,845	1,891	1,994	1,959	1,964	1,918	1,918
38	2,007	1,931	1,906	1,877	1,808	1,844	1,894	1,994	1,962	1,966	1,922
39	2,039	2,004	1,929	1,907	1,877	1,811	1,846	1,900	1,999	1,969	1,972
40	1,984	2,044	2,009	1,934	1,914	1,883	1,820	1,854	1,911	2,009	1,980

Figures reproduced from the ONS data set for the 2011 all person Sub-National Population Projection

1.68.   In this case, the age-group of seventeen-year-olds in 2011 grows from 1,543 in 2011 to 1,826 in 2012, 2,924 in 2013 and so on, peaking at 3,217 in 2016 (when they are at age 22

years) until finally falling back to 2,449 in 2021. This effect can be seen by following the cells diagonally down to the right.

1.69. The cohort aged seven years in 2011 is at 1,555, and reaches 1,618 at age seventeen years in 2021, its peak.

1.70. Similarly, the cohort aged twenty-four years in 2011 is at 1,951 and reaches 1,924 by 2021, having peaked at 1,957 in 2018.

1.71. These are reasonably consistent with national average trends and so the focus is on the cohorts in between those aged seven and those aged twenty-four in 2011.

1.72. We have taken the band within the black outlines (aged eighteen to twenty-four in 2012, for example, totaling 17,427) and calculated the expansion of those cohorts against the same cohort in the previous year (viz. aged seventeen to twenty-three in 2011, totaling 15,436).

1.73. The effect of this is to demonstrate the effects of the population 'bulge' in ARITHMETIC terms (rather than statistical) over the period from 2011 to 2021 as shown below:

Scale of bulge in cohort	Years compared
1,991	For ages 18-24 in 2012 versus ages 17-23 in 2011
1,653	For ages 18-25 in 2013 versus ages 17-24 in 2012
1,367	For ages 18-26 in 2014 versus ages 17-25 in 2013
1,191	For ages 18-27 in 2015 versus ages 17-26 in 2014
1,029	For ages 18-28 in 2016 versus ages 17-27 in 2015
848	For ages 18-29 in 2017 versus ages 17-28 in 2016
759	For ages 18-30 in 2018 versus ages 17-29 in 2017
691	For ages 18-31 in 2019 versus ages 17-30 in 2018
600	For ages 18-32 in 2020 versus ages 17-31 in 2019
521	For ages 18-33 in 2021 versus ages 17-32 in 2020
10,650	TOTAL 'RESIDUAL' BULGE OVER 2011 to 2021

1.74. This approach has attempted to estimate the area between the 2021 curve and the 2021 curve between the ages of 18 and 33 and the inference to be drawn from this is not necessarily, therefore, that the population forecast is wrong by a total of 10,065 people over the ten year period. It is that the data need to be tested again having screened out the anomaly of overseas students.

1.75. A crude approach to the arithmetic model would be to impose a cap on the population forecast between the ages of eighteen and thirty-three at, say, 2,000 and then to show the same charts and figures as above.

1.76. This would show the projection as being restated as below:

Age	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
16	1,457	1,506	1,454	1,544	1,525	1,506	1,422	1,408	1,492	1,574	1,561
17	1,543	1,510	1,556	1,507	1,591	1,573	1,552	1,470	1,454	1,537	1,618
18	1,774	1,826	1,788	1,830	1,784	1,856	1,838	1,810	1,729	1,707	1,790
19	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
20	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
21	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
22	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
23	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
24	1,951	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
25	1,864	1,928	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
26	1,921	1,869	1,924	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
27	1,836	1,928	1,884	1,931	2,000	2,000	2,000	2,000	2,000	2,000	2,000
28	1,795	1,850	1,934	1,895	1,938	2,000	2,000	2,000	2,000	2,000	2,000
29	1,905	1,808	1,848	1,924	1,892	1,929	2,000	2,000	2,000	2,000	2,000
30	1,889	1,917	1,830	1,860	1,931	1,903	1,936	2,000	2,000	2,000	2,000
31	1,979	1,918	1,940	1,863	1,884	1,952	1,926	1,957	2,000	2,000	2,000
32	1,827	1,960	1,905	1,924	1,854	1,869	1,933	1,911	1,940	2,000	2,000
33	1,797	1,817	1,941	1,892	1,907	1,843	1,852	1,915	1,897	1,924	2,000
34	1,752	1,792	1,821	1,938	1,893	1,904	1,846	1,852	1,913	1,898	1,924
35	1,863	1,781	1,820	1,855	1,966	1,925	1,933	1,880	1,884	1,943	1,930

1.77.   Both of these approaches has the disadvantage of assuming ALL growth is due to the student population and that there is no background expansion.

2.   Overseas Students

2.1.   The Higher Education Statistics Authority (HESA) publishes figures showing the numbers of students at institutions and the proportion of overseas students.
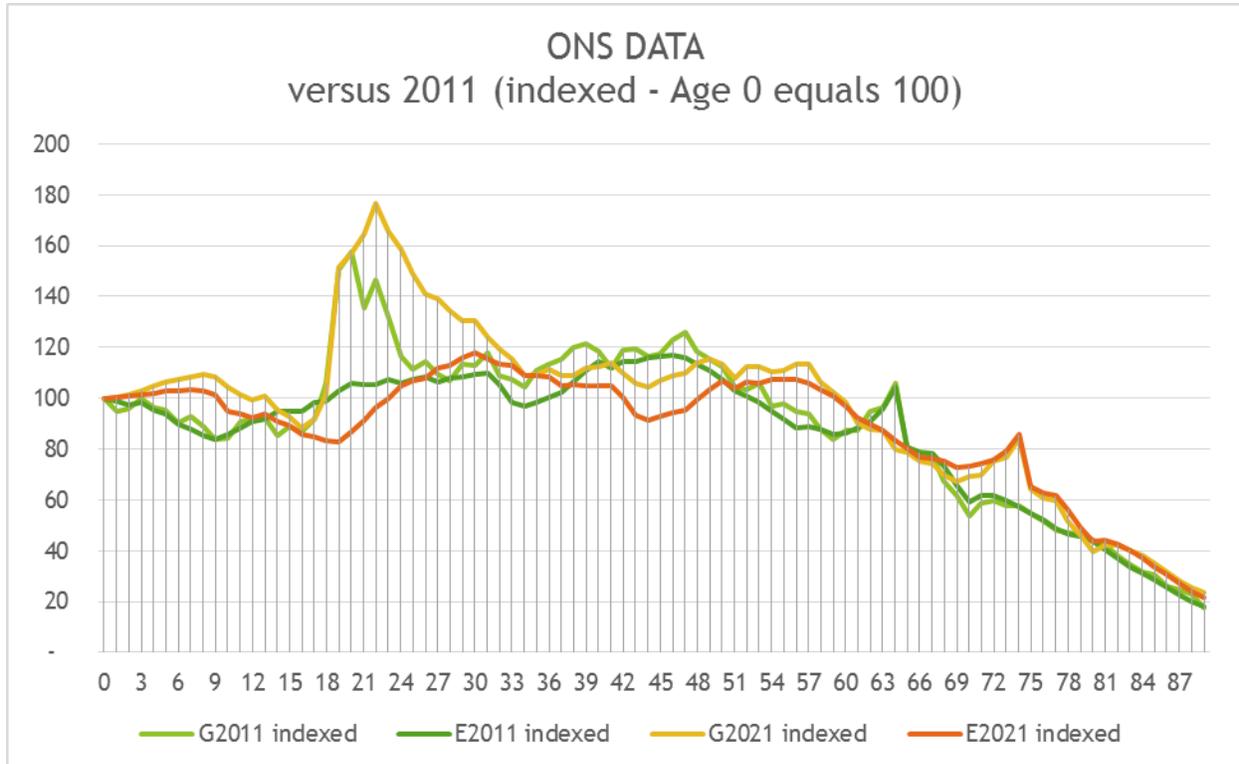
2.2.   For The University of Surrey, the figures for 2000/1 and 2010/11 (incorporating the census years) show there was an increase of 4,664 in the numbers of students between the two periods **of which the <u>increase</u> in overseas students accounted for 3,145**.
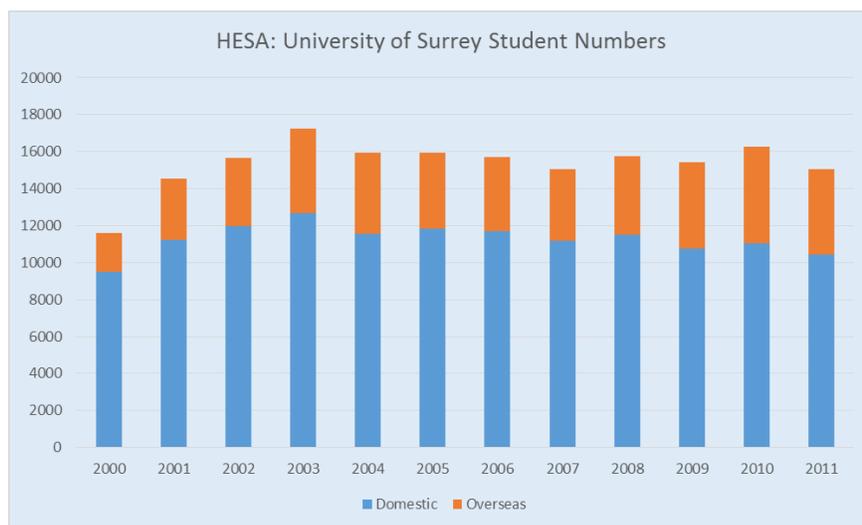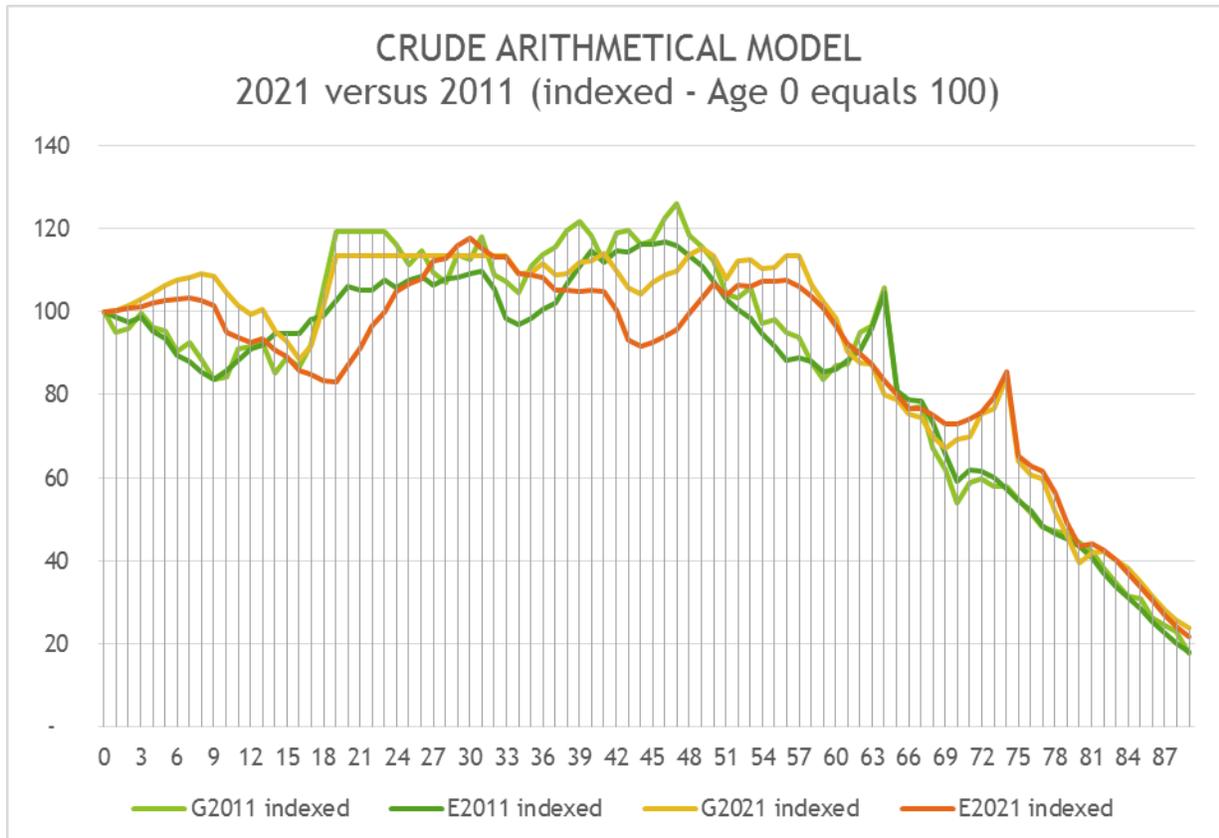
2.3.   The 2001 census (year 2000 in the chart above) had the lowest student numbers and the smallest cohort of overseas students, whereas the 2011 census (year 2010) had the highest number of overseas students. Reflecting this between censuses as a trend is to misunderstand the data.

2.4.   In 2010, there were 2,607 homes that were exempt from Council Tax, a reasonable proportion of which will have been as a result of student exemptions, which, if accommodating, say, four students each in 2,000 of them, could account for the student numbers not able to be accommodated in the University Courts and some of the residual students of other Guildford institutions.

2.5.   It should be noted that anomalies within the 2011 census will allow domestic students to be recorded at their (parental) home rather than at university, whereas overseas students are probably recorded at their university address. It seems reasonable to screen out this student anomaly when assessing the figures.

3. Crude Arithmetical Model

3.1.   In the absence of the necessary skills and expertise to conduct a full statistical reappraisal of the figures, the very basic arithmetical model would take the total erroneous population growth in the table above (assessed as 20,034) and deduce that this would adjust the projected 2021 population figure from 156,291 to 136,257, reflecting a slight reduction from the 2011 census figure of 137,580.

3.2.   This does not reflect reality either of the demographic growth or of the appropriate 2011 baseline number.

3.3.   Clearly there needs to be a more discerning assessment and, in order to model an approach which emulates the national model but without the complexity of a full demographic model, we have considered how the application of a notional population cap within the key cohorts might impact the projections.

3.4.   Taking the adjustments made above, where the area beyond the curve was estimated at 10,650 people, and assuming this expansion beyond the typical university town bulge (based on the 2011 profile) is entirely down to the student anomaly, this would suggest a population in 2021 of 145,649 (growth of 8,069 over ten years, which at 2.42 people per household would require 334 homes per year)

3.5.   The following two charts show the indexed data for Guildford against the indexed England data (where the cohort aged 0 is set as 100 and each cohort is shown relative to that baseline).

ONS DATA
versus 2011 (indexed - Age 0 equals 100)

G2011 indexed   E2011 indexed   G2021 indexed   E2021 indexed

3.6. The first chart (above) shows the data from ONS indexed for both Guildford and England based on their respective populations at aged under one year old set to 100.

3.7. The second chart (below) shows the same data but adjusted by the crude arithmetical model (table shown above) where the population between seventeen and thirty-three is restricted to 2,000:

CRUDE ARITHMETICAL MODEL
2021 versus 2011 (indexed - Age 0 equals 100)

— G2011 indexed   — E2011 indexed   — G2021 indexed   — E2021 indexed

3.8. This analysis shows that such a cap (statistically applied) would seem to be a realistic approach – although we should caution against its application in such a crude way without an underlying assessment both of the effect of the student population and of background migration into Guildford.

3.9. The implication on the housing numbers (again using crude arithmetical analysis) shows the following:

2011 CENSUS DATA   Population   137,580

2011 CENSUS (capped)   Population   135,461
(*suggests, crudely, around 2,000 overseas students
may have stayed in Guildford over the census count*)

2021 POPULATION PROJECTION   156,299

2021 CAPPED PROJECTION   148,253
(*removes the cumulative anomaly identified across the projection years*)

3.10.   This suggests (at 2.42 people per household – as per the 2011 census) that the housing need on the basis of demographic trends is likely to be 12,792 over the ten year period (the capped 2021 projection LESS the 2011 capped census data), requiring 5,286 homes at 529 homes per year (compared to 774 homes per year suggested by the unadjusted data).

3.11.   NB: Applying a notional cap of 1,900 to the key cohorts in 2011 to 2021 makes very little difference to the assumed population growth (just under 12,000 instead of 12,792).

Normalised Data Mapped by England Indexation

3.12.   In order to consider alternative normalization processes, the Guildford data for those aged below 1 year old were multiplied by the respective England indices for each successive cohort.

3.13.   These annual data provided the following summary:

2011 CENSUS DATA	Population	137,580
2011 INDEXED CENSUS	Population	133,156
2021 POPULATION PROJECTION		156,299
2021 INDEXED PROJECTION		143,691

3.14.   This analysis is still rather crude but has the benefit of overlaying the England aggregate indexed profile over the Guildford population according to the number of infants under one year old.

3.15.   This demonstrates a projected population increase of 10,535 between 2011 and 2021, translating to 435 homes per year.

3.16.   Further analysis of other sources is being carried out to enable us to understand whether there are other flaws which might require a reassessment of the core data.

3.17.   A further simplistic approach to dealing with the anomaly in the data is to take the problematic years in each cohort as 19-28, which as we have demonstrated is broadly where the population bulges.

3.18.   If the average forecast population growth for the remaining population (11% vs. 26%) is applied to these years it provides a very simple estimate of the adjustment required to remove this bulge with the added advantage that years 19-28 would then show a growth rate that is consistent with the remaining populations.

3.19.   Taking this approach would give a revised demand level at 2.42 people per household of 641. See the tables below.

Actual data

	2011	2021	Increase	Growth
19-28	21,486	27,113	5,627	26%
Other	116,094	129,186	13,092	11%
	137,580	**156,299**	**18,719**	**14%**
Proportion				
19-28	16%	17%		
Other	84%	83%		

Adjusted data

	2011	2021	Increase	Growth
19-28	21,486	23,909	2,423	11%
Other	116,094	129,186	13,092	11%
	137,580	**153,095**	**15,515**	**11%**
Proportion				
19-28	19%	16%		
Other	100%	84%		

3.20. There remains a further challenge and that is that, if there is an unexplained anomaly, the complex CLG housing formation modelling, based on a complex ONS forecast including fertility as well as migration, could also be inflating estimates elsewhere in the system. In this last method, for example, adopting the same percentage average increase for our 19-28 cohort, would probably overstate the population as a result of the impact on expected fertility within the target age range.

Housing Based Adjustment

3.21. The CLG household projection (based on ONS SNPP(2011)) highlighted above suggests that 663 new homes per year will need to be built over the period from 2011 to 2021.

3.22. Adjusting the 15 to 24 and 25 to 34 age-groups to the stated current Guildford average, the projected required rise in households falls to 507 per year from 2011 to 2021.

3.23. Again this shows that the impact of the anomaly, is to substantially inflate the housing need figures and it would not, therefore, be safe to rely upon the data as provided without significant further research.

4. CONCLUSION

4.1. The premise for the housing data in the Draft SHMA published by GL Hearn and that issued by Edge Consultants in the How Many New Homes? document looks as though it is deeply flawed and **a full demographic analysis needs to be undertaken to understand the NEED for housing in Guildford during the Local Plan period**.

4.2. IT SHOULD BE EMPHASISED THAT NONE OF THESE SIMPLISTIC APPROACHES IS CORRECT, NOR DO THEY ARRIVE AT THE RIGHT ANSWER, THEY MERELY INDICATE THAT, UNEXPLAINED, THE VISUAL ANOMALY IN THE DATA WILL BE A BONE OF CONTENTION IN THE LOCAL PLAN PROCESS AND COULD LEAD TO A SUBSTANTIAL OVERSTATEMENT OF NEED.

4.3. **The Guildford Society urges Guildford Borough Council to re-examine the core data (particularly within age-group cohorts aged 18 to 24 in 2011) before it moves to adopt any report or figure as the basis for its Objective Assessment of Housing Need in the Emerging Local Plan.**

JDSL-20140216_HousingNumbers-DemographicCritique