Pegasus
Group

LAND AT OAKLEY FARM, CHELTENHAM

APPENDICES TO ADDENDUM ON EDUCATIONAL CONTRIBUTIONS

ON BEHALF OF ROBERT HITCHINS LIMITED

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APPENDICES:

APPENDIX 1: COMPARATIVE DATASETS

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APPENDIX 1:

COMPARATIVE DATASETS

Key

More than 3 standard deviations above the mean (outside of 99.7% of the sample)
Up to 3 standard deviations above the mean (within between 95% and 99.7% of the sample)
Up to 2 standard deviation above the mean (within between 68% and 95% of the sample)
Within one standard deviation of the mean (within the average 68% of the sample)
Up to 2 standard deviations below the mean (within between 68% and 95% of the sample)
Up to 3 standard deviations below the mean (within between 95% and 99.7% of the sample)
More than 3 standard deviations below the mean (outside of 99.7% of the sample)

Table 1.1 - Comparison of pupil product ratios applied by identified LEAs excluding incomparable ppr's

	Number of beds	Applied ppr per 100 dwellings where adjusted to take account of migration and SEND			
		Primary school	Secondary school	Sixth form	Total
Gloucestershire IPS	Average	38.5	17.0	6.0	**61.5**
Gloucestershire IDP	Average	27.8	12.1	1.8	**41.6**
Neighbouring LEAs					
Worcestershire (adjusted to take account of migration in AH)	Average	21.0	12.0	2.4	**35.4**
Warwickshire					
North Warwickshire	Average	19.3	13.8	2.8	**35.8**
Nuneaton & Bedworth	Average	20.8	14.9	3.0	**38.6**
Rugby	Average	33.8	24.2	4.8	**62.8**
Stratford on Avon	Average	24.9	17.8	3.6	**46.3**
Warwick	Average	31.8	22.7	4.5	**59.0**
Wiltshire	Average	27.8	19.7		**47.5**
South Gloucestershire	Average	36.0	18.0	5.0	**59.0**
Swindon (sixth form ppr not in public domain but taken from GCC)	Average	37.0	14.0	6.0	**57.0**
Other LEAs identified in documents provided by the LEA on 08/09/21					
Derbyshire	Average	24.0	20.0	8.0	**52.0**
Kent	Average	28.0	20.0	-	**48.0**
Lincolnshire (sixth form ppr not in public domain but taken from GCC)	Average	20.0	19.0	3.8	**42.8**
Northamptonshire	Average	29.0	15.0	7.0	**51.0**
Nottinghamshire	Average	21.0	16.0	-	**37.0**
Suffolk	Average	25.0	18.0	4.0	**47.0**
Surrey	Average	25.0	18.0		**43.0**
West Sussex	Average	25.0	18.0	4.0	**47.0**
Other LEAs identified in representations of Stroud District Council (CDE12)					
Bolton	Average	23.2	18.7	-	**41.9**
Nottingham	Average	22.6	16.1	-	**38.7**

Table 1.2 - Comparison of pupil product ratios applied by identified LEAs with estimated averages

	Number of beds	Applied ppr per 100 dwellings where adjusted to take account of migration and SEND			
		Primary school	Secondary school	Sixth form	**Total**
Gloucestershire IPS	Average	38.5	17.0	6.0	**61.5**
Gloucestershire IDP	Average	27.8	12.1	1.8	**41.6**
Neighbouring LEAs					
Herefordshire	House mix applied to estimate average	18.0	13.0	0.5	**31.5**
Worcestershire (adjusted to take account of migration in AH)	Average	21.0	12.0	2.4	**35.4**
Warwickshire					
North Warwickshire	Average	19.3	13.8	2.8	**35.8**
Nuneaton & Bedworth	Average	20.8	14.9	3.0	**38.6**
Rugby	Average	33.8	24.2	4.8	**62.8**
Stratford on Avon	Average	24.9	17.8	3.6	**46.3**
Warwick	Average	31.8	22.7	4.5	**59.0**
Wiltshire	Average	27.8	19.7		**47.5**
South Gloucestershire	Average	36.0	18.0	5.0	**59.0**
Oxfordshire					
Cherwell	House mix applied to estimate average	33.4	20.2	3.0	**56.5**
South Oxfordshire	House mix applied to estimate average	28.1	22.1	3.0	**53.1**
Vale of White Horse	House mix applied to estimate average	30.9	21.7	3.2	**55.8**
West Oxfordshire	House mix applied to estimate average	34.6	22.6	3.2	**60.4**
Swindon (sixth form ppr not in public domain but taken from GCC)	Average	37.0	14.0	6.0	**57.0**
Other LEAs identified in documents provided by the LEA on 08/09/21					
Cambridgeshire	Midpoint	35.0	21.5		**56.5**
Derbyshire	Average	24.0	20.0	8.0	**52.0**
Essex	Houses	30.0	20.0	4.0	**54.0**
Kent	Average	28.0	20.0	-	**48.0**
Leicestershire	Houses	30.0	16.7	3.3	**50.0**
Lincolnshire (sixth form ppr not in public domain but taken from GCC)	Average	20.0	19.0	3.8	**42.8**
Medway	Houses	27.0	19.0	5.0	**51.0**
Norfolk	Houses	28.1	14.5	1.5	**44.1**
Northamptonshire	Average	29.0	15.0	7.0	**51.0**
Nottinghamshire	Average	21.0	16.0	-	**37.0**
Peterborough	Midpoint	40.0	28.0	-	**68.0**
Suffolk	Average	25.0	18.0	4.0	**47.0**
Surrey	Average	25.0	18.0		**43.0**
West Sussex	Average	25.0	18.0	4.0	**47.0**
Other LEAs identified in representations of Stroud District Council (CDE12)					
Bolton	Average	23.2	18.7	-	**41.9**
Nottingham	Average	22.6	16.1	-	**38.7**

APPENDIX 2:

DEMOGRAPHIC ANALYSIS

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Determinants of ppr's

1.1   In order to consider whether any individual LEAs provide a reasonable comparator, it is firstly necessary to identify those demographic characteristics which may inform the ppr's experienced. A number of characteristics have therefore been compared with the ppr's that have actually arisen to determine whether there is a relationship between the characteristic and the ppr in the LEAs identified by the LEA. This analysis has demonstrated that there is not a strong relationship between the ppr which has arisen and:

  - The proportion of residents that have migrated to the LEA in the previous year with a correlation coefficient of 0.03[1]; or

  - The proportionate growth in the housing stock with a correlation coefficient of 0.32; or

  - The affordability of housing with a correlation coefficient of 0.39.

1.2   It does however demonstrate a strong relationship between the ppr which has arisen and:

  - The median age of the population with a correlation coefficient of 0.70, which is unsurprising given that this likely to provide an indication of the proportion of residents of child-bearing age;

  - The proportion of the population that classify themselves as being white with a correlation coefficient of 0.79, reflecting the fact that all other ethnic groups have a greater number of children per household;

  - The birth rate with a correlation coefficient of 0.73, which is unsurprising given that this provides an indication of the number of children arising;

  - The ppr which has arisen in subsequent periods with a correlation coefficient of 0.85, which is unsurprising given that it would be expected that ppr's would remain broadly stable.

1.3   These strong relationships are presented graphically in Figures 2.1 to 2.4 below[2].

1.4   The fact that there are no strong (or even moderate) relationships between the ppr's experienced and any of the growth or affordability of the housing stock or the levels of migration experienced, would suggest that the change in the number of pupils is largely determined by the change within the existing population, and that any changes to pupil numbers that arise from migration (including to new dwellings) are relatively *de minimis*.

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[1] A correlation coefficient of less than 0.3 indicates that there is no or a very weak relationship, of between 0.3 and 0.5 indicates a weak relationship, of between 0.5 and 0.7 indicates a moderate relationship and of more than 0.7 indicates a strong relationship.
[2] In all of these Figures, the datapoint for Gloucestershire is highlighted as well as any potential outliers.

Figure 2.1 – the relationship between the median age of the population in 2011 and the ppr's experienced in the period 2011-19

Figure 2.2 – the relationship between the proportion of the population that were white in 2011 and the ppr's experienced in the period 2011-19

Figure 2.3 – the relationship between the birth rate in 2013[3] and the ppr's experienced in the period 2013-19
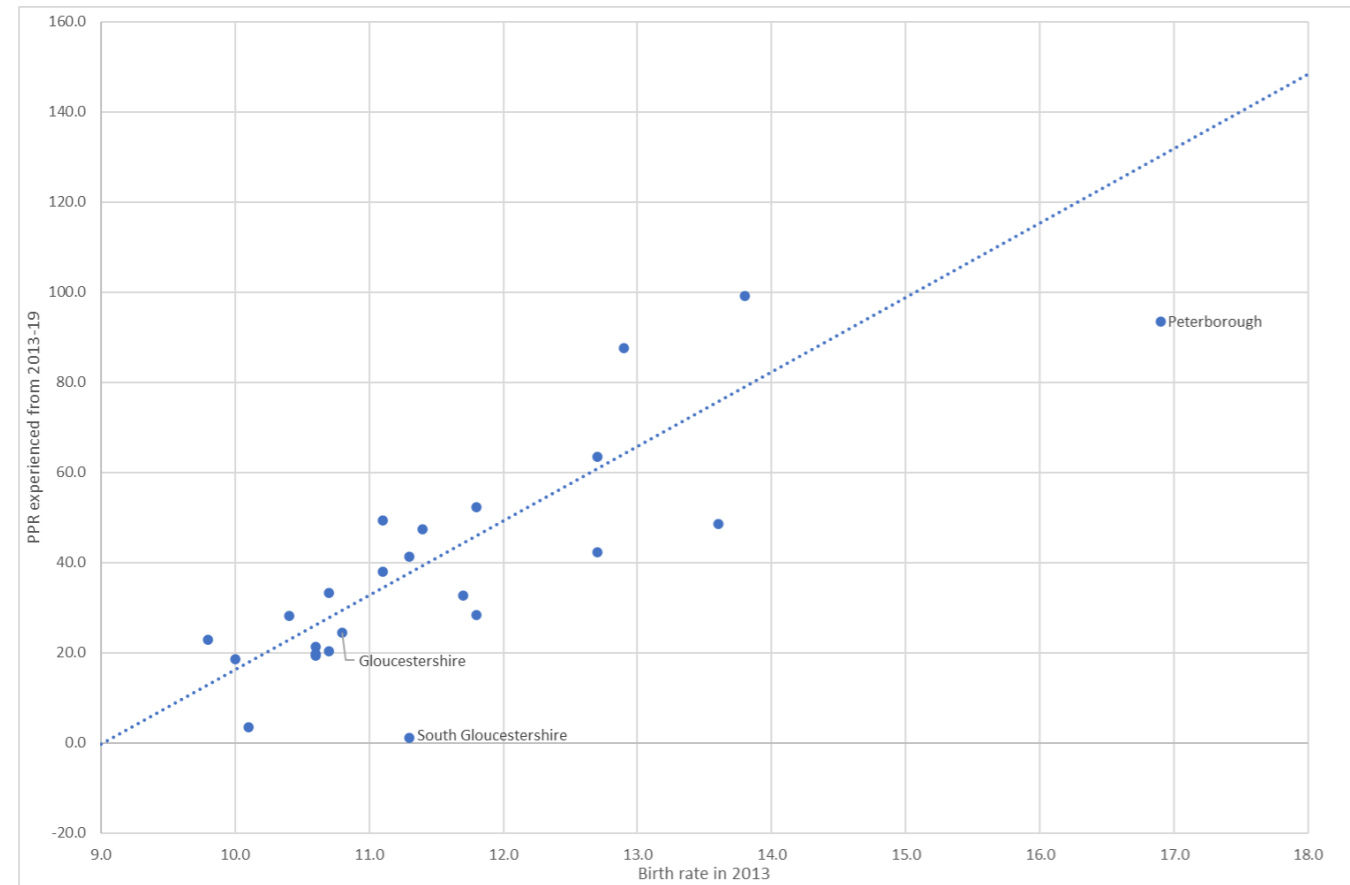
Figure 2.4 – the relationship between the ppr experienced from 2011-15 and that experienced from 2015-19

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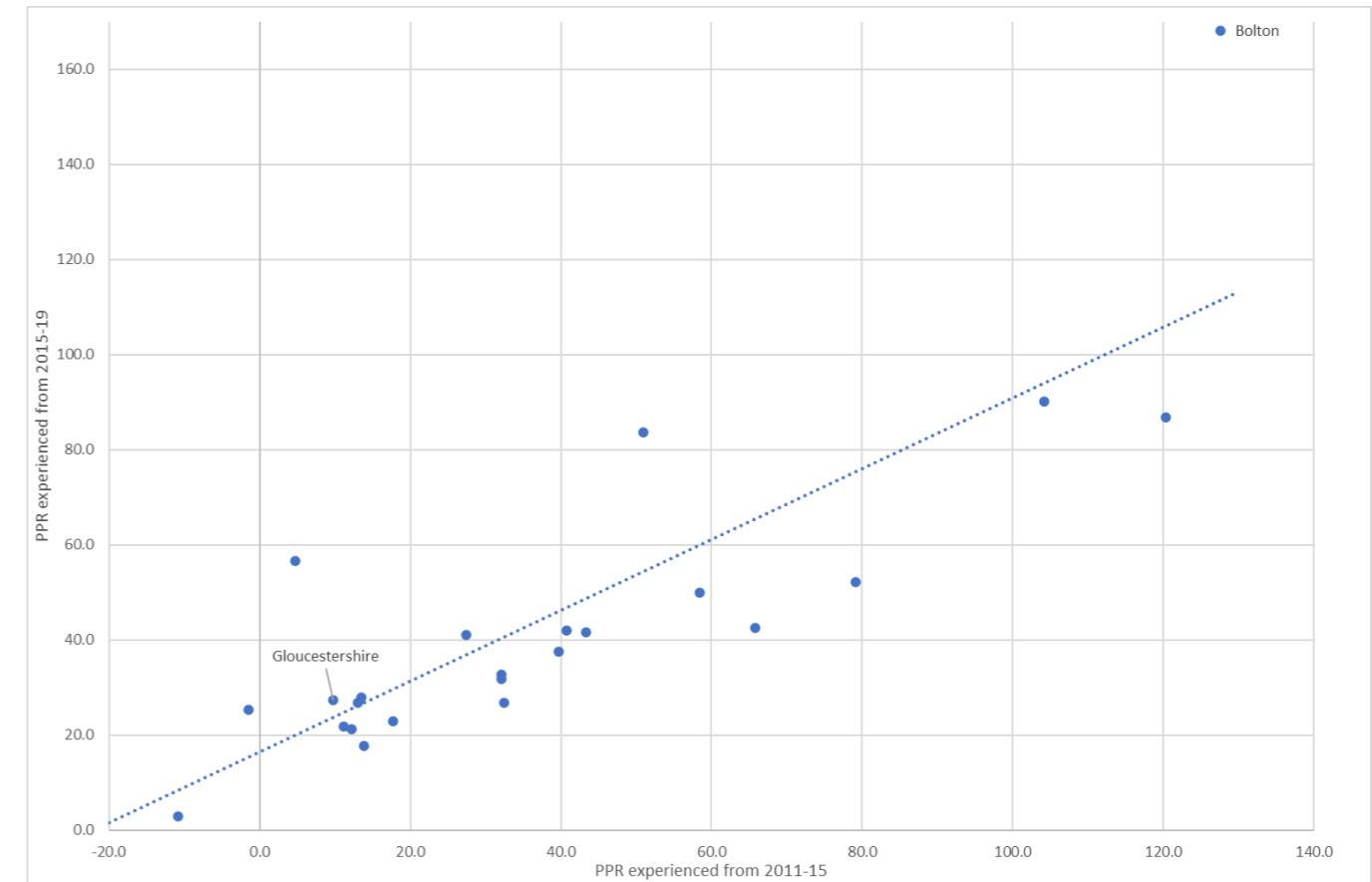
[3] 2013 has been used as this is the earliest year for which the birth rates are available on a consistent basis.

Expected ppr's in Gloucestershire as a result of the above determinants

1.5   Given these strong relationships it would be expected that Gloucestershire wouldn't experience a high ppr in the future as suggested by the LEA Gloucestershire has:

- A younger age profile than other LEAs;

- A more ethnically diverse population than other LEAs;

- A higher birth rate than other LEAs; and/or

- Recently experienced high ppr's.

1.6   The relative positions of Gloucestershire compared to the other LPAs considered are presented in Figures 2.5 to 2.9 below[4]. These clearly demonstrate that Gloucestershire, which is highlighted in red, actually has an older population, a more ethnically homogenous population, a lower birth rate, and a lower recent ppr than average across the identified LPAs such that the strong relationships between each of these determinants would have to collapse for Gloucestershire to have the second or third highest ppr as suggested by the LEA[5].

1.7   The LEA seek to draw support from the fact that a number of other LEAs in a number of LPAs apply similar ppr's to those identified in Gloucestershire (61.5), namely in Rugby (62.8), Warwick (59), South Gloucestershire (59), Cherwell (56.5), West Oxfordshire (60.4), Swindon (57), Cambridgeshire (56.5) and Peterborough (68). It is immediately apparent from Figures 2.5 to 2.9 that:

- Rugby, Warwick and Cherwell experience a significantly greater birth rate than Gloucestershire, are much more ethnically diverse, and have a much younger population such that they would be expected to experience much greater ppr's than Gloucestershire, rather than broadly equivalent ppr's as assumed by Gloucestershire;

- South Gloucestershire, Swindon, Cambridgeshire and Peterborough experience a significantly greater birth rate than Gloucestershire, are much more ethnically diverse, have a much younger population, and has experienced significantly greater ppr's in recent years than have occurred in Gloucestershire such that they would be expected to experience much greater ppr's than Gloucestershire, rather than broadly equivalent ppr's as assumed by Gloucestershire;

- West Oxfordshire is the single exception as it has a lower birth rate, a less ethnically diverse population and an older population than Gloucestershire and so it would be expected to have lower ppr's which could be taken to suggest that the ppr's identified in Gloucestershire are appropriate. However, the ppr's in West Oxfordshire and Gloucestershire are outliers with reference to any other comparator, and one potentially anomalous ppr cannot be used to provide support for another. Furthermore, there is the potential that the ppr's in West Oxfordshire has been affected by the large military population within that area such that these would once again not provide a reasonable comparator for Gloucestershire which does not have a significant military population.

1.8   Therefore, each of the comparators which the LEA seek to draw support from, reflect significantly different demographic circumstances that explain why the ppr's in these comparators may be towards the top end of the spectrum. These therefore provide no support for the contention of the LEA.

1.9   The only comparator which reflects demographic circumstances broadly similar to those in Gloucestershire is Wiltshire, as highlighted in green in Figure 2.5 to 2.9 below. Indeed, the birth rates, the homogeneity of ethnicity, the median age and the historic ppr's that have actually arisen are very similar to those in Gloucestershire. In response, Wiltshire Council applies a ppr of 47.5 which is significantly lower than the 61.5 identified in Gloucestershire. There is simply no explanation to justify why given the similarity of both of these LEAs why Gloucestershire would experience ppr's materially greater than those in Wiltshire.

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[4] These charts are orientated such that the LPAs that would be expected to have higher ppr's are located towards the right.
[5] Unless of course something unprecedented is expected to occur in Gloucestershire, such as the mass evacuation of children from other parts of the country or overseas to Gloucestershire.

1.10   It is also interesting to note that in Gloucestershire, the birth rates have continued to reduce, the proportion of the population that identify themselves as white has increased, and the median age of the population has increased since 2011[6], such that it would be expected that the ppr's will now be lower than those which arose in the period since 2011, namely 19.7 in Gloucestershire. This yet again suggests that the ppr of 61.5 identified by the LEA assumes that the strong relationships between each of these characteristics and the ppr collapses without any explanation as to why this should be the case in the specific circumstances of Gloucestershire.

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[6] Or 2013 in the case of the birth rates.
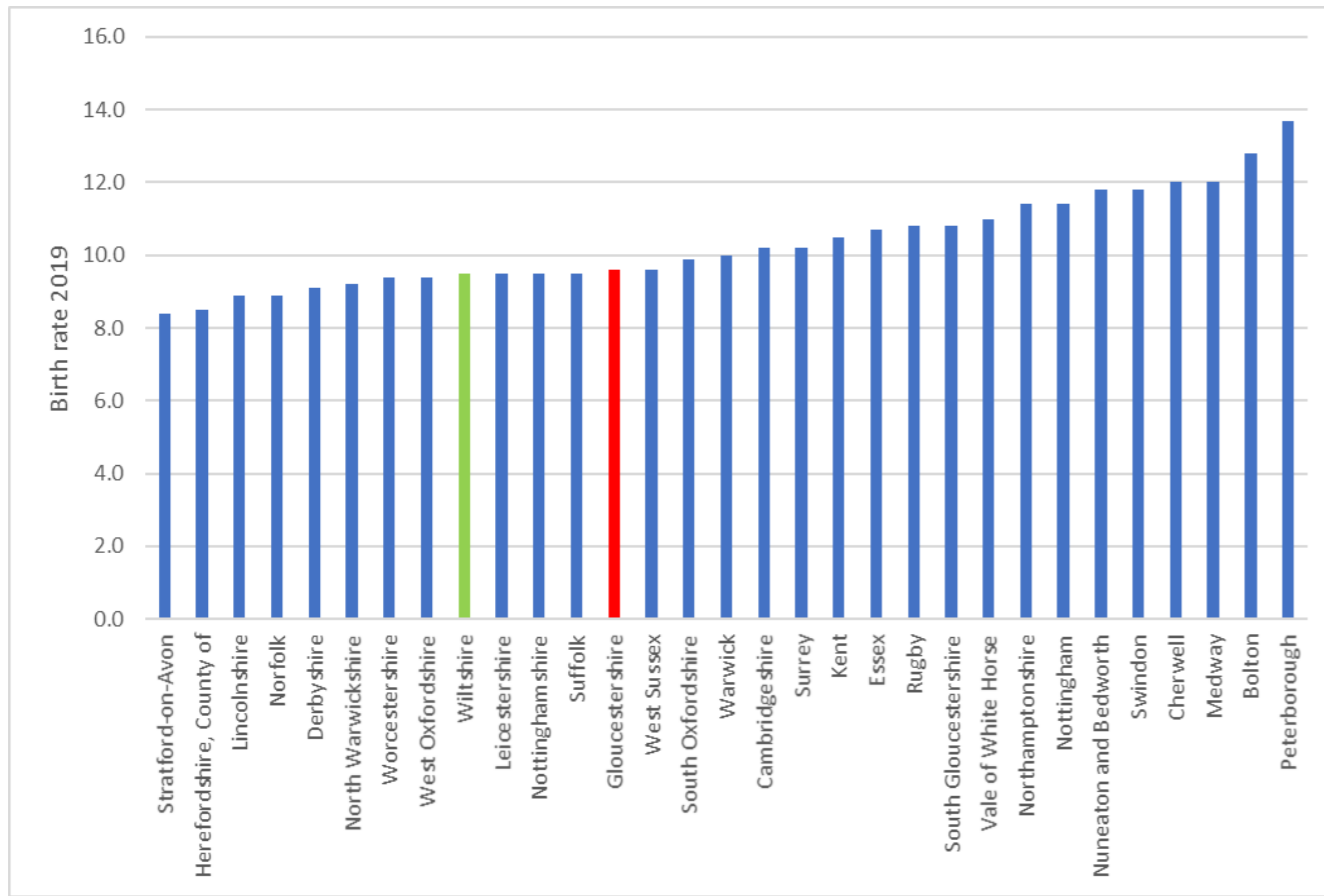
Figure 2.5 – the birth rate in 2019

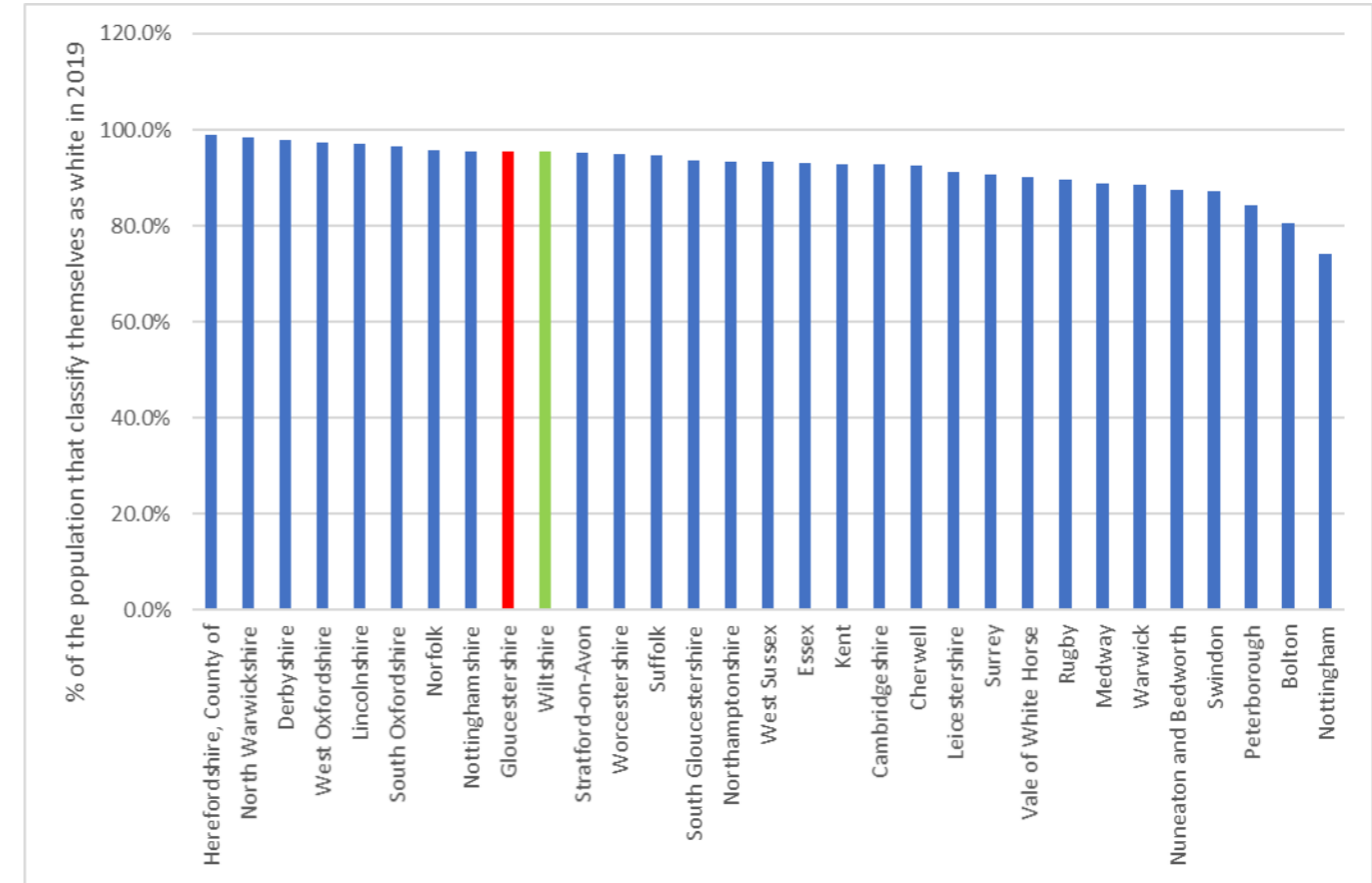**Figure 2.6 – the proportion of residents that classified themselves as white in 2016**
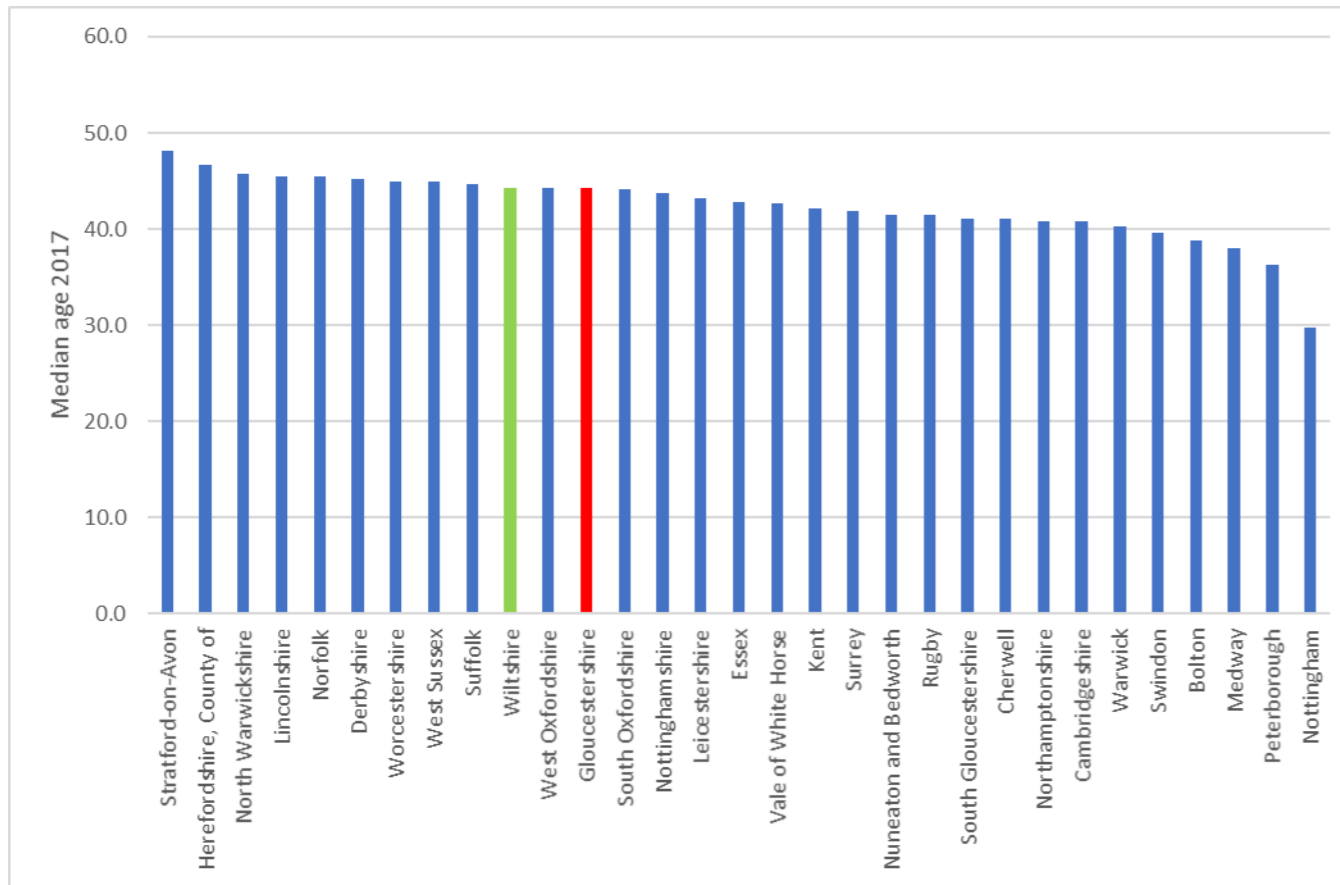
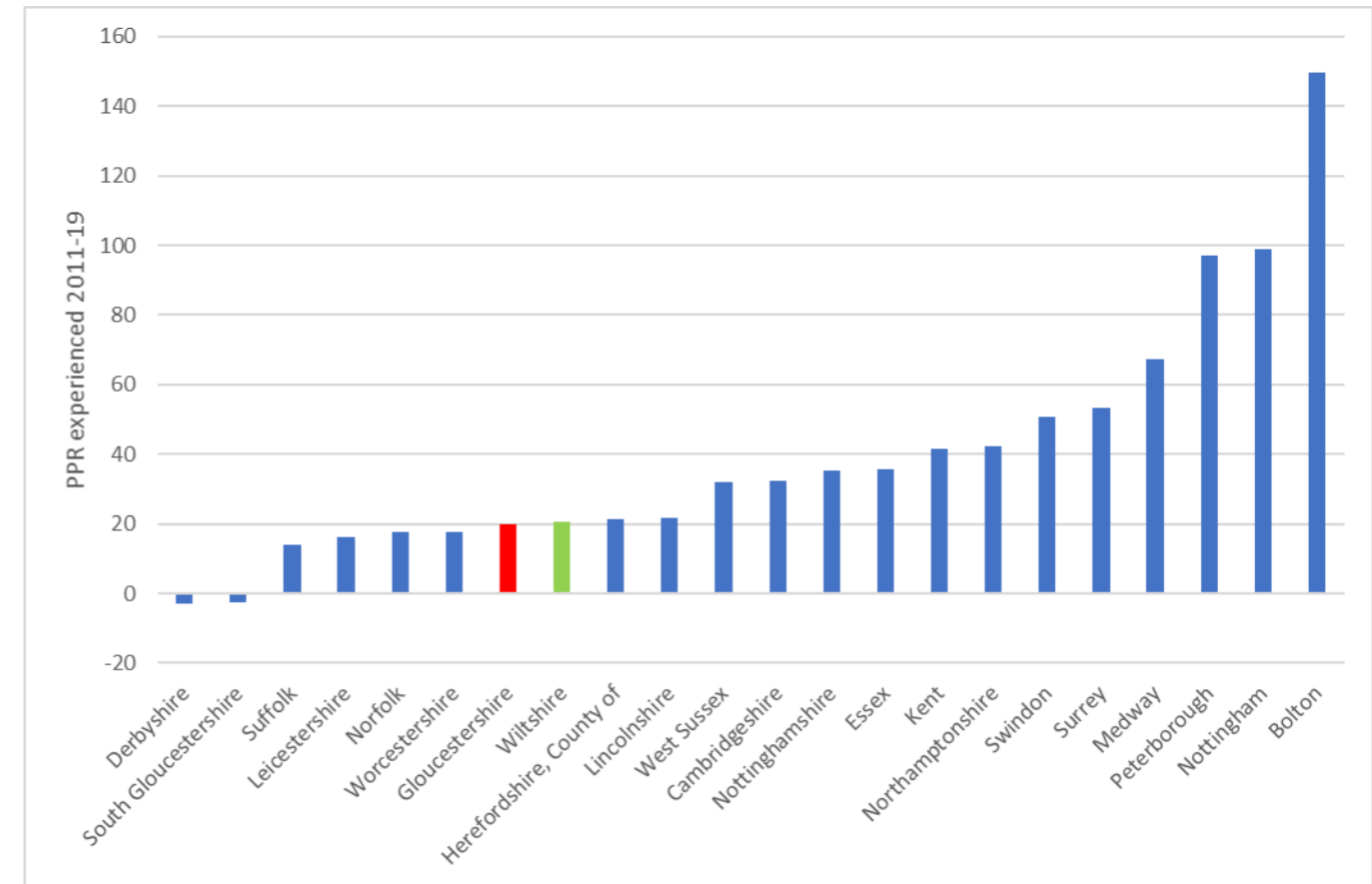**Figure 2.7 – the median age in 2017[7]**

Figure 2.8 – the ppr experienced from 2011-19[8]

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[7] The latest year for which this information is available.

[8] These figures are not available for individual LPAs and so only the figures for LEAs are included.

Conclusions

1.11   The preceding analysis demonstrates that:

- there is a strong relationship between a number of demographic characteristics at a point in time and the ppr which has actually been experienced thereafter;

- according to those demographic characteristics, Gloucestershire would be expected to experience ppr's in the future below the average within the sample of LEAs rather than the second or third greatest as suggested by the County Council;

- all but one of the LEAs from which the County Council seek to draw support from currently have demographic characteristics that would suggest that the ppr's will be materially greater than those which will occur in Gloucestershire and therefore provide no support for the ppr's identified by Gloucestershire;

- the only LEA which experiences similar demographic characteristics currently, and so would be expected to identify similar ppr's, identify a ppr significantly below that identified by Gloucestershire County Council;

- the demographic characteristics in Gloucestershire have changed such that it would now be expected that Gloucestershire will experience lower ppr's than the ppr of 19.7 experienced in the recent past, rather than increasing substantially to 61.5 as assumed by the LEA.

1.12   In summary, the proposition of the County Council that some other LEAs identify ppr's that approach or exceed those identified in Gloucestershire provides support for the position of the County Council, is misconceived in the absence of any assessment of the demographic characteristics and comparability of those LEAs. When the demographic characteristics are taken into account this suggests that:

- the ppr's in Gloucestershire will be materially lower than those identified in Rugby, Warwick, Cherwell, South Gloucestershire, Swindon, Cambridgeshire and Peterborough contrary to the ppr's identified by the LEA;

- the ppr's would be expected to broadly similar to those which will occur in Wiltshire, wherein the LEA identify a ppr of 47.5[9];

- the ppr's would be expected to be lower than the 19.7 previously experienced in Gloucestershire given that the population is now more ethnically homogenous, older and experiences a lower birth rate.

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[9] Acknowledging that the compliance of this figure with the guidance has not been assessed and so it could be materially lower if for example Wiltshire Council has not taken account of vacant/second homes, the proportion of children that attend state funded schools, or if Wiltshire Council's position that all households in market housing will be new to the local population is not robust.

APPENDIX 3:

THE CORRESPONDING DATA FOR KINGSWAY AND GCHQ

Pupil Product Ratios (PPR) Check

Actual NOR as at Pupil Census January 2021

The Cognisant Study in 2018 surveyed a sample of dwellings at two housing developments.

The actual number of pupils on roll at GCC schools was recorded in the Pupil Census in January 2021 for these developments as shown in the table below.

These developments are not yet mature and the additional demand for school places generated by these developments is expected to increase in future years. This is indicated by the numbers of pupils being generally lower in the older cohorts. The total number of pupils accessing a school place will increase as the larger numbers of children in the younger cohorts age through the phases of education.

Number of pupils	Kingsway	GCHQ	Total
YR	203	29	232
Y1	193	28	221
Y2	183	25	208
Y3	197	24	221
Y4	200	17	217
Y5	189	20	209
Y6	194	19	213
Y7	174	20	194
Y8	167	19	186
Y9	188	14	202
Y10	161	14	175
Y11	143	14	157
Y12	61	6	67
Y13	35	8	43
Total Primary	**1359**	**162**	**1521**
Total Secondary	**833**	**81**	**914**
Total Post-16	**96**	**14**	**110**
Number of Dwellings	3337	880	**4217**
Primary PPR	41	18	**36**
Secondary PPR	25	9	**22**
Post-16 PPR	3	2	**3**