LISTED BUILDINGS CONSENTS: A REVIEW OF DATA

$$\chi^2 = N\left[\sum_{i=1}^{r}\sum_{j=1}^{c}\frac{{N_{ij}}^2}{N_i.N_j} - 1\right]$$

for English Heritage

by

Green Balance

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Cover:

Before and after the grant of listed building consent for works to the Chaser Inn, Shipbourne, Kent.

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SUMMARY

A compilation and analysis is presented of a sample of 936 applications for listed building consent, providing a statistically sound cross-section of applications decided around England. The cases are evenly distributed so far as practicable between regions, between urban and rural areas, between authorities which do and do not charge for pre-application discussions, and between periods before and after legislation came into effect to reintroduce V.A.T. at 20% on approved works to listed buildings.

Information on each application has been obtained so far as practicable on: the grade of listed building for which consent was sought; the type of listed building affected; the type of applicant for listed building consent; the works for which listed building consent was sought; whether applications were submitted by the applicant direct or by an agent; whether the applicant had sought advice from the planning authority beforehand; and whether the listed building consent application was accompanied by a separate planning application. The data were entered into an Excel spreadsheet to allow variables to be combined to give insights into a huge variety of issues.

The report explains the variables which were selected, the sampling procedures used and how particular local authorities were chosen for sampling. Details are provided on the benefits and limitations of the choices made, the statistical issues involved, and how difficulties can be addressed. The statistical test used to calculate the significance of difference between two or more data sets is the χ^2 test, for which a worked example is presented in Appendix 2.

The main analytical results are presented, comprising tables and charts to show the relationship between the four main topics used to construct the sample and the six main items of information obtained on each application. (Data on accompanying planning applications proved too thin to be reliable for presentation purposes.) Relationships which might have demonstrated significant differences between the variables were subjected to the χ^2 test.

Additional analysis is presented which explores three issues in more detail:

– how best to present and analyse data when a large number of items are 'not stated' or 'unknown', and appear to be imbalancing the relationship between variables;
– whether some works to listed buildings (categorised into five types) are more likely than others to be applied for in combination or separately; and
– the extent to which obtaining pre-application advice is influenced by the key variables for which data have been obtained.

The two principal conclusions to emerge from the analysis are: first, that charities, private individuals and institutions applied for listed building consent less frequently after the increase in V.A.T. came into effect (apparently the result of the V.A.T. increase, though other changes between the two sampled periods cannot be ruled out); and second, that fewer applicants seek pre-application advice in authorities which charge for pre-application advice. Both of these are statistically significant findings.

CHAPTER 1

THE PROJECT

Aims

1.1 English Heritage required a study of a significant sample of listed building consent applications to shed light on matters such as:

– who is applying for listed building consent;
– the types of change being proposed;
– the impact of local authority charging for listed building consent applications;
– the impact of the reversion of V.A.T. rates on approved works for listed buildings from zero to 20% on 1st October 2012;
– other variables which might be affecting the pattern of listed building consents; and
– any regional variations in the data.

Objectives

1.2 Four variants were critical to the sampling process required by English Heritage. Data were needed as follows.

(a) By region. Data were required from at least 100 listed building consent applications in each of the nine standard English regions.

(b) By urban or rural authority.

(c) According to whether or not the local planning authority charged for pre-application advice on prospective listed building consent applications.

(d) Before and after the change in the law on V.A.T. charging on 1st October 2012.

1.3 In principle, the data obtained should be evenly split between each of these requirements. Therefore half the sample should be urban applications and half rural applications, half each from authorities which do and do not charge for advice, and half each before and after the V.A.T. change. Together with an even split of data between the nine regions, all four requirements could be satisfied provided the overall sample size was 936 applications. This would mean 104 cases in each region. Unique combinations of the four variables (of which there are 72) could be provided in blocks of 13 sampled applications. This would allow highly detailed 'what if?' combinations of assumptions to be tested. (This would be at the limits of statistical significance, with results not being reliable at any smaller size of sample.)

1.4 The other variables on which data were required were agreed as follows:

(i) The grade of listed building for which consent was sought.

(ii) The type of listed building affected (domestic, non-domestic or structure).

(iii) The type of applicant for listed building consent.

(iv) The works for which listed building consent was sought.

(v) Whether applications were submitted by the applicant direct or by an agent.

(vi) Whether the applicant had sought advice from the planning authority beforehand.

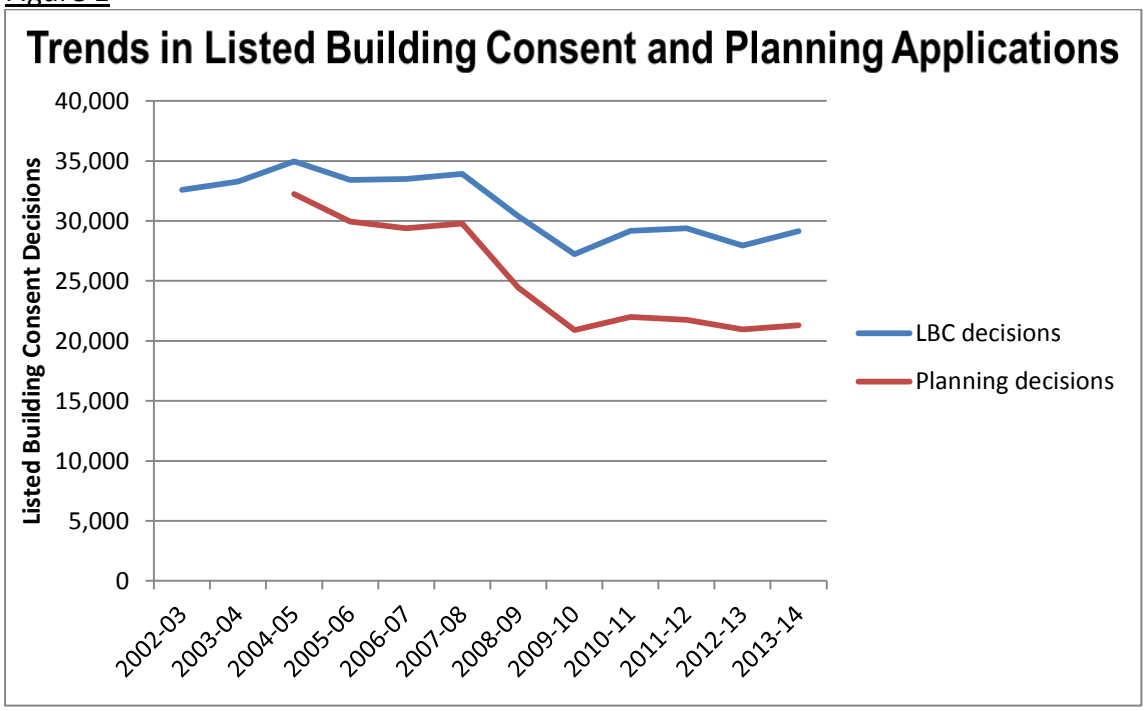
(vii) Whether the listed building consent application was accompanied by a separate planning application.

1.5 The data collected would ideally enable each of the four variants (a) to (d) around which the sampling procedure had been designed (or combinations of those) to be assessed against each of the other seven variables (i) to (vii). Statistical tests could then be run to assess the significance of any difference identified between two or more sets of data.

Background

1.6 This research is conducted against a background of a reduced number of decisions on listed building consents applications in recent years. The trend is shown below in Figure 1. This indicates that there was a 20% reduction in applications in the two years from March 2008, i.e. at the onset of the economic downturn. Application numbers were roughly stable beforehand and have been roughly stable since. There is of course a possibility that numbers will pick up again with the economic recovery, though that is conjectural. The other trend line shows a similar pattern for planning decisions as a whole, but a sharper 30% decline with the downturn (figures are divided by 20 for presentation on this chart).

Figure 1



1.7 There is currently limited strategic knowledge about detailed aspects of listed building consent applications, such as: who the applicants are, the types of alterations they are proposing and the proportions that do not accompany a planning application. Superimposed on the trend in numbers of listed building consent applications are changes in context, notably a marked reduction the number of historic environment staff in many local planning authorities, which has increased the interest in charging for pre-application advice as a way to generate funds to help maintain services. The pattern of listed building consent applications may also have changed as a result of the loss of zero-rating of V.A.T. on approved works for listed buildings and a return to a standard 20% rate. This has raised concern that, in particular, unauthorised work may be carried out and fewer applications may be made for listed building consent, especially for changes to internal fixtures and fittings which are more difficult for authorities to identify. The research aimed to shed as much light as possible on recent experience, so far as this is practicable by an analysis of applications for listed building consent.

Report structure

1.8 Detailed aspects of the methodology are discussed in chapter 2. This includes commentary on the assumptions made in the sampling process, the theoretical limitations in the data analysis and the practical problems arising from the data available.

1.9 The main findings of the research are presented in chapter 3. This includes the principal data analyses and the assessments of significance carried out.

1.10 A further commentary on the findings and some additional assessments of the data collected are given in chapter 4.

1.11 Conclusions are presented in chapter 5.

CHAPTER 2

RESEARCH METHODS

Selection of variables

(i) Regions

2.1 The nine standard English regions are East of England, East Midlands, London, North East, North West, South East, South West, West Midlands and Yorkshire & Humber. Data were collected from local planning authorities in each region in equal numbers: 104 listed building consent applications per region.

(ii) Urban and rural authorities

2.2 Defra has prepared an urban/rural classification of unitary and lower-tier local authorities, distinguishing three degrees of urbanisation (Major Urban, Large Urban and Other Urban) and three degrees of rurality (Significant Rural, Rural 50 and Rural 80). All local authorities were identified as either urban or rural according to this classification. Defra distinguishes 168 urban authorities and 158 rural ones: the difference between the two available data source sizes (the 'population size' of each in statistical terms) was treated as not significant for sampling purposes. Equal numbers of listed building consent applications were taken from urban and rural authorities. The Defra classification excludes non-unitary County Councils and National Park Authorities, all of which are local planning authorities. This study therefore excluded these authorities from the available options under other headings too.

2.3 The one exception to this approach arose in London. Here, all the local authorities are classified by Defra as 'urban'. There is therefore a shortage of rural authorities in the database as a whole and this precludes any study of the split between urban and rural authorities within the London region. However, an additional selection criterion was introduced into the database, exclusively for London, distinguishing inner and outer London authorities. The option is available to treat the outer authorities as 'rural' for analytical purposes. If this is not done, then, for analysis involving rural or urban authorities, the London region should ideally be taken out of the database beforehand. At the website www.londoncouncils.gov.uk/londonfacts/londonlocalgovernment/londonboroughs.htm, the London Councils identify the following London Boroughs as in outer London: Barking and Dagenham, Barnet, Bexley, Brent, Bromley, Croydon, Ealing, Enfield, Haringey, Harrow, Havering, Hillingdon, Hounslow, Kingston upon Thames, Merton, Newham, Redbridge, Richmond upon Thames, Sutton and Waltham Forest. For the purpose of any relevant analysis in this study, these outer London Boroughs are treated as 'rural'.

(iii) Requests for pre-application advice where the local authority charges

2.4 English Heritage has assembled a list of the charging policies in all local planning authorities in England (excl. non-unitary County Councils), and categorised them as either charging or not charging. This project has followed that categorisation. In practice there is

a huge variety of criteria used by local authorities for deciding whether to charge in particular cases and how much to charge (e.g. only for major applications, or on a case-by-case basis, or not for maintenance queries, or only for written advice, or only for certain types of applicant, or in a variety of other specific circumstances). In short, the distinction between charging and not charging is not as definitive as would be ideal. This means that caution is needed when applying the results of assessments involving charging for pre-application advice.

2.5 English Heritage concluded that 129 of the 324 authorities studied (excluding National Parks) charged for pre-application advice (40%). To meet the requirements of the chosen research priorities (paragraph 1.3 above), equal numbers of charging and non-charging authorities have been sampled. There is therefore scope to weight the data to eliminate the effect of sampling a disproportionally high fraction of local authorities which do not charge. However, as the nature of charging varies from the marginal to the emphatic, and therefore lies to some degree on a continuum rather than in black and white terms, there is considerable doubt whether a weighting system to address the problem identified would greatly improve the statistical reliability of the findings where charging is a variable. None has therefore been applied.

2.6 One particular difficulty arose in the North East region, where there is no rural authority which charges for pre-application advice. In order to secure a sufficient sample size in that region, a double sample of listed building consent applications had to be taken from rural non-charging authorities. With charging authorities under-represented and non-charging authorities over-represented, data from the North East had to be excluded from analysis in cases involving requests for pre-application advice. There is a possibility that absence of charging might have raised the number of requests for pre-application advice in that region.

(iv) <u>The impact of change to the V.A.T. legislation</u>

2.7 The V.A.T. legislation affecting listed buildings came into effect on 1st October 2012. To identify the effect of the change, the study wished to avoid sampling in the periods immediately before the change (when there may have been a rush to beat the deadline) and the period immediately after (when there may have been a commensurate dearth of applications). However, a sufficient sampling period was required from which a local authority might provide 13 listed building consent applications before and 13 after the change. The decision was taken to avoid sampling in a one year period either side of the change in V.A.T. and to sample in the adjacent six month period. The sampling periods were therefore 1st April 2011 to 30th September 2011 and 1st October 2013 to 31st March 2014. The intention was primarily that applications submitted and determined in these periods were sampled, but there was compromise on the determination date if necessary (and in exceptional circumstances on the start date). Applications which were subsequently withdrawn were not sampled and are outside the scope of the study.

2.8 The principal difficulty with sampling from these two periods which are for the most part two years apart is in interpreting the results. The intention is to measure any impact the change in V.A.T. legislation may be having, but it is impossible to hold constant all other

changes which might be having an effect over the same period too and impractical to make statistical adjustments. For example, the gradual emergence of the economy from its significant downturn together with rising house prices (and associated extra stamp duty) during the three years between the beginning and the end of the sample periods may also have affected the other variables being studied. The possibility of other influences on the number of listed building consent applications affecting differently the two periods studied cannot be ruled out. However, no adjustment was immediately apparent that could usefully be made to the pre-V.A.T. and post-V.A.T. sampled data.

2.9 The data obtained by this study on applications for listed building consent is only a small subset of the data that might be obtained on the impact of change in the V.A.T. legislation. This study only considered applications that were submitted, not proposals that did not lead to submitted listed building consent applications. Indeed the sampling procedure was constructed to ensure that there were equal numbers of applications before and after the change. This study therefore could not conclude on whether the legislation change had a significant effect in discouraging applications. Numbers of listed building consent decisions are known for the sampling period covered by the study, though, as illustrated in Figure 1. This indicates a broadly constant rate of applications over the whole study period (March 2011 – March 2014) and certainly no significant drop in applications after October 2012. For example, the number of listed building consent decisions nationally was 29,391 in 2011-12 and 29,146 in 2013-14. The total number of sampled applications which involved internal alterations was 246 prior to the change in legislation and 262 afterwards. At no time in any region did the sampled applications identify fewer than 21 cases in which internal works were proposed (out of a maximum 52). These figures are only indicative, but point towards a judgement that the change in V.A.T. rate had no significant impact on the propensity to seek listed building consent or, more specifically, consent for internal works.

(v) <u>The grade of listed building for which consent was sought</u>

2.10 The grade of listed building was collected in all 936 applications sampled: I, II* or II.

(vi) <u>The type of listed building affected</u>

2.11 Listed buildings were divided between domestic, non-domestic and structures for the purposes of this study, with one of these categories assigned to all 936 applications.

(vii) <u>The type of applicant for listed building consent</u>

2.12 Applicants were divided for this study between charities, commercial, individual private, and institutional, with one of these categories assigned to all 936 applications.

(viii) <u>The works for which listed building consent was sought</u>

2.13 Categories of work which might have been included in the applications for listed building consent were: demolition, extension, external, internal and curtilage. This was the only issue studied where multiple options could exist: an application could be for just one

category of work or up to all five. Categories were allocated based on the information supplied (for the most part) on the application forms. The intention was to describe the nature of the work for which consent is required in a descriptive and functional way rather than to make a judgement on the heritage significance of the proposals. 'Significance' could have been too awkward to decide in the time available for categorising each application and could have attracted different opinions.

(ix) Whether applications were submitted by the applicant direct or by an agent

2.14 Whether or not an agent was used by the applicant was apparent in all but 13 of the 936 applications sampled. This information is given on the application form, but some authorities did not place their application forms on their websites. The information was often available instead from the officer's report, but in five authorities this information was not reliably supplied.

(x) Whether the applicant had sought advice from the planning authority beforehand

2.15 Whether or not pre-application advice was sought was identified in 837 of the 936 applications sampled (89%). The large majority of the cases where a response was not stated were concentrated in London and Yorkshire & Humber and to a lesser extent the South East. All 18 cases in the South East were in Chiltern District, where this information had been redacted from the application forms.

(xi) Whether the application was accompanied by a separate planning application

2.16 Whether or not a listed building consent application was accompanying a separate planning application was not known in 350 of the 936 applications sampled (37%). Most local authorities provide this information on their websites where they hold applications data, but many do not. The information is not requested on application forms. Where the information was readily available, including in officers' reports on cases, it was included. However, the resources for the project precluded a search of local authority databases to identify if there was an accompanying planning application. That task that could have become onerous when an absence of information could indicate either there was no accompanying planning application or that this has not yet been found. The scale of the omission is so great that the available data are supplied in the spreadsheet provided to the client, but have not been included in any analysis in this report.

Sampling procedures

2.17 The most appropriate test to establish whether there is a statistically significant difference between two data sets of the kind obtained for this project is the χ^2 ('chi-squared') test. This is a simple test extensively used in the social sciences which evaluates whether or not frequencies in data which have been obtained empirically differ significantly from those which would be expected under a certain set of theoretical assumptions. This test measures the significance of any relationship. χ^2 is particularly suitable for analysing the kind of data in this project because it is a non-parametric test, which can be used where the data are not necessarily assumed to be 'normally distributed' – that is, the data do not

need to follow the shape of a bell-curve when plotted on a graph of numbers of occurrences on the vertical axis against values of the variable on the horizontal axis – but are instead skewed. However, the reliability of the test depends on the data put into it having been derived from a sampling procedure which meets certain standards.

2.18 The two key features of χ^2 which affect how listed building consent applications around England should be sampled are:

1) the sample should be random (that is, each application and each combination of applications has an equal chance of being selected), and
2) this statistic works best with large sample sizes (occurrences in each cell comparing different variables should exceed 5), but smaller total sample sizes are acceptable:
   - the fewer the number of variables compared at any one time; and
   - the more nearly equal are the numbers of sampled cases from each of the variables being compared at any one time.

2.19 The procedure for sampling applications, described in the previous section, shows that the first requirement has already been violated. The chance of any individual listed building consent application being selected is not equal everywhere. The available data on listed building consent applications do not fall evenly into the categories required. This was illustrated above by reference to the different numbers of urban and rural authorities in paragraph 2.2: the likelihood was that there was a marginally greater chance of applications being chosen from rural areas, because there were fewer of them but equal numbers of cases were taken from urban and rural areas. (This assumes that there are broadly equal numbers of listed building consent applications in urban and rural authorities, an untested assumption). On a similar basis, paragraph 2.5 showed that there was a substantially greater chance of applications being sampled from local authorities which did charge for pre-application advice than those which did not.

2.20 The same difficulty is still more pronounced in relation to sampling from each of the nine regions. The total number of applications available for sampling varied greatly between the regions, so some regions were over-represented in the overall sample and some under-represented. Had random sampling been used across the whole of England, then regions with relatively few applications would have been expected to contribute less to the whole database than other regions. In 2013-14, there were 7.7 times as many applications for listed building consent in the South West region as there were in the North East region, for example. Had a random sample been used, the potentially small number of applications in some regions might possibly have been insufficient to draw reliable conclusions about those poorly-represented regions. The sampling method used in this study ('disproportional stratified sampling') is therefore a helpful device to ensure that all regions provide a sufficient number of cases for statistical analysis.

2.21 From the point of view of applying the χ^2 test, the system of stratified sampling is less satisfactory than a random sample, but it does have some compensatory advantage in increasing the likelihood that there will be more nearly equal numbers of sampled cases from each of the variables being compared at any one time. In effect, there are alternative advantages between random sampling (to improve the statistical reliability of the test) and stratified sampling (to provide sufficient data to put into that test).

2.22 Furthermore, stratified samples simply alter the chance of an application being selected, so a weighting procedure can be used to compensate for that. An example of how to do that, and the consequences of doing so, are provided in Appendix 1. In the example used there, the difference between unweighted data and weighted data would involve reallocating no more than 5% of the 468 sampled cases to compensate for the different numbers of applications to select from in each region. The adverse impact of using disproportional stratified sampling in this case therefore appears quite limited. This suggests that the ideal requirements for applying the χ^2 test have not been met but that the departure from those is not so excessive as to invalidate the use of the test. Nonetheless, test results should be treated with caution, especially where the results are marginal in demonstrating significance or otherwise of difference between variables.

2.23 Appendix 1 uses just such a marginal case to explore the impact of small changes in the weighting of data on the outcome of testing for significant difference between data sets. The modest differences in numbers of applications identified within each of the pre-V.A.T.-change and post-V.A.T.-change periods (the main topic of interest in the example used) mask larger differences between the periods, when the numbers change by up to 10 percentage points. The significance of the differences between the data sets shown by the χ^2 test turns out in this case to be much greater with the weighted figures than with the unweighted figures. This reinforces the importance of exercising caution in drawing conclusions from the data, especially unweighted data, where the χ^2 test produces only marginally significant results.

2.24 We conclude on stratified sampling and weighting that the data obtained from regions could be weighted according to both the number of listed building applications by region and according to their share of authorities which do or do not charge for pre-application advice. This would improve the reliability of the analyses carried out, and we recommend it in any particular assessment of the data on which a significant decision rests. However, for the purposes of this report, the approach taken has been to extend the analysis using original unweighted data, rather than use the time available to cover a narrower range of issues more precisely with weighted data.

2.25 The procedure for sampling the local planning authorities within each region was also stratified. In almost all regions there was a choice of local authorities which met the additional requirements of combinations of urban or rural, charging or non-charging for pre-application discussions (the exception being the North East – see paragraph 2.6 above). Authorities were selected for sampling according to a procedure described in the next section. This aimed to focus the sample on authorities likely to be most comparable between regions, but moderated by data availability considerations. This further violated the expectation of random sampling in terms of the application of the χ^2 test, but had the alternative advantage of avoiding the least representative authorities in each region.

Selection of local authorities for sampling

2.26 The requirements of the project indicate a minimum of 36 local authorities for sampling, with one authority offering each combination of region (9), urban or rural (2) and

charging or not charging for pre-application discussions (2). Four authorities were required from each region as the ideal starting point: one each for urban & charging, rural & charging, urban & non-charging and rural & non-charging. Choosing one authority in each category was ideal for practical and budgetary purposes (recognising that sampling all authorities in each of the four categories would have provided a statistically superior data set). The selection was based on numbers of listed buildings in each authority. Authorities were prioritised for selection that had as close as practical to the median number of listed buildings per authority in each region. This entailed listing all authorities within a region in order of the number of their listed buildings, and then selecting the authorities in each category nearest to the median. Table 1 illustrates the procedure in the Yorkshire and Humber Region, where there are 21 local planning authorities. The authorities highlighted in red were the primary ones selected.

Table 1 Classification of local planning authorities in Yorkshire & Humber region

Authority (no. of listed buildings)		**Urban or rural**	**Charging**
North East Lincolnshire (223)		Urban	No
City of Kingston upon Hull (465)		Urban	No
Rotherham (524)		Urban	No
Selby (624)		Rural	No
Barnsley (668)		Urban	No
Wakefield (740)		Rural	Yes
Doncaster (790)		**Urban**	**No**
North Lincolnshire (914)		Rural	No
Sheffield (1,158)		Urban	Yes
York (1,593)		**Urban**	**Yes**
Craven (1,601)	**(Median)**	**Rural**	**No**
Hambleton (1,760)		Rural	No
Scarborough (1,962)		Rural	No
Richmondshire (1,967)		Rural	No
Ryedale (2,024)		**Rural**	**Yes**
Calderdale (2,124)		Rural	No
Harrogate (2,265)		Rural	Yes
Bradford (2,291)		Urban	Yes
Leeds (2,339)		Urban	No
East Riding of Yorkshire (2,382)		Rural	No
Kirklees (3,014)		Urban	No

2.27 In the context of prioritising a single authority, those with very large or very small numbers of listed buildings might well not be representative of their region. The expectation was that authorities with intermediate numbers of listed buildings would tend to cluster in the middle of the size distribution and offer the most representative cases. Authorities with very few listed buildings needed to be avoided if possible: there was a risk that they would receive insufficient applications (less than 13 in each of two six month periods, one either side of the date when the V.A.T. legislation was changed). If that happened, although there would be the benefit of 100% sampling in that authority, an

additional authority would need to be sampled as well. This concern proved well-founded: even selecting authorities close to the median did not always resolve this, so in some regions additional authorities with the same basic characteristics had to be sampled as well. Alternatively, authorities with very large numbers of listed buildings could be likely to offer so many listed building consent applications that the sample sizes taken from them would be small in relation to the total number of applications. With just 13 required in a six month period, the sample might not be representative.

2.28 In practice the sampling procedure suffered from a need to use authorities further from the median than hoped-for within many regions. In the case of Yorkshire and Humber, for example, there were insufficient applications in Doncaster in the study periods, so Barnsley was sampled too. After Doncaster, Barnsley is the authority next-closest to the median authority in the region which is urban and does not charge for pre-application advice. Also, the records in Craven did not distinguish listed building consent applications from other planning applications in the authority's website search function, so identifying listed building cases would have been an onerous task: Hambleton was used instead. After Craven, Hambleton is the authority next-closest to the median authority in the region which is rural and does not charge for pre-application advice. Overall, 61 authorities had to be approached instead of 36. Only in the South West region was it practicable to obtain all data exclusively from the four prioritised authorities. Additional or different authorities from the preferred ones had to be used because:

– there were insufficient applications in the primary target authority within the time periods sampled; and/or
– data proved impractical to collect from the website of the preferred authority (e.g. listed building consent applications could not be identified separately from other planning applications, or were not placed on a website at all).

A full list of authorities sampled, with explanations for variations from the preferred authorities for sampling, has been supplied to English Heritage to accompany the spreadsheet on the 936 sampled applications.

CHAPTER 3

KEY RESEARCH FINDINGS

Key findings

3.1 The sample of 936 applications for listed building consents identified the following key points:

- applications affected 23 Grade I, 95 Grade II* and 818 Grade II listed buildings;
- 549 listed buildings were in domestic use, 371 in non-domestic use and 16 were structures;
- 27 applicants were charities, 91 were institutions, 287 were commercial and 531 were private individuals;
- 725 applicants used an agent, 198 did not and in 13 cases this was not stated;
- the works for which listed building consent were requested included 199 cases involving demolition, 191 extensions, 739 external works, 508 internal works, and 156 works in the curtilage;
- 569 applicants had sought pre-application advice from their local authority, 268 had not, and in 99 cases this was not stated;
- there was a planning application associated with the listed building consent application in 180 cases but not in a further 406 cases; the position with the remaining 350 cases is unknown.

3.2 These figures can be presented as percentages as follows:

- grade: Grade I (2.46%), Grade II* (10.15%) and Grade II (87.39%); this compares with the following national percentages (where buildings have been graded) – Grade I (2.48%), Grade II* (5.79%) and Grade II (91.73%);
- use: domestic (58.65%), non-domestic (39.64%) and structures (1.71%);
- applicants: charities (2.88%), institutions (9.72%), commercial (30.66%) and private individuals (56.73);
- agents: agent used (77.46%), agent not used (21.15%) and not stated (1.39%);
- works: demolition (21.15%), extensions (20.41%), external works (78.95), internal works (54.27%), and in the curtilage (16.67%);
- pre-application advice: sought (60.79%), not sought (28.63%), and not stated (10.58%);
- associated planning application: yes (19.23%), no (43.38%), unknown (37.39%).

3.3 Paragraphs 1.2-5 set out the four main divisions of the sample data and the seven main further variables on which data were collected. Information on whether listed building consent applications were accompanied by planning applications was collected so far as practicable but omitted from the analysis. The main part of this chapter analyses in turn each of the four main topics against each of the six additional variables. For each analysis, data have been extracted from the main spreadsheet and summarised in both tabular and graphic forms. Where there are limitations in the data available or a reduced set of data has been analysed, an explanation is given.

3.4 On occasions where an initial assessment of the data suggests that there may be significant differences between the results (i.e. by region, by urban or rural authority, by pre-application charging policy or by period), a statistical test, χ^2, has been run to test for that significance. Appendix 2 provides a worked example of one of the χ^2 tests applied.

Authorities in each region

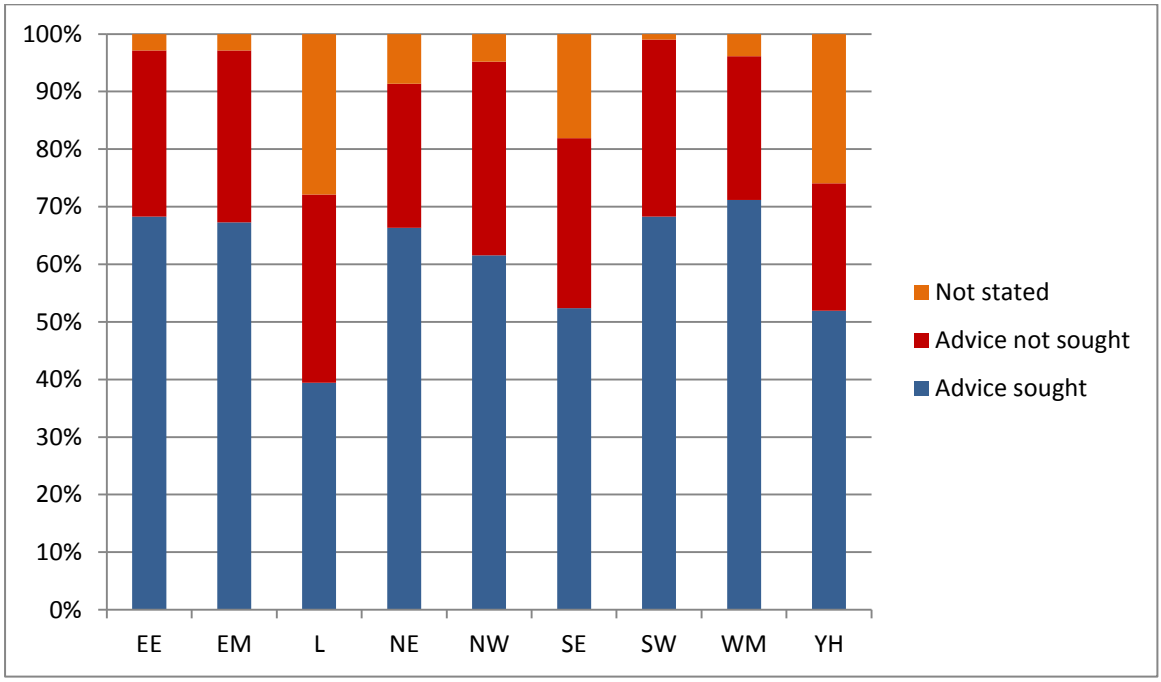
(i) Pre-application advice sought

3.5 Data issues: data for the North East are presented for completeness, but excluded from analysis due to absence of representation of rural authorities which charge for pre-application advice. That absence of charging might have increased the number of requests for pre-application advice in that region.

Table 2 Pre-application advice sought by region

Advice	EE	EM	L	NE	NW	SE	SW	WM	YH
Sought	71	70	41	69	64	55	71	74	54
Not sought	30	31	34	26	35	31	32	26	23
Not stated	3	3	29	9	5	18	1	4	27

Figure 2 Pre-application advice sought, by region (100% = 104)



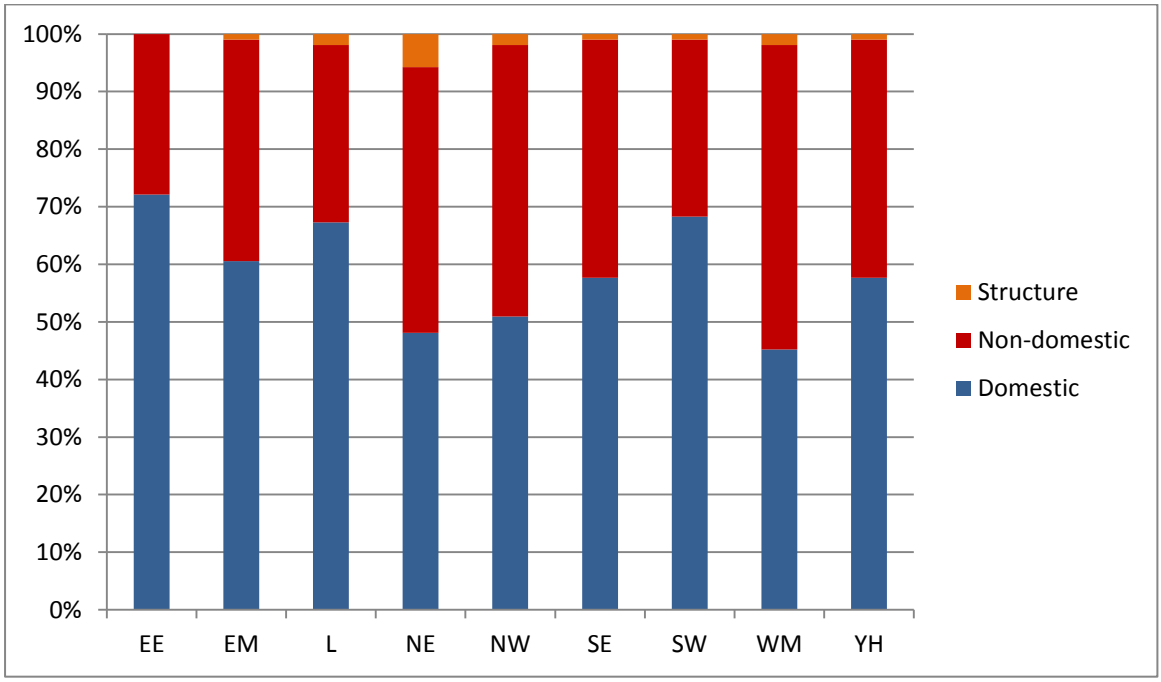
3.6 A χ^2 test shows that there is no statistically significant difference (at the 5% level) between regions with respect to seeking or not seeking pre-application advice. (This would be unchanged by the inclusion of the North East data.)

(ii) Listed Building type

Table 3 Applications for listed building types, by region

LB type	EE	EM	L	NE	NW	SE	SW	WM	YH
Domestic	75	63	70	50	53	60	71	45	60
Non-domestic	29	40	32	48	49	43	32	55	43
Structure	0	1	2	6	2	1	1	2	1

Figure 3 Applications for listed building types, by region (100% = 104)

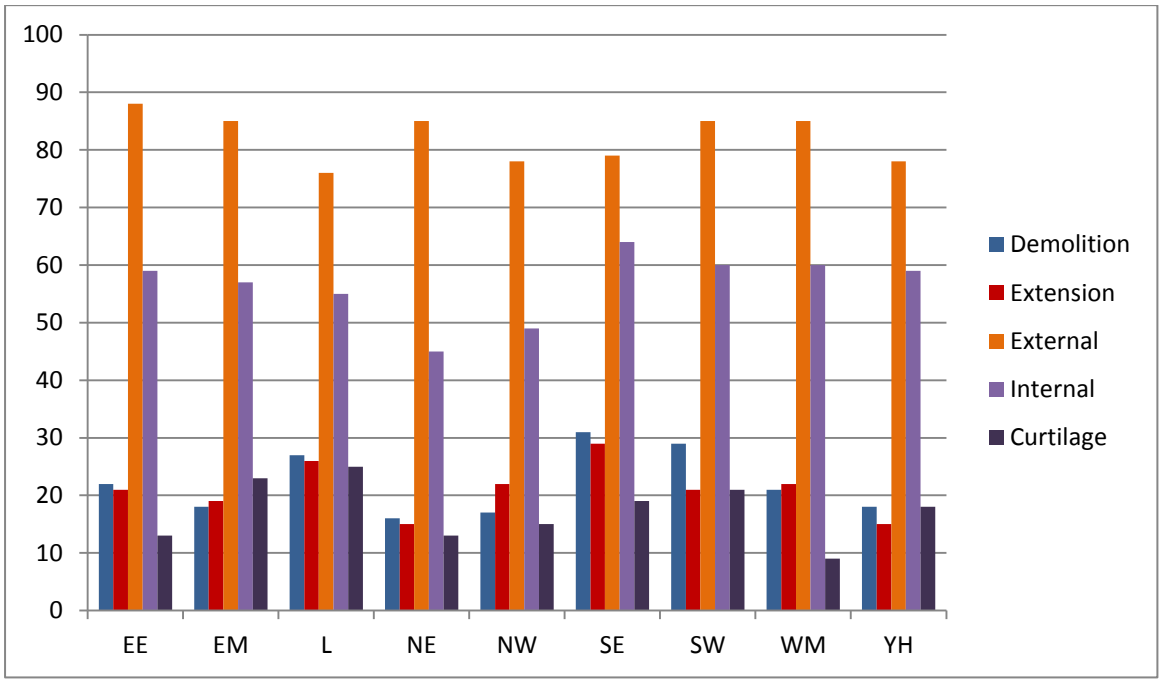


(iii) Proposed work

Table 4 Proposed works in listed building consent applications, by region

Proposed work	EE	EM	L	NE	NW	SE	SW	WM	YH
Demolition	22	18	27	16	17	31	29	21	18
Extension	21	19	26	15	22	29	21	22	15
External	88	85	76	85	78	79	85	85	78
Internal	59	57	55	45	49	64	60	60	59
Curtilage	13	23	25	13	15	19	21	9	18

Figure 4 Proposed works in listed building consent applications, by region (no.)



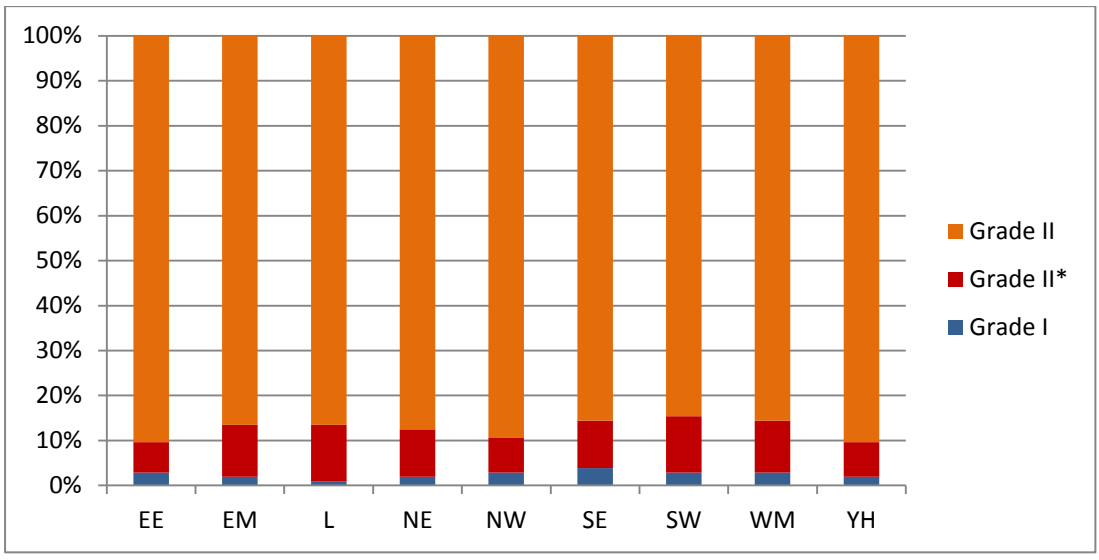
3.7 A χ^2 test shows that there is no statistically significant difference (at the 5% level) between regions with respect to numbers of LBC applications for different types of proposed works.

(iv) Listed Building grade

Table 5 Applications for Listed Building grades, by region

LB Grade	EE	EM	L	NE	NW	SE	SW	WM	YH
Grade I	3	2	1	2	3	4	3	3	2
Grade II*	7	12	13	11	8	11	13	12	8
Grade II	94	90	90	91	93	89	88	89	94

Figure 5 Applications for Listed Building grades, by region (100% = 104)

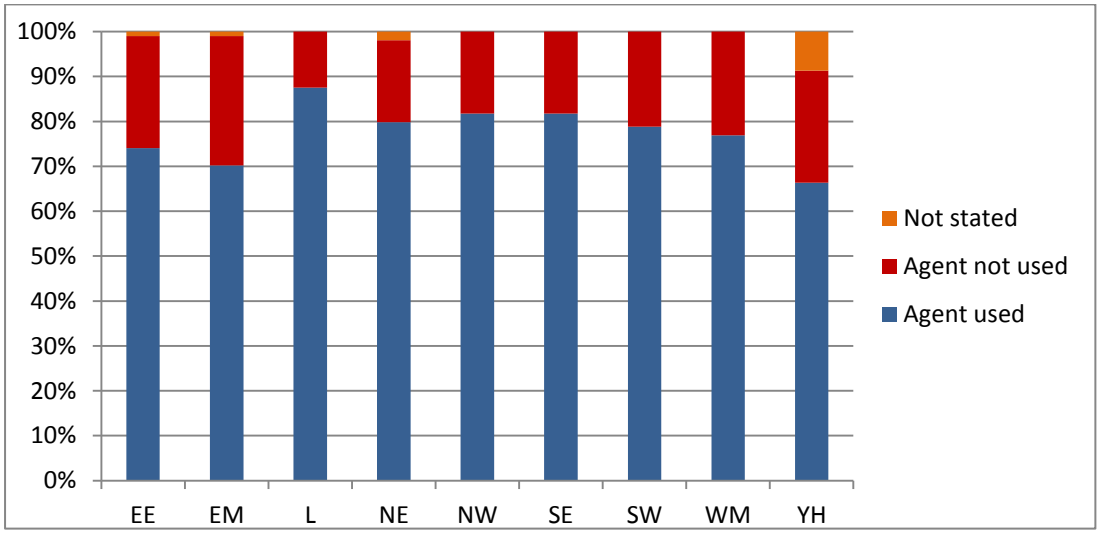


(v) Use of an agent

Table 6 Use of an agent, by region

Use of agent	EE	EM	L	NE	NW	SE	SW	WM	YH
Agent used	77	73	91	83	85	85	82	80	69
Agent not used	26	30	13	19	19	19	22	24	26
Not stated	1	1	0	2	0	0	0	0	9

Figure 6 Use of an agent, by region (100% = 104)

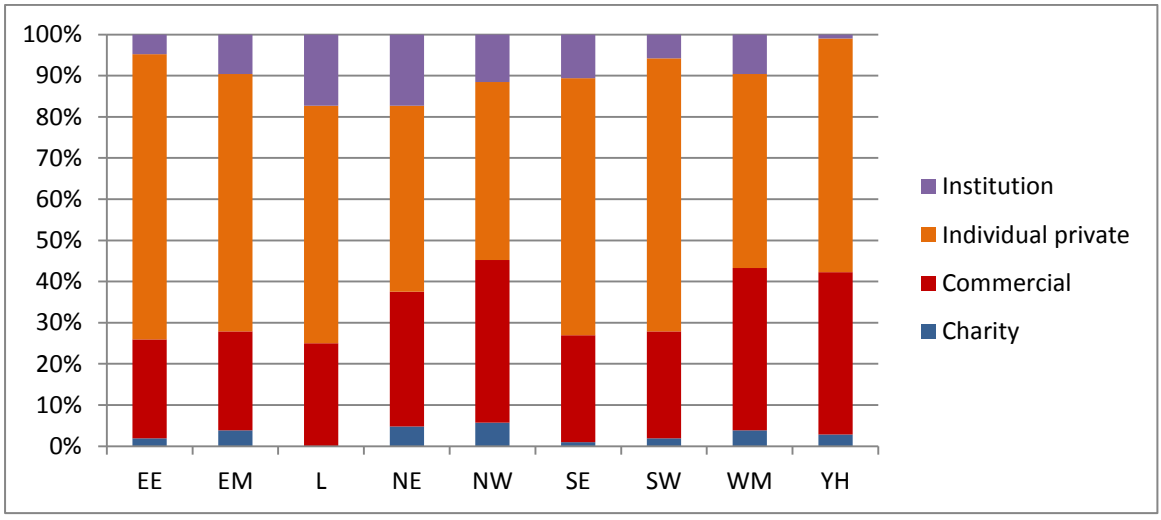


(vi) Applicant type

Table 7 Applicant types for listed building consent, by region

Applicant type	EE	EM	L	NE	NW	SE	SW	WM	YH
Charity	2	4	0	5	6	1	2	4	3
Commercial	25	25	26	34	41	27	27	41	41
Individual private	72	65	60	47	45	65	69	49	59
Institution	5	10	18	18	12	11	6	10	1

Figure 7 Applicant types for listed building consent, by region (100% = 104)



Urban and rural authorities

3.8 Data issues: outer London Boroughs are treated as 'rural' for this analysis.

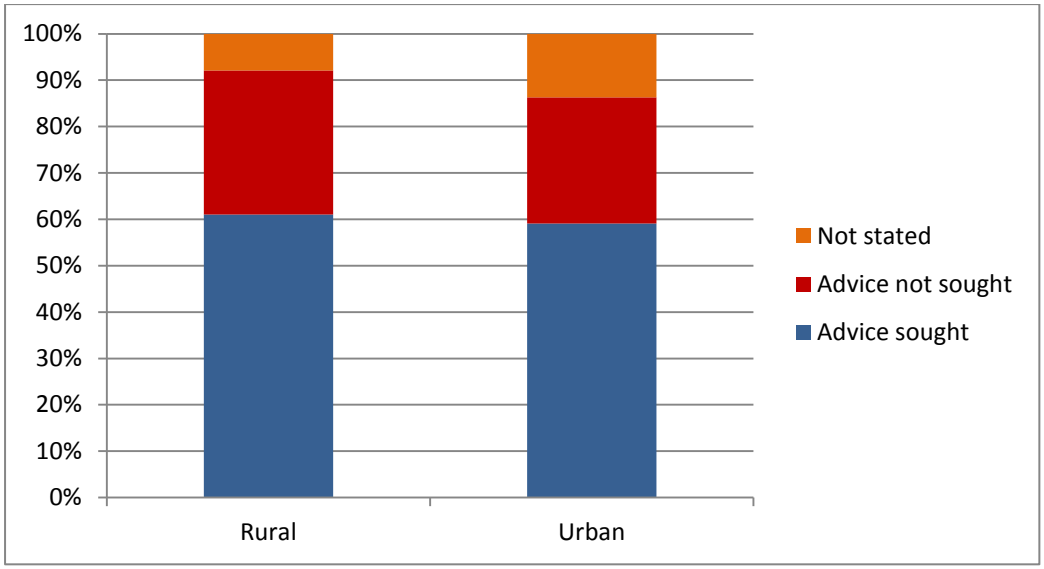
(i) Pre-application advice sought

3.9 Data issues: data for the North East are excluded from analysis due to the absence of representation of rural authorities which charge for pre-application advice. That absence of charging might have increased the number of requests for pre-application advice in rural authorities.

Table 8 Pre-application advice sought, by rural/urban authority

Advice	Rural	Urban
Sought	254	246
Not sought	129	113
Not stated	33	57

Figure 8 Pre-application advice sought, by rural/urban authority (100% = 416)

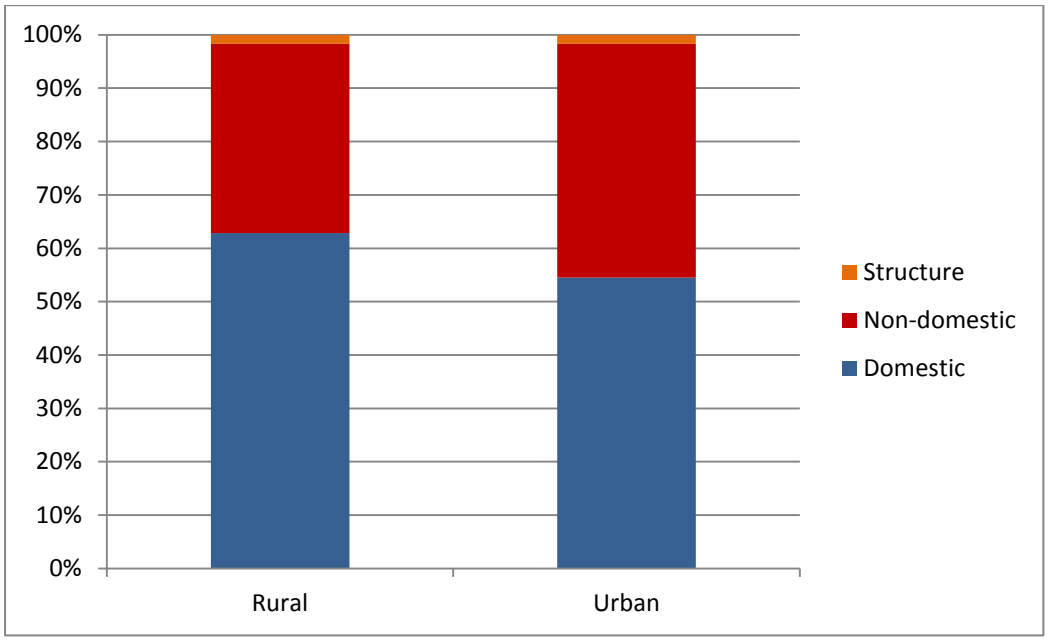


(ii) Listed Building type

Table 9 Applications for Listed Building types, by urban/rural

Advice	Rural	Urban
Sought	294	255
Not sought	166	205
Not stated	8	8

Figure 9 Applications for Listed Building types, by urban/rural (100% = 468)

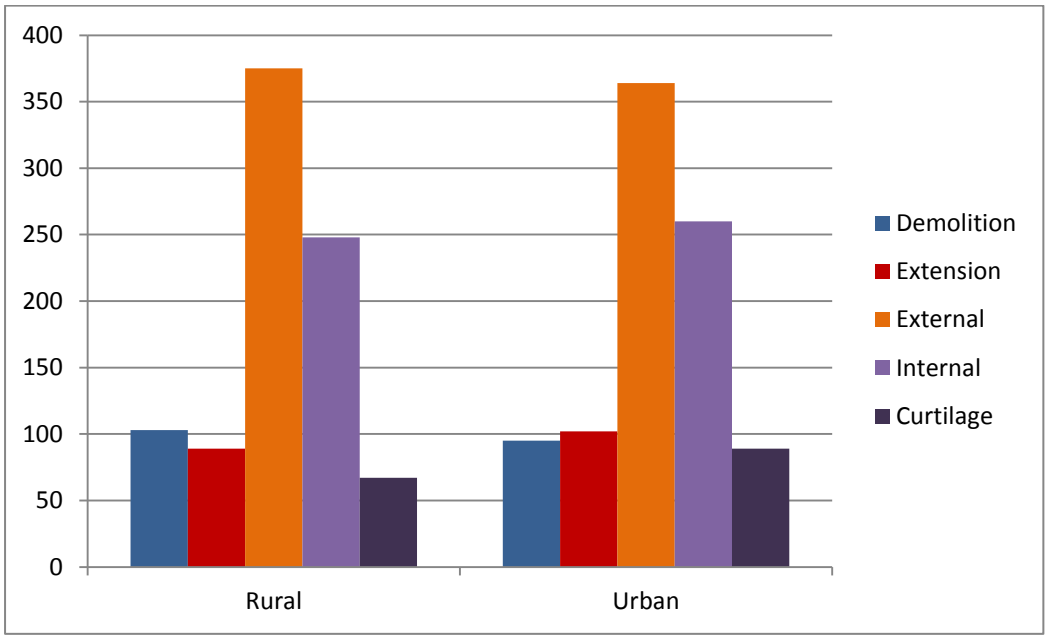


(iii) Proposed work

Table 10 Proposed works in LBC applications, by rural/urban authority

Proposed work	Rural	Urban
Demolition	103	95
Extension	89	102
External	375	364
Internal	248	260
Curtilage	67	89

Figure 10 Proposed works in LBC applications, by rural/urban authority (no.)

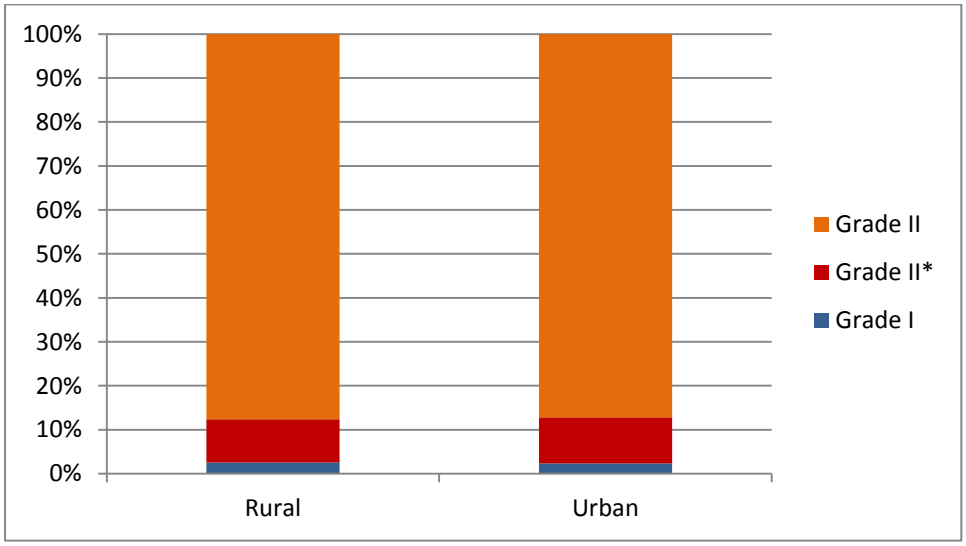


(iv) Listed Building grade

Table 11 Applications for Listed Building grades, by rural/urban

LB Grade	Rural	Urban
Grade I	12	11
Grade II*	46	49
Grade II	410	408

Figure 11 Applications for Listed Building grades, by rural/urban (100% = 468)

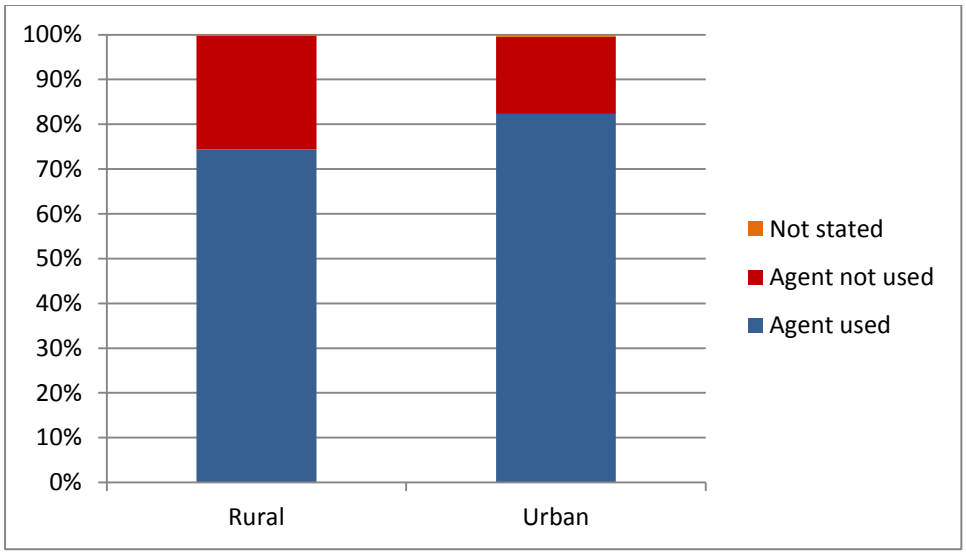


(v) Use of an agent

Table 12 Use of an agent, by rural/urban authority

Use of agent	Rural	Urban
Agent used	348	377
Agent not used	119	79
Not stated	1	12

Figure 12 Use of an agent, by rural/urban authority (100% = 468)

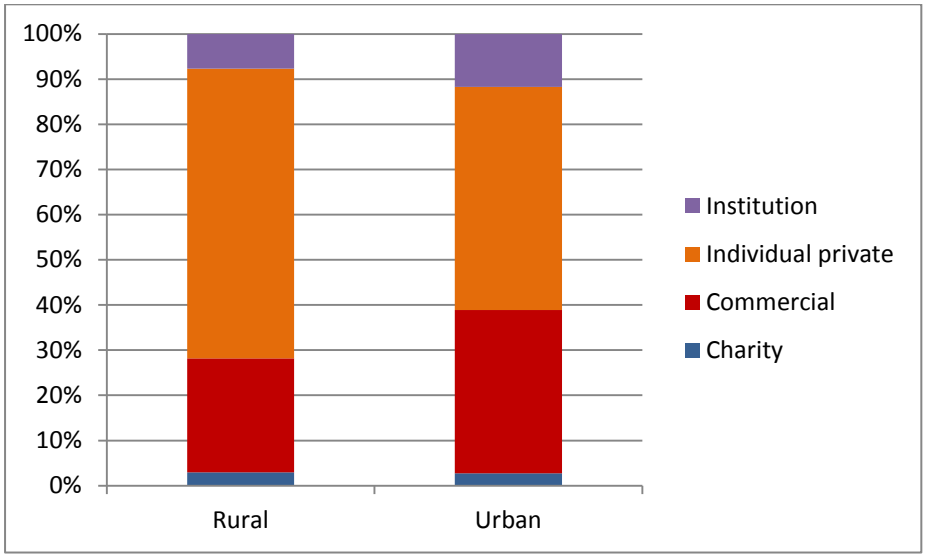


(vi) Applicant type

Table 13 Applicant types, by rural/urban authority

Applicant type	Rural	Urban
Charity	14	13
Commercial	118	169
Individual private	300	231
Institution	36	55

Figure 13 Applicant types, by rural/urban authority (100% = 468)



Authorities which do and do not charge for pre-application advice

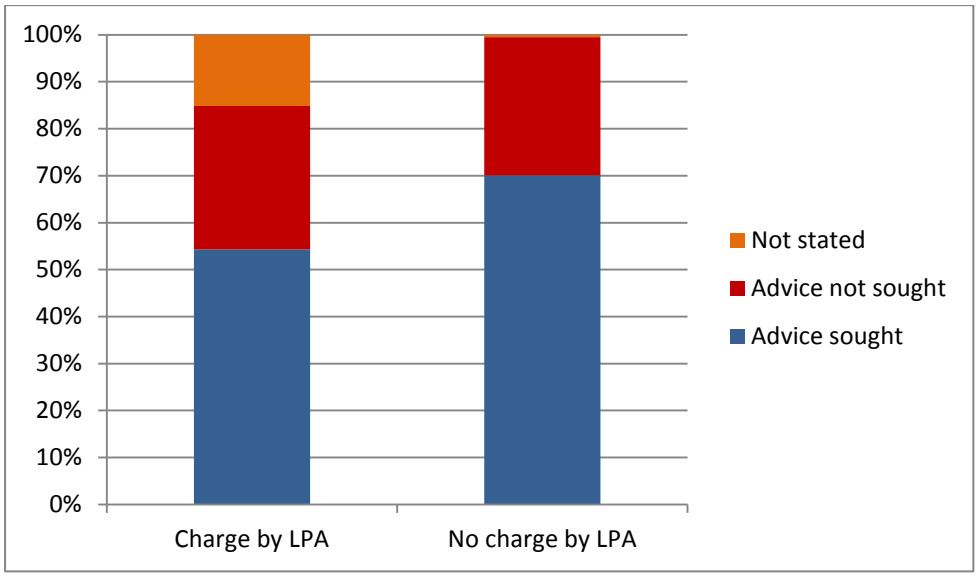
3.10 Data issues: data for North East excluded are from the analysis due to absence of representation of rural authorities which charge for pre-application advice.

(i) Pre-application advice sought

Table 14 Pre-application advice, by LPA charging policy

Advice	Charge by LPA	No charge by LPA
Sought	226	274
Not sought	127	115
Not stated	63	27

Figure 14 Pre-application advice, by LPA charging policy (100% = 416)



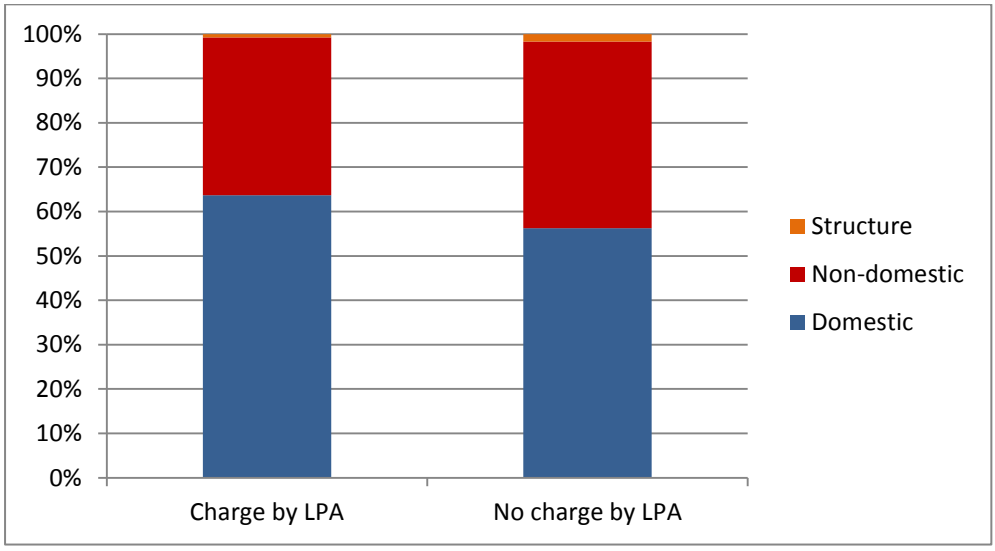
3.11 A χ^2 test shows that fewer applicants seek pre-application advice in authorities which charge for pre-application advice, at the 5% level (from a sample of 742 applications with known information on this matter). However, the difference found is only just statistically significant, so it is possible that the limitations of the sampling methods could be influencing the results one way or the other, and the reliability of the conclusion should be viewed in this light. No weighting has been applied to these data.

(ii) Listed Building type

Table 15 Applications for Listed Building types, by LPA charging policy

LB type	Charge by LPA	No charge by LPA
Domestic	265	234
Non-domestic	148	175
Structure	3	7

Figure 15 Applications for Listed Building types, by LPA charging policy (100%= 416)

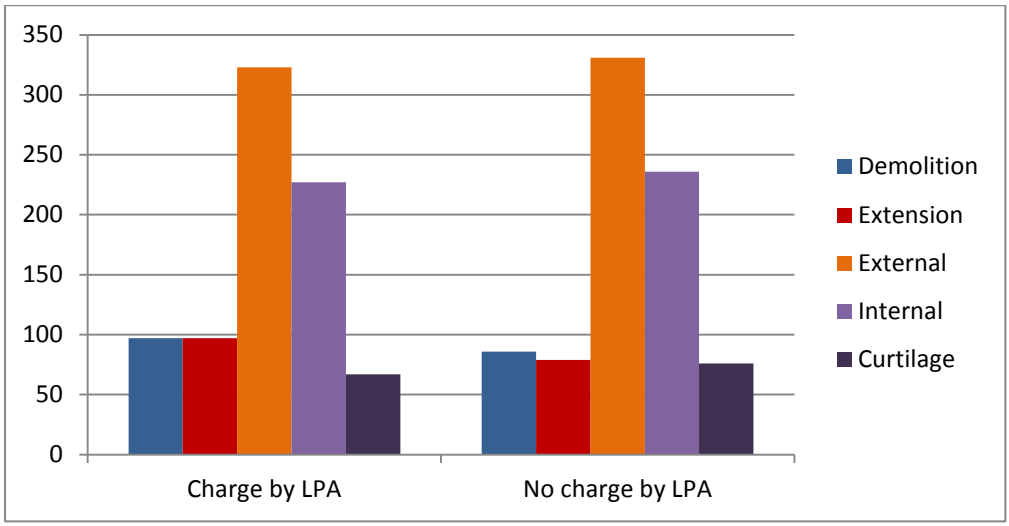


(iii) Proposed work

Table 16 Proposed works in applications, by LPA charging policy (no.)

Proposed work	Charge by LPA	No charge by LPA
Demolition	97	86
Extension	97	79
External	32	331
Internal	227	236
Curtilage	67	76

Figure 16 Proposed works in applications, by LPA charging policy (no.)

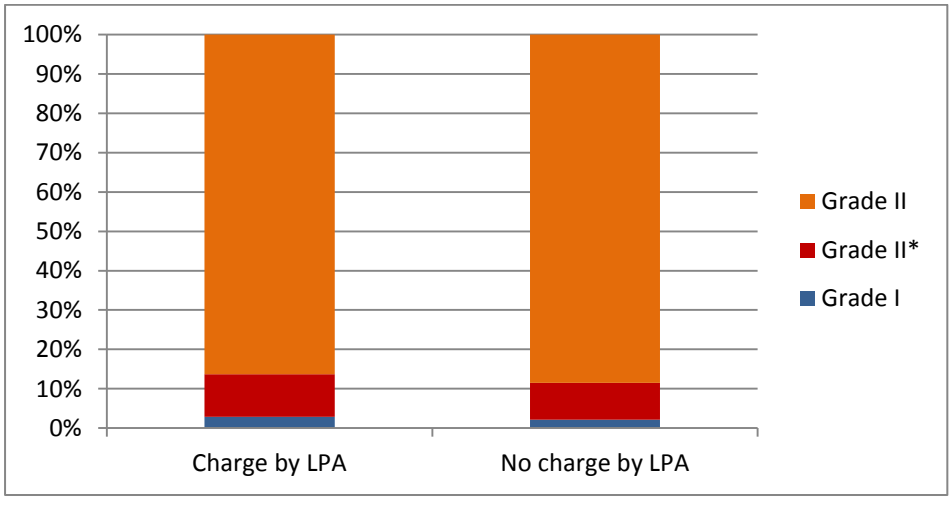


(iv) Listed Building grade

Table 17 Applications for Listed Building grades, by LPA charging policy

LB grade	Charge by LPA	No charge by LPA
Grade I	12	9
Grade II*	45	39
Grade II	359	368

Figure 17 Applications for Listed Building grades, by LPA charging policy (100% = 416)

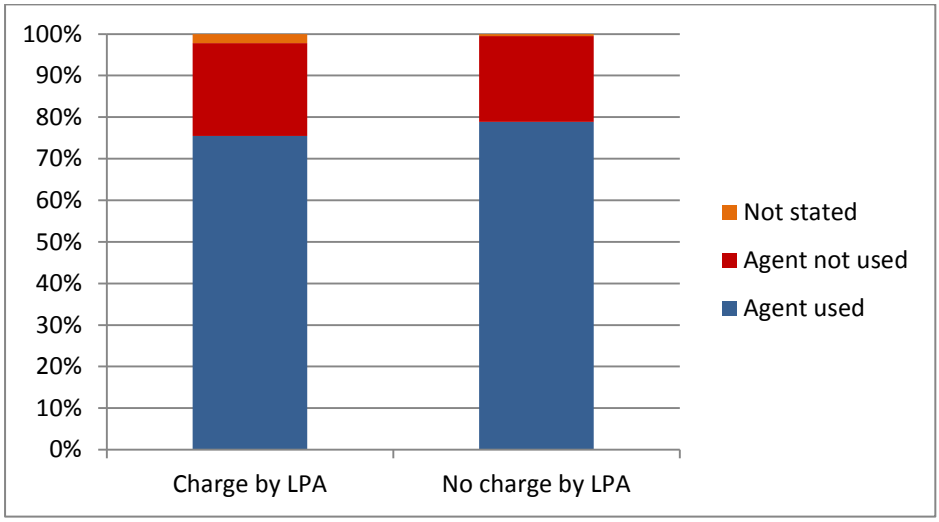


(v) Use of an agent

Table 18 Use of an agent, by LPA charging policy (100% = 416)

Use of agent	Charge by LPA	No charge by LPA
Agent used	314	328
Agent not used	93	86
Not stated	9	2

Figure 18 Use of an agent, by LPA charging policy (100% = 416)

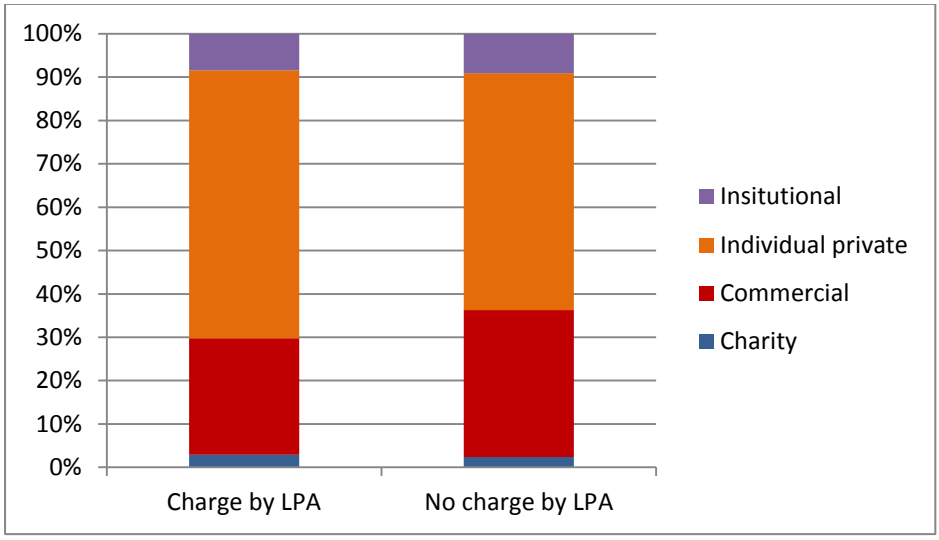


(vi) Applicant type

Table 19 Applicant types, by LPA charging policy

Applicant type	Charge by LPA	No charge by LPA
Charity	12	10
Commercial	112	141
Individual private	257	227
Institutional	35	38

Figure 19 Applicant types, by LPA charging policy (100% = 416)



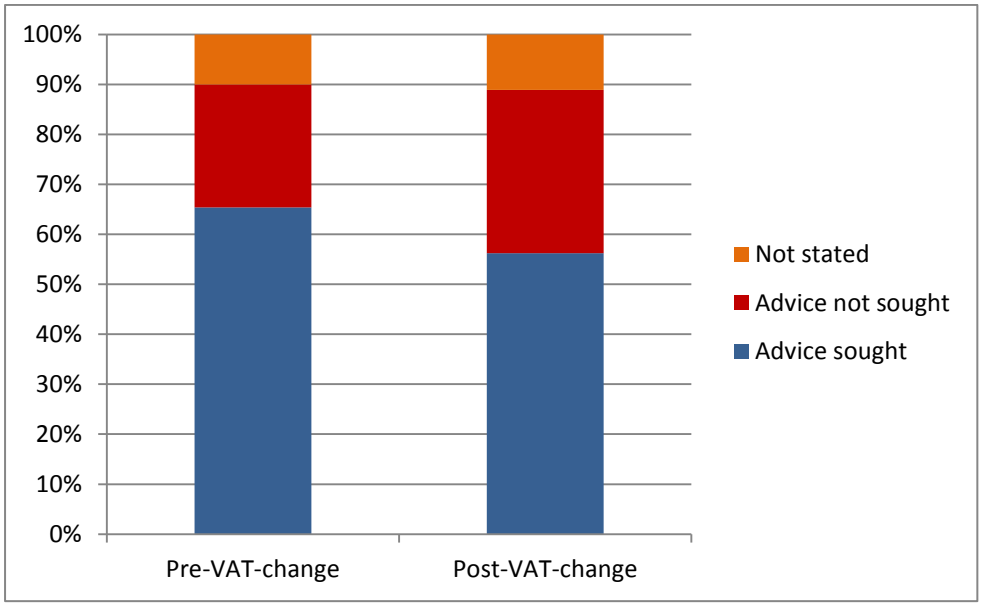
Applications before and after the change in V.A.T. legislation

(i) Pre-application advice sought

Table 20 Pre-application advice sought, by V.A.T. period

Advice	Pre-V.A.T.-change	Post-V.A.T.-change
Sought	306	263
Not sought	115	153
Not stated	47	52

Figure 20 Pre-application advice sought, by V.A.T. period (100% = 468)



3.12 There is a statistically significant difference at the 5% level (and also at the 1% level) in the seeking of pre-application advice before and after the change in V.A.T. legislation.

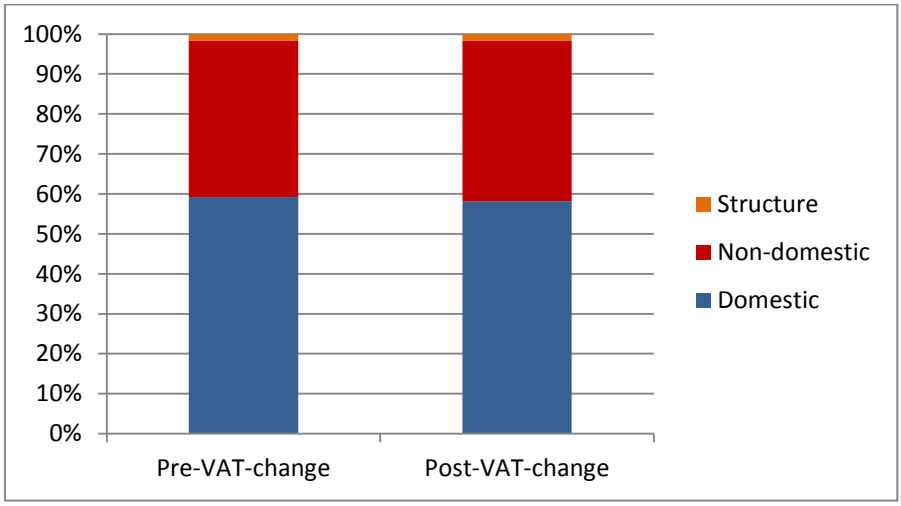
3.13 This finding must be treated with some caution, however. The intuitive expectation is that charging V.A.T. on development would have little effect on the likelihood of applicants seeking pre-application advice: the V.A.T. payment would only become payable if development proceeded, and no extra risk is involved prior to permission being granted. If pressed for a reason for a direction of change, an increase in the costs of proceeding with development (due to the V.A.T. change) would in effect put a more expensive project at risk from planning refusal, so this might make applicants more likely to seek pre-application advice. However, the observed finding is that distinctly fewer applicants did so. The reason for this is unclear, even though it is a statistically significant outcome. One possibility is that the applications were sampled not only either side of the change in V.A.T. legislation but also either side of the coming into effect of the National Planning Policy Framework on 27th March 2012: there is therefore a possibility that the change in level of advice being sought has been instigated by the NPPF rather than the V.A.T. change, though again any reason for that is not clear.

(ii) Listed Building type

Table 21 Applications for Listed Building types, by V.A.T. period

LB type	Pre-V.A.T.-change	Post-V.A.T.-change
Domestic	277	272
Non-domestic	183	188
Structure	8	8

Figure 21 Applications for Listed Building types, by V.A.T. period (100% = 468)

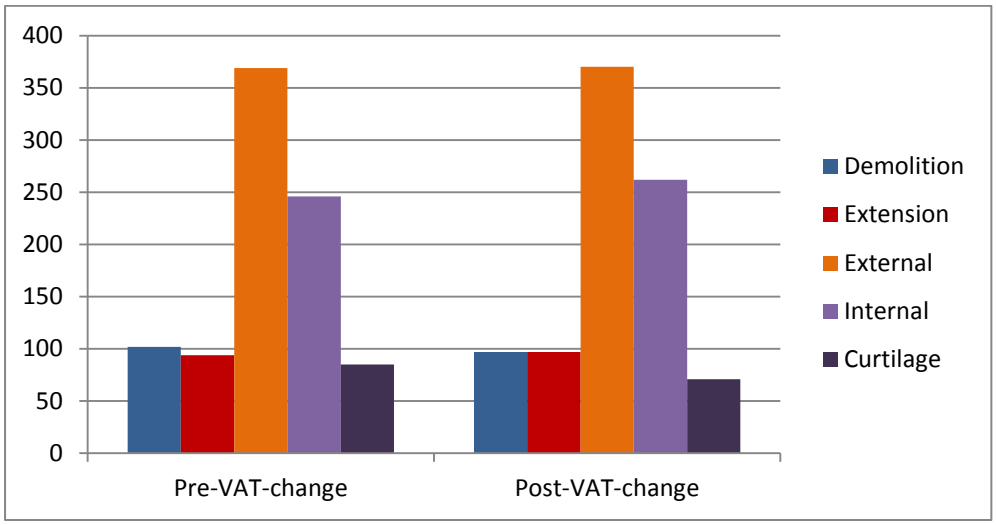


(iii) Proposed work

Table 22 Proposed works in listed building consent applications, by V.A.T. period

Proposed work	Pre-V.A.T.-change	Post-V.A.T.-change
Demolition	102	97
Extension	94	97
External	369	370
Internal	246	262
Curtilage	85	71

Figure 22 Proposed works in listed building consent applications, by V.A.T. period (no.)

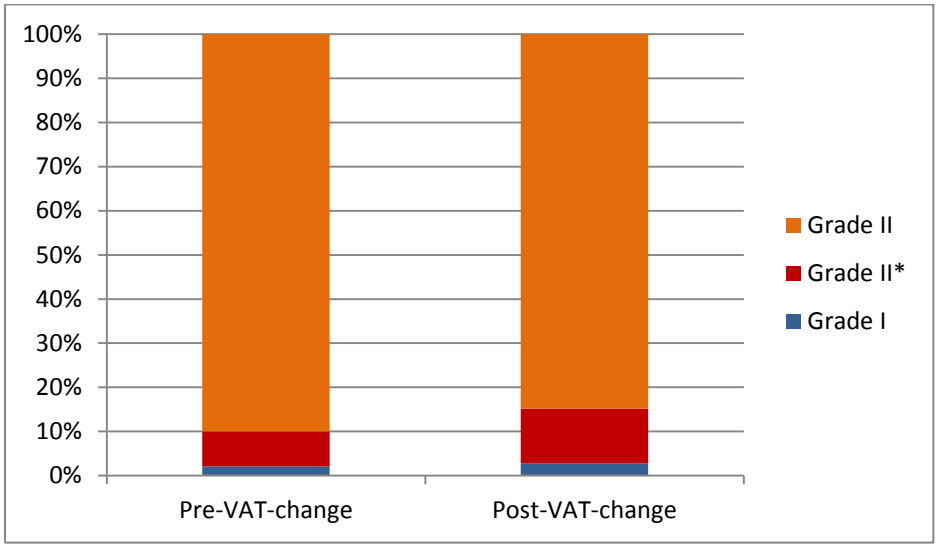


(iv) Listed Building grade

Table 23 Applications for Listed Building grades, by V.A.T. period

LB grade	Pre-V.A.T.-change	Post-V.A.T.-change
Grade I	10	13
Grade II*	37	58
Grade II	421	397

Figure 23 Applications for Listed Building grades, by V.A.T. period (100% = 468)

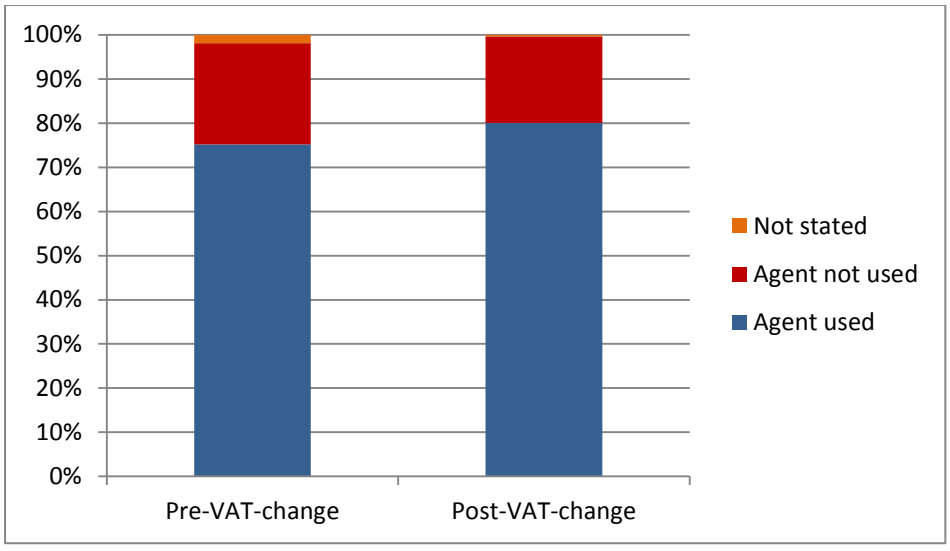


(v) Use of an agent

Table 24 Use of an agent, by V.A.T. period

Use of Agent	Pre-V.A.T.-change	Post-V.A.T.-change
Agent used	352	373
Agent not used	107	91
Not stated	9	4

Figure 24 Use of an agent, by V.A.T. period (100% = 468)

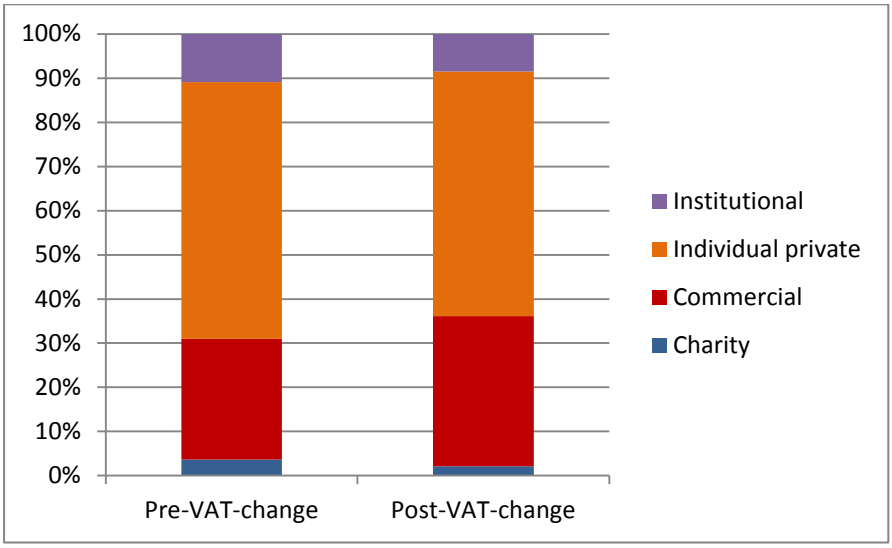


(vi) Applicant type

Table 25 Applicant types for listed building consent, by V.A.T. period

Applicant type	Pre-V.A.T.-change	Post-V.A.T.-change
Charity	17	10
Commercial	128	159
Individual private	272	259
Institutional	51	40

Figure 25 Applicant types for listed building consent, by V.A.T. period (100% = 468)



3.14 There is a statistically significant difference between the types of applicant for listed building consent before and after the change in V.A.T. legislation at the 10% level.

3.15 The test statistic is insensitive to the direction of the relationship. If a null hypothesis was chosen which did predict direction (specifically that the change in V.A.T. legislation did not discourage charities, private individuals and institutions from applying for listed building consent), the result is significant at half the chosen level of significance (i.e. at 5% rather than 10%).

3.16 The conclusion can be reached that charities, private individuals and institutions applied for listed building consent less frequently after the increase in V.A.T. came into effect on 1 October 2012, and that this is significant at the 5% level, from a sample of 936 applications. This is not unexpected: commercial organisations can reclaim V.A.T. whereas the other applicants may not be able to do so. However, the difference found is only just statistically significant, so it is possible that the limitations of the sampling methods could be influencing the results. The reliability of the conclusion should be viewed in this light.

3.17 Furthermore, the spreadsheet shows that of the observed increase in numbers of commercial applicants, from 128 to 159 (out of 468 applicants in each period), 28 of the 31 extra were located in London, the South East and East of England, suggesting that the impact of the V.A.T. change has been particularly noticeable in the more economically buoyant parts of the country. There is a therefore a possibility that the data are reflecting

the influence of the rising buoyancy of the commercial sector in the greater South East region (between 2011 and 2014), rather than necessarily the impact of the V.A.T. change exclusively.

3.18 This example is examined in greater detail in Appendix 1, where regionally weighted data are introduced and their consequences for significance of difference identified.

CHAPTER 4

ADDITIONAL DATA ASSESSMENT

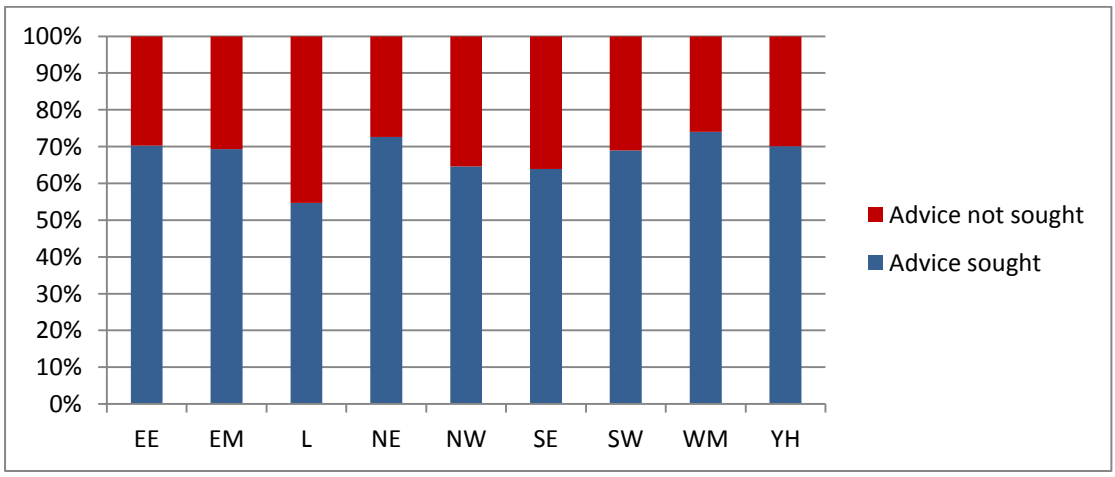
4.1 This chapter provides additional assessment of a small number of issues prompted by the key research findings in chapter 3. The range of possible analyses is enormous, so the items selected here can only give a flavour of the range of information capable of being provided from the data recorded on the spreadsheet.

Responding to missing information

4.2 Some of the information sought about applications for listed building consent was missing from local authority records or not readily obtainable. In cases where data are recorded as 'not stated' or 'unknown' on some scale, the effect can be to depress the numbers and proportions of cases in the categories under investigation. This can make comparison difficult between variable which have large and small numbers of missing data, at least visually when considering data in charts and graphs. Statistically this is not important, as the χ^2 test simply ignores the missing data. Information in chapter 3 is presented graphically in 100% column charts in cases where the number of sampled cases is fixed by the methodology, so this includes a separate entry for any missing data. For easier visual comparison between variables it is of course entirely practicable to redraw the graphics to omit the missing data: this allows the proportions (not numbers) in each category to be compared between variables.

4.3 As an example, the sample data on the extent to which applicants entered into pre-application discussions with their local authority by region are presented in Table 2 and in Figure 2 in chapter 3. The data for London, South East and Yorkshire & Humber are adversely affected by the relatively high proportions of sampled applications where there is a lack of knowledge as to whether pre-application advice was sought or not, so these regions appear as anomalies. Figure 26 below therefore presents the data in a similar format (100% column chart) to Figure 2 above but with all the 'not stated' figures removed. This makes the relative positions of the regions more readily compatible on the basis of known information.

Figure 26 Pre-application advice sought, by region (proportions)



4.4 Figure 26 shows that there is a broadly 70%/30% split of applicants, in favour of those who do seek pre-application advice on listed building consent applications compared with those who do not. The only major departure from this is in London, where the split is nearer to 55%/45%. The elimination of the 'not stated' element has brought the South East and especially Yorkshire & Humber regions' results more obviously closely into line with results from other regions. The finding of the χ^2 test, noted in paragraph 3.6, is now more understandable that there is no statistically significant difference (at the 5% level) between regions with respect to seeking or not seeking pre-application advice.

Types of works to listed buildings, in combination

4.5 Applications for listed building consent in the sample were identified as falling into at least one category of works proposed: demolition, extension, external, internal and curtilage. Proposals could possibly include elements of all five types of work: 12 of the 936 cases did this. Paragraph 3.1 reported that there were included 199 cases involving demolition, 191 extensions, 739 external works, 508 internal works, and 156 works in the curtilage.

4.6 The data collected allow the types of work proposed to be examined in an extensive variety of combinations. The following paragraphs concentrate on types of works which were carried out either exclusively or in close association with other types of work. Table 26 shows the extent to which each type of work was proposed to be carried alone.

Table 26 Exclusivity of types of work proposed to listed buildings (no.)

Type of work	Total no. of cases	Cases with no other type of work involved
Demolition	199	2
Extension	191	4
External	739	253
Internal	508	102
Curtilage	156	45

4.7 Table 26 shows how strikingly infrequent are proposals for demolition or extension without also carrying out other works at the same time. On the other hand, external works to listed buildings are proposed to be carried out alone in 34% of the cases sampled.

4.8 The extent of association of the five types of work with each of the others is shown in turn in the following five tables. The first data column in each case shows the number of occasions on which two types of work featured at the same time in applications (with or without any other type of work being involved), and the second column picks out the occasions on which those two types of work were applied for exclusively (with no other type of work). There is some repetition between the tables, though there is benefit in presenting all material relevant to any one type of work in a single table.

Table 27 The association of demolition works with other work types

Combination of work types	Cases	(% of demolition)	Cases with combination only
Demolition + extension	95	47.7	0
Demolition + external	158	79.4	14
Demolition + internal	131	65.8	16
Demolition + curtilage	56	28.1	21

Table 28 The association of extension works with other work types

Combination of work types	Cases	(% of extension)	Cases with combination only
Extension + demolition	95	49.7	0
Extension + external	183	95.8	33
Extension + internal	124	64.9	1
Extension + curtilage	31	16.2	2

Table 29 The association of external works with other work types

Combination of work types	Cases	(% of external)	Cases with combination only
External + demolition	158	21.4	14
External + extension	183	24.8	33
External + internal	385	52.1	200
External + curtilage	85	11.5	19

Table 30 The association of internal works with other work types

Combination of work types	Cases	(% of internal)	Cases with combination only
Internal + demolition	131	25.8	16
Internal + extension	124	24.4	1
Internal + external	385	75.8	200
Internal + curtilage	53	10.4	2

Table 31 The association of curtilage works with other work types

Combination of work types	Cases	(% of curtilage)	Cases with combination only
Curtilage + demolition	56	35.9	21
Curtilage + extension	31	19.9	2
Curtilage + external	85	54.5	19
Curtilage + internal	53	34.0	2

4.9 The principal observations from the sample results are:

- external works to listed buildings are proposed substantially more frequently in combination with other works than are any other types of work;
- curtilage works are the least likely type to accompany any other type of work;
- the combination of internal and external works, without any other type of work, is easily the most frequently arising of any exclusive pair of works;
- extensions and demolition are both more likely to be accompanied by other types of work than are the other three types of work (confirming the finding in Table 26).

The use of pre-application advice

4.10 Pre-application advice is known to have been sought by at least 569 applicants in the sample of 936. The database provides extensive breakdowns of that information. For example, such advice was sought by 18 charitable applicants (67%), 165 commercial applicants (57%), 326 individual private applicants (61%) and 60 institutional applicants (66%). Charities and institutions were therefore marginally more likely to take advice before submitting listed building consent applications than were individual private or commercial applicants.

4.11 Pre-application advice was sought on the kinds of works indicated in Table 32 below.

Table 32 Pre-application advice sought by type of works applied for

Works	Cases	% (of 569 pre-app. advice sought)	Incidence of works	% of works
Demolition	133	23.4	199	66.8
Extension	108	19.0	191	56.5
External	457	80.3	739	61.8
Internal	311	54.7	508	61.2
Curtilage	98	17.2	156	62.8

4.12 Table 32 shows that there was not a great difference between the types of proposed work on which pre-application discussions were held with the local planning authority. The final column shows that advice was sought in approaching about two thirds of cases for all types of works. That column corrects for the effect of substantially more applications being submitted for some types of work (especially external work) than others (especially work in the curtilage). The rate of seeking pre-application advice was the highest for demolition, potentially the most challenging of all the kinds of works which can be proposed to listed buildings.

4.13 Pre-application advice was sought from the local planning authority in 569 cases. An agent was used in 425 (74.7%) of these. This is discernibly higher than the use of pre-application advice by applicant type (paragraph 4.10 above) or according to the type of work proposed (paragraph 4.12 above). However, this is not measuring a more thorough approach to seeking advice by agents than by applicants who do not use agents, but simply the substantial incidence of using agents. Agents were used by applicants in 77.5% of all listed building consent applications, and the rate of pre-application advice is fractionally below this. Using an agent makes no significant difference to the likelihood of pre-application discussions being held with the local planning authority.

CHAPTER 5

CONCLUSIONS

5.1 The principal findings from a stratified sample of 936 applications for listed building consent are:

(1) The following key data are identified:

- applications affected 23 Grade I, 95 Grade II* and 818 Grade II listed buildings;
- 549 listed buildings were in domestic use, 371 in non-domestic use and 16 were structures;
- 27 applicants were charities, 91 were institutions, 287 were commercial and 531 were private individuals;
- 725 applicants used an agent, 198 did not and in 13 cases this was not stated;
- the works for which listed building consent were requested included 199 cases involving demolition, 191 extensions, 739 external works, 508 internal works, and 156 works in the curtilage;
- 569 applicants had sought pre-application advice from their local authority, 268 had not, and in 99 cases this was not stated;
- there was a planning application associated with the listed building consent application in 180 cases but not in a further 406 cases; the position with the remaining 350 cases is unknown.

(2) Charities, private individuals and institutions applied for listed building consent less frequently after the increase in V.A.T. came into effect on 1 October 2012. This is a statistically significant finding at the 5% level using unweighted data from the sample of 936 applications, but overwhelmingly significant (at better than the 0.1% level) using weighted data to correct for anomalies in the sampling procedure between regions. This appears to be the result of the V.A.T. increase, though other changes between the two sampled periods cannot be ruled out.

(3) Fewer applicants seek pre-application advice in authorities which charge for pre-application advice. This finding is significant at the 5% level, from a sample of 742 applications with known information on this matter. This difference is only just statistically significant, so it is possible that the limitations of the sampling methods could be influencing the results one way or the other, and the reliability of the conclusion should be viewed in this light.

(4) There do not appear to be any statistically significant differences in the findings on the main variables between the regions of England or between urban and rural areas.

(5) Fewer applicants sought pre-application advice from their local planning authority after the change in V.A.T. legislation than did beforehand. This is a statistically significant difference at the 1% level, but is difficult to explain.

(6) The use of pre-application discussions shows little systematic difference between applicant types (though charities and institutions are fractionally more likely to use these

than commercial or individual private applicants), between types of works proposed (though demolition proposals generate slightly more advice), or according to whether or not an applicant uses an agent.

5.2 Additional matters are:

(i) If the data provided by this project are to be used to inform policy or investment decisions, the data should first be weighted to correct for limitations in the sampling procedure, prior to assessing statistical significance: Appendix 1 illustrates how this can be done.

(ii) The impact of the change in V.A.T. rate on the propensity to seek listed building consent – or, more specifically, consent for internal works – was not studied directly by this research, but the indicative information available from this project and elsewhere suggests that a significant effect was unlikely.

(iii) Studying applications for listed building consent can give an insight into some effects of the reintroduction of 20% V.A.T. on approved works to listed buildings, but it is an indirect approach. Obtaining listed building consent is cheap compared with the cost of works, so there is advantage in undertaking direct studies of works carried out or not carried out (which is the point at which V.A.T. becomes payable). Additional work is also needed to address, for example:

- proposed works to listed buildings which were truncated, postponed or abandoned due to the increased cost after the reimposition of V.A.T. at 20%: information on actions which are not taken can be every bit as factual as information on those which are;
- the opportunity costs as a result of the higher V.A.T. rate, particularly additional repair work to listed buildings foregone as a result of the greater expenditure on V.A.T. elsewhere;
- cases where new building was undertaken, where this was an option instead of works to a listed building, due to the costs after the reimposition of V.A.T. at 20% on listed building repairs;
- listed buildings which have deteriorated due to the insufficiency of resources to pay for works which now attract an additional 20% cost due to V.A.T., particularly where the underlying costs of repair are now greater than they were prior to the legislation change.

APPENDIX 1
WEIGHTING DATA TO ADJUST FOR STRATIFIED SAMPLING

A1.1 This Appendix addresses the principal difficulty caused by use of stratified sampling of listed building consent applications rather than random sampling. This is that, by selecting a pre-determined number of cases to be sampled from each region, the number of applications is disproportional to the total choice of applications in each region. The cases collected over-represent some regions and under-represent others. The same principle applies to selecting cases from authorities which either charge or do not charge for pre-application discussions. This appendix shows how data would need to be weighted to correct for the imbalances in the sampling procedures, mainly by using a worked example.

A1.2 Weighting can correct for imbalances in the sampled number of listed building consent applications in the subsequent statistical analysis. 104 applications were sampled in each region. The fractions sampled are shown in Table 33.

Table 33 listed building consent applications by region (2013-14)

Region	LBC applications 2013-14	Fraction of all LBC applications by region
East of England	3,839	.131
East Midlands	3,023	.103
London	5,249	.179
North East	728	.025
North West	1,639	.056
South East	5,425	.185
South West	5,633	.192
West Midlands	2,034	.070
Yorkshire & Humber	1,711	.059
Total	29,281	1.0

Source: CLG website Live Table 124A

A1.3. If there had been the same number of applications in each region, then each region would have had one ninth of the total, or 0.111 of the total. The actual fractions can be compared with that average figure.

A1.4 The implications here are these. When comparing data in one region with another region, the raw data can be used: the data are assumed to be a representative sample. However, when taking a national overview based on the total of regional figures, the data from each region should first be adjusted according to the respective weights of the regional figures. If, for example, the question posed was “Did the national proportions of each type of property-owning applicant for listed building consent change after the V.A.T. legislation change?”, the raw data would benefit from being adjusted, as follows.

A1.5 The raw data shows that of the 468 applications in the post-V.A.T.-change period, derived from 52 applications in each region, the applicants were of the following four types, resulting in the unweighted proportions shown in Table 34.

Table 34 Number and proportion of applicants by type (England, post-V.A.T.-change)

Applicant type	**No. of applicants**	**Proportion of applicants**
Charity	10	0.021
Commercial	159	0.340
Individual (private)	259	0.553
Institutional	40	0.086
Total	468	1.0

A1.6 The weighted figures on applicant types must be derived from the raw data for each region. Individual numbers must be revised up or down according to the regional share of all applications. The weighted numbers of applicants by type are the original number multiplied by the weight and divided in every case by one ninth, as shown in Table 35.

Table 35 Applicant types by region, unweighted and weighted (post-V.A.T.-change)

Region	Charity			Commercial			Individual (private)			Institutional		
	No.	Wt.	Result	No.	Wt.	Result	No.	Wt.	Result	No.	Wt.	Result
EE	0	.131	0	18	.131	21.22	34	.131	40.09	0	.131	0
EM	2	.103	1.85	12	.103	11.12	33	.103	30.59	5	.103	4.64
L	0	.179	0	18	.179	29.00	27	.179	43.50	7	.179	11.28
NE	2	.025	0.45	17	.025	3.83	23	.025	4.76	10	.025	2.25
NW	4	.056	2.02	21	.056	10.58	23	.056	11.59	4	.056	2.02
SE	0	.185	0	17	.185	28.31	32	.185	53.28	3	.185	5.00
SW	0	.192	0	15	.192	25.92	34	.192	58.75	3	.192	5.18
WM	1	.070	0.63	20	.070	12.60	24	.070	15.12	7	.070	4.41
YH	1	.059	0.53	21	.059	11.15	29	.059	15.40	1	.059	0.53
Total	10	1	5.48	159	1	153.73	259	1	273.08	40	1	35.31

A1.7 The unweighted and weighted numbers of applicants by type, and the proportions of all applicants that each represents, are shown in Table 36.

Table 36 Number and proportion of applicants by type, unweighted and weighted (England, post-V.A.T.-change)

Applicant type	No. of applicants	Unweighted proportion	Weighted no. of applicants*	Weighted proportion**
Charity	10	0.021	6	0.012
Commercial	159	0.340	154	0.329
Individual (private)	259	0.553	273	0.584
Institutional	40	0.086	35	0.075
Total	468	1.0	468	1.0

* Rounded to whole numbers

** Based on the original figures, not rounded

A1.8 The figures show that in this particular example there were small changes to the national totals once regional weighting had been taken into account: 14 out of the 468 applicants (3%) should be added to the 'individual (private)' category, drawn from other categories. While this is a modest change, the already small numbers of charity and institutional applicants were cut back disproportionately. The reason for this can be readily appreciated from Table 35: this shows, for instance, that all the charity applicants were recorded in the five regions with below-average numbers of LBC applications, so inevitably their contributions to this applicant category were marked downwards.

A1.9 A similar process can be followed for figures from the pre-V.A.T.-change period studied, using archived data on numbers of listed building consent applications from the CLG website Live Table 124A covering the year 2011-12.

Table 37 listed building consent applications by region (2011-12)

Region	LBC applications 2011-12	Fraction of all LBC applications by region
East of England	4,032	.139
East Midlands	1,854	.064
London	4,617	.160
North East	688	.024
North West	1,533	.053
South East	6,291	.218
South West	5,890	.204
West Midlands	2,188	.076
Yorkshire & Humber	1,792	.062
Total	28,885	1.0

Source: CLG website Live Table 124A

A1.10 The actual fractions can again be compared with the average figure of 0.111 of the total. The raw data shows that of the 468 applications in the pre-V.A.T.-change period, derived from 52 applications in each region, the four types of applicant were in the unweighted proportions shown in Table 38.

Table 38 Number and proportion of applicants by type (England, pre-V.A.T.-change)

Applicant type	No. of applicants	Proportion of applicants
Charity	17	0.036
Commercial	128	0.274
Individual (private)	272	0.581
Institutional	51	0.109
Total	468	1.0

A1.11 The weighted figures on applicant types are calculated in the same way as in Table 4, with the results shown in Table 39.

Table 39 Applicant types by region, unweighted and weighted (pre-V.A.T.-change)

Region	Charity			Commercial			Individual (private)			Institutional		
	No.	Wt.	Result	No.	Wt.	Result	No.	Wt.	Result	No.	Wt.	Result
EE	2	.139	2.50	7	.139	8.76	38	.139	47.54	5	.139	6.25
EM	2	.064	1.15	13	.064	7.49	32	.064	18.43	5	.064	2.88
L	0	.160	0	8	.160	11.52	33	.160	47.52	11	.160	15.84
NE	3	.024	0.65	17	.024	3.67	24	.024	5.18	8	.024	1.73
NW	2	.053	0.95	20	.053	9.54	22	.053	10.49	8	.053	3.82
SE	1	.218	1.96	10	.218	19.62	33	.218	64.75	8	.218	15.70
SW	2	.204	3.67	12	.204	22.03	35	.204	64.26	3	.204	5.51
WM	3	.076	2.95	21	.076	14.36	25	.076	17.10	3	.076	2.95
YH	2	.062	1.12	20	.062	11.16	30	.062	16.74	0	.062	0
Total	17	1	14.36	128	1	108.15	272	1	292.01	51	1	54.68

A1.12 The unweighted and weighted numbers of applicants by type, and the proportions of all applicants that each represents, are shown in Table 40.

Table 40 Number and proportion of applicants by type, unweighted and weighted (England, pre-V.A.T.-change)

Applicant type	No. of applicants	Unweighted proportion	Weighted no. of applicants*	Weighted proportion**
Charity	17	0.036	14	0.031
Commercial	128	0.274	108	0.230
Individual (private)	272	0.581	292	0.622
Institutional	51	0.109	54	0.117
Total	468	1.0	468	1.0

* Rounded to whole numbers

** Based on the original figures, not rounded

A1.13 The figures show that in this particular example there were small changes to the national totals once regional weighting had been taken into account: principally, 20 out of the 468 applicants (4.3%%) should be added to the 'individual (private)' category, drawn from the 'commercial' category. The reason for this can be readily appreciated from Table 39: this shows, for instance, that the five largest numbers of commercial applicants were recorded in the five regions with the lowest proportions of listed building consent applications, so inevitably their contributions to this applicant category were marked downwards.

A1.14 The unweighted data can now be compared with the weighted data for the periods before and after the V.A.T. change, to establish if weighting makes any significant difference to the findings of the analysis. The unweighted and weighted figures are presented in Table 41.

Table 41 Unweighted and weighted numbers of applicants by type, (England, before and after the V.A.T.-change)

Applicant type	No. of applicants before V.A.T. change		No. of applicants after V.A.T. change	
	Unweighted	Weighted	Unweighted	Weighted
Charity	17	14	10	6
Commercial	128	108	159	154
Individual (private)	272	292	259	273
Institutional	51	54	40	35
Total	468	468	468	468

A1.15 The analysis of unweighted figures in chapter 3 shows that charities, private individuals and institutions have been discouraged by the change in V.A.T. legislation from applying for listed building consent at the 5% level, from a sample of 936 applications, though the outcome was marginal at this level. The χ^2 test can now be applied to the weighted figures. The weighted data show larger changes in the figures between the two periods (e.g. the number of commercial applicants rises by 42 rather than by 31, which is 9.9 percentage points rather than 6.6 percentage points in the unweighted figures), so unsurprisingly the difference between the data sets is more significant. The level at which this significance is registered by the χ^2 test is well in excess of 1 in 1,000 rather than the previous 1 in 20. In other words, the possibility of the reduced numbers of charities, private individuals and institutions being due to chance rather than due to the change in V.A.T. is exceptionally small. On this occasion, the weighted figures show a much more convincing difference in the variables between the two periods than did the unweighted figures.

APPENDIX 2

ASSESSING SIGNIFICANCE OF DIFFERENCE: WORKED EXAMPLE

A2.1 This appendix presents the calculations to show how the χ^2 test can be used in practice. It uses the example from Table 14 in chapter 3, repeated in Table 42 below, which is in the section on authorities which do and do not charge for pre-application advice. It deals specifically with the relationship between charging and whether or not applicants sought pre-application advice from their local planning authority.

A2.2 Null hypothesis: authorities which charge for pre-application advice will not experience fewer applicants seeking pre-application advice. (Data exclude North East region due to absence of representation of rural authorities which charge for pre-application advice.)

Table 42 Pre-application advice, by LPA charging policy

Advice	Charging authorities	Non-charging authorities	All
Sought	226	274	500
Not sought	127	115	242
Total	353	389	742

A2.3 The computation formula for χ^2 (for data tables with multiple rows and columns) is:

$$\chi^2 = N\left[\sum_{i=1}^{r}\sum_{j=1}^{c}\frac{{N_{ij}}^2}{N_i.N_j} - 1\right]$$

Where:
N = The sum of all entries in the table
N_{ij} = The number observed in the $(i,j)^{th}$ cell of the table
for i = 1, 2, . . ., r (rows) and j = 1, 2, . . ., c (columns)
N_i = The numerical total of all entries in row i
N_j = The numerical total of all entries in column j

A2.4 Calculations of cell entries for the expression $\frac{{N_{ij}}^2}{N_i.N_j}$:

$226^2/(500 \times 353)$ = 51,076 /176,500 = 0.2893824
$274^2/(500 \times 389)$ = 75,076/194,500 = 0.3859948
$127^2/(242 \times 353)$ = 16,129/85,426 = 0.1888066
$115^2/(242 \times 389)$ = 13,225/94,138 = 0.1404852
= 1.0046690

1.004669 subtract 1 = 0.004669

Observed χ^2 (i.e. the figure above x N) = 0.004669 x 742 = 3.464

A2.5 The number of degrees of freedom (the number of occasions there remains choice in cell entries after the number in the first cell has been fixed, knowing N_i & N_j) is determined by the formula: df = (r – 1) x (c – 1). Degrees of freedom = (2 – 1) x (2 – 1) = 1 x 1 = 1.

A2.6 χ^2 at 0.10 (10%) level at 1 degree of freedom (from standard χ^2 tables) = 2.706. (This means that only in 10% of cases would an observed χ^2 figure exceed this amount if there were no relationship between the variables. There has been no need to make a correction for continuity [Yates' correction] because all the expected entries in the table are above 5 and N is large.)

A2.7 The observed figure is larger than the calculated figure, so the null hypothesis is rejected: there is a statistically significant difference (at this level) between authorities that have different charging policies with respect to seeking or not seeking pre-application advice.

A2.8 The test statistic is insensitive to the direction of the relationship. In this case a null hypothesis was chosen which did predict direction, so the result in this case is significant at half the chosen level of significance (i.e. at 5% rather than 10%). The observed figures in this case could only be attributed to chance rather than a relationship once in 20 times. This 5% level of significance is a standard level for testing in cases such as this.

A2.9 The conclusion can be reached that fewer applicants seek pre-application advice in authorities which charge for pre-application advice, (from a sample of 742 applications with known information on this matter). However, the difference found is only just statistically significant, so it is possible that the limitations of the sampling methods could be influencing the results and the reliability of the conclusion should be viewed in this light.