

# **An Investigation of the Nature of Vacant Commercial and Industrial Property**

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**Key Words:** Commercial and Industrial Property, Vacancy, Stock

## **SUMMARY**

Commercial and industrial floorspace statistics covering England at the local authority district level have been published for the past four years. These statistics provide annual snapshots of the quantity, location and type of non-domestic building stock across the country. Longitudinal analysis, although restricted to a short time-frame, can tell us about changes in land use activity and illustrate how the stock of commercial and industrial floorspace is slowly increasing. What these statistics do not reveal is whether the stock is in use or vacant. Growing interest in the redevelopment and re-use of 'brownfield' land (which, it is assumed, includes 'brown' buildings), means that the ability to identify stock that is vacant, particularly for long periods of time, is of great importance to land use policy makers and developers. This paper reports the results of a pilot study to collect data on vacant commercial and industrial floorspace in Leeds over a four-year period. Using data collected and maintained by central and local government for property taxation purposes, sub-building information on vacancy was compiled and statistics produced that were designed to nest within the Commercial and Industrial Floorspace Statistics that are currently available. This paper reports the results of the pilot study, investigates the nature of the vacant stock in terms of building type, land use and age and reports significant differences in the periods for which premises were vacant when the stock is classified in these ways.

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## **1. INTRODUCTION**

The UK Government publishes annual statistics relating to the number, size and value of commercial and industrial premises in England since 1998 (ODPM, 2006a). These statistics break down the non-domestic building stock into its principal land uses and geographical locations. There has been growing political interest in monitoring the amount of vacant non-domestic building stock and measuring the number, size and value of such premises both in absolute terms and also as a proportion of total stock. The interest arises because vacant property is a useful indicator of urban change and represents a resource which may require Government intervention to encourage re-use. Twenty years ago the Government confirmed that “[a]n up to date or even accurate figure of the national stock of vacant land is not available – whether presented on its own or in comparison with the stock of used land” (DoE, 1988). Recording the location and characteristics of vacant buildings was regarded as more problematic than doing so for vacant land and was only seriously considered when the re-use of brownfield (or, more accurately, previously developed land) became a central tenet of Government policy in the early part of this century (ODPM, 2005).

Myers and Wyatt (2004) argued that it is important not only to consider vacant and derelict land but also vacancy within buildings. Indeed the National Land Use Database initiative requires local authorities in England to compile information about vacant land and buildings but it is acknowledged that it is more difficult to identify vacancy (and partial vacancy) within buildings and even more difficult to record attributes such as floor area and condition. Myers and Wyatt (2004) described a way of combining information on vacant commercial and industrial premises collected by the Government for property taxation purposes with information on vacant premises collected by local authorities. This combined data set allows the compilation of statistics on commercial and industrial vacancy in England and Wales for local authorities wishing to supply data. This paper uses a sample of these data to examine the nature and location of vacant commercial and industrial property in a post-industrial city in the north of England. It is possible to determine the nature of vacant business premises (length of vacancy, size, age and type of premises) and locate them in order to identify clusters of long-term vacant property that may be suitable for regeneration.

The paper is structured as follows: section two describes the way in which property tax records can be used as source of information about vacant non-domestic premises; section three presents a case study in Leeds describing the way in which this information was collected and processed to allow the analysis that is described in section four. Section five offers some concluding comments.

## 2. PROPERTY TAX RECORDS AS A SOURCE OF VACANCY INFORMATION

Non-domestic premises in England and Wales that are subject to property taxation or Business Rates are known as ‘hereditaments’, literally, a property interest that can be inherited. Commercial and Industrial Floorspace and Rateable Value Statistics (ODPM, 2006a) report the number of hereditaments, total floorspace, total rateable value, and rateable value per square metre for each of the main land uses (retail, offices, factories and warehouses) for each local authority in England. The information comes from the administrative databases used by the Valuation Office Agency (VOA) to assess the rateable value of each hereditament in England and Wales (Bruhns, *et al* 2000). The rateable value is based essentially on its rental value and this, in turn, is driven by a range of factors including the use, location and age of the premises. A major determinant of rental value is often floorspace. Thus for many of the more common types of commercial premises, the VOA measures floor area as part of the detailed internal surveys of buildings that it undertakes to assess rateable values. The VOA assesses all properties that are either occupied, or vacant but ready for beneficial occupation. The fact that a property is vacant has no impact on its rateable value though it can affect the amount of business rates that are paid; this is explained in more detail below.

Hereditaments are classified by the VOA as either ‘bulk’ or ‘non-bulk’. Bulk classes include the main land use types (retail, offices, factories and warehouses). Hereditaments which are not in any one of the four bulk classes are collectively known as non-bulks and include hotels, public houses, schools, hospitals, libraries, and leisure premises. Floorspace and other descriptive statistics are generally not available for non-bulk hereditaments (Bruhns, 2000). Certain business premises are exempt from paying Business Rates altogether and hence are excluded from the calculation, including agricultural land and buildings and fish farms.

There are situations where business premises can be refunded part or all of the Business Rates they have paid. The amount they receive back is called relief and vacant premises are amongst those that qualify for relief. The amount of relief that can be received depends on both the time that a property has been vacant for and the type of property. For the first three months that a property has been vacant it receives 100% relief regardless of its bulk class, after that retail and office premises only receive 50% relief while factories and warehouses still receive 100%.

For the past five years the Government has published a vacancy statistic for each local authority by analysing the rateable values and the amount of the relief given to hereditaments each year (ODPM 2005a). The statistic is derived from data that is collected annually from each local authority on the financial amount of relief given to businesses. However, because the primary purpose of these data is revenue calculation by the Treasury, only the *total* amount of relief given by each local authority is recorded. This means that the vacancy statistic will underestimate the total number and value of vacant property since some will only be receiving 50% relief as explained above. Therefore, an adjustment is made to estimate the total value of relief as if all premises had received 100% relief regardless of how long they had been vacant. The assumptions underlying this adjustment are as follows. The amount of relief given to premises which are vacant for less than three months, and therefore receive 100% relief, is estimated.

Based on more detailed information provided by several local authorities it is estimated that on average 3% of all commercial and industrial property in a typical local authority area is likely to be vacant for less than three months at any time. Therefore 3% of the total gross rates payable is taken as an estimate of the amount of relief that is going to properties vacant for less than three months and this amount is deducted from the total relief, leaving a 'residual' relief given to premises vacant for more than three months. This residual relief figure is then adjusted to take into account that shops and offices are only permitted 50% relief. Using the Commercial and Industrial Floorspace and Rateable Value Statistics it is possible to estimate how much of the residual relief is likely to be from each bulk class by assuming that the proportion of rateable value which relates to vacant properties will be the same within each bulk class. The relief given to retail and offices is then multiplied by two to provide an estimate of the true value of vacant premises. Finally the estimates of relief from short-term, long-term vacant from retail and offices, and long-term vacant from warehouses and factories are added together to give a total estimate of the value of properties in each local authority. The proportions of vacant properties are calculated by taking this total relief estimate as a percentage of the total Business Rate paid to the Government by the local authority. Although the vacancy statistics are not fully accredited – referred to as 'experimental statistics' by the Office for National Statistics – they are available from [www.statistics.gov.uk](http://www.statistics.gov.uk). For England the percentage of commercial and industrial properties that were vacant in 2000/01 (April 2000 – March 2001) was 7% and in 2001/02 and 2002/03 it was 8%. For Leeds the respective figures were 9%, 10% and 11%.

This 'experimental' vacancy statistic falls short of what is required and the Government recently commissioned research into ways in which information about vacant commercial and industrial premises might be improved (ODPM, 2006b). The next section describes a case study that shows how improvements can be made in terms of recording duration of vacancy, identifying vacant premises at a larger geographical scale and analysing the key attributes of vacant commercial and industrial premises such as size, age and use.

### **3. CASE STUDY: VACANT COMMERCIAL AND INDUSTRIAL PROPERTY IN LEEDS**

The method of combining Business Rates information from the Valuation Office Agency and local authorities was described in Myers and Wyatt (2004) but has undergone some review and improvement since that time. The raw data on which the Commercial and Industrial Floorspace and Rateable Value Statistics are based undergoes considerable processing before the generation of the statistics themselves. This involves imputation of missing floorspace and the reclassification of bulk classes in certain circumstances. More information on the methods of imputation is available in the annexes of Commercial and Industrial Floorspace and Rateable Value Statistics 1998-2004 (ODPM, 2005b). To retain compatibility with the published floorspace statistics, VOA floorspace data for Leeds that had already been processed for the floorspace statistics was used in this case study.

Episodes of vacancy falling between 1 April 2000 and 31 March 2004 were obtained from Leeds City Council. The codes that are used to record periods of exemption and relief from full rates liability do vary from authority to authority and are no doubt a result of the use of different billing systems. However, the reasons for which exemption or relief may be granted are laid down by statute and it is possible to define a set of codes that identify hereditaments that are:

- entitled to rates relief during an initial three-month period of vacancy;
- legally prohibited from being occupied (for example, premises in very poor condition and the local authority has prohibited occupation);
- empty and subject to major works;
- empty and the subject of Crown action (for example, the hereditament has been compulsorily acquired and is standing empty);
- empty industrial property (includes factories, stores, warehouses and workshops);
- empty shops or offices;
- empty listed premises;
- empty and where the rateable value is under £2,200 in the 2005 Rating List

Contiguous vacancy episodes were conflated into a single record – for this purpose a gap of up to three days was considered to be contiguous but in most cases the gap was a day or less. This captures exemption and relief episodes where one is immediately followed by the other. The conflated vacancy periods were then each joined to the appropriate attribute information for each hereditament, maintained by the VOA. Basically, because the characteristics of a hereditament may change over time – perhaps a new floor is added or it changes use – a join process was devised that ensured that the correct version of the hereditament (referred to as an ‘assessment’ by the VOA) was joined to the vacancy information, in other words the assessment with a matching identification code and which was the version current at the start of the vacancy period. If there was no vacancy period during a version (assessment) of a hereditament then that assessment was flagged as fully occupied. If a vacancy period occurred during an assessment the one of four possible cases were possible:

- Case 1: vacancy started on or before the start of the assessment period for a hereditament and finished on or after the end of the assessment period– in which case the assessment period was flagged as vacant for its full duration, see figure 1.

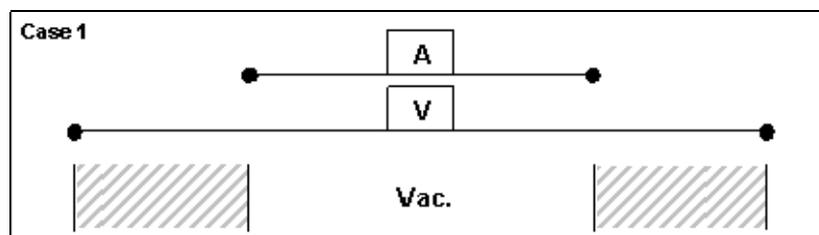


Figure 1

- Case 2: vacancy started on or before the start of the assessment period and finished before the end of the assessment – in which case the assessment period was subdivided into two parts, the first flagged as vacant and the remainder as occupied, see figure 2.

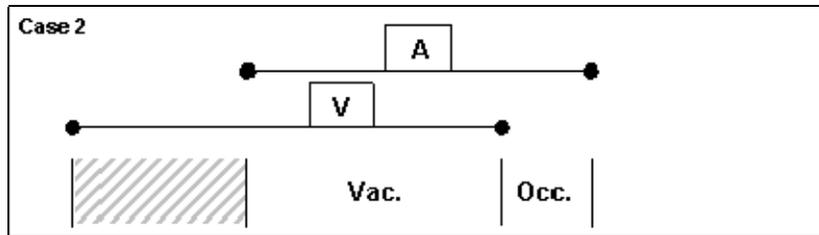


Figure 2

- Case 3: vacancy started after the start of the assessment period and finished on or after the end of the assessment – in which case the assessment period was subdivided into two parts, the first flagged as occupied and the remainder as vacant, see figure 3.

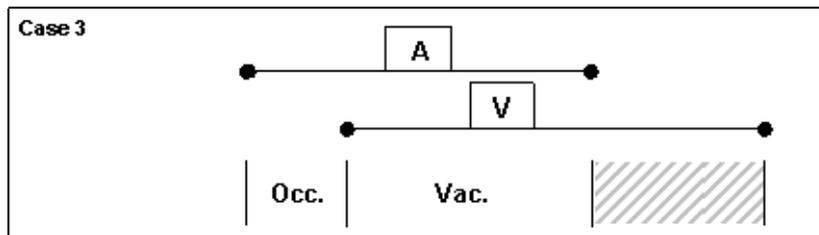


Figure 3

- Case 4: vacancy started after the start of the assessment period and finished before the end of the assessment – in which case the assessment period was subdivided into three parts flagged successively as occupied, vacant and occupied, see figure 4.

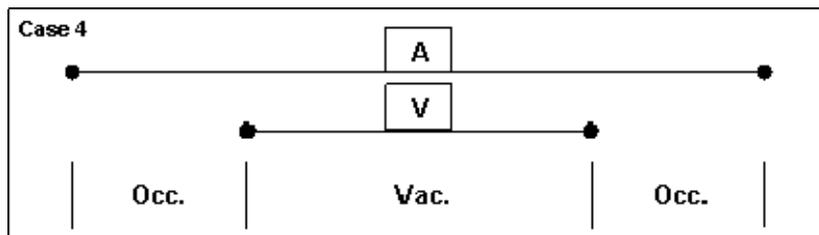


Figure 4

This process resulted in a chronological listing of all assessment periods for each hereditament, subdivided where appropriate to differentiate between occupied and vacant. For a more detailed explanation of the processing and join method, see ODPM (2006b). With the addition of calculated fields showing the length of each period and other attribute data from the VOA data

(rateable value, floorspace, etc.), these records formed the core data set from which further analysis could be undertaken.

#### 4. ANALYSIS

Figure 5 shows the floorspace and rateable value of *all* hereditaments in Leeds for 2004. Factories had the largest total floorspace, albeit being the least in number (at 3,188) and having the lowest total rateable value, offices had the highest total rateable value and retail accounted for the largest number of hereditaments (8,169), but these covered the least floorspace.

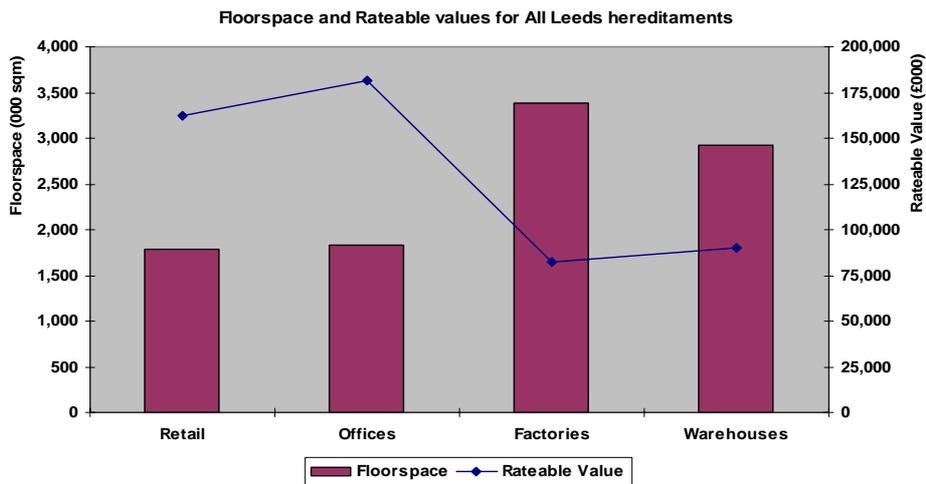


Figure 5

Figure 6 shows *vacant* floorspace and rateable values for 2004. 13% (2,678) of all bulk class hereditaments in Leeds were vacant, representing 10% and 9% of the total floorspace and rateable values respectively. 34% of vacant hereditaments were offices, accounting for the highest overall rateable value. Retail contributed 25% of total vacant hereditaments but had the least floorspace and rateable value. Factories had the lowest proportion of vacancy (20%) but covered the largest floorspace because they typically consist of larger units compared to office and retail units.

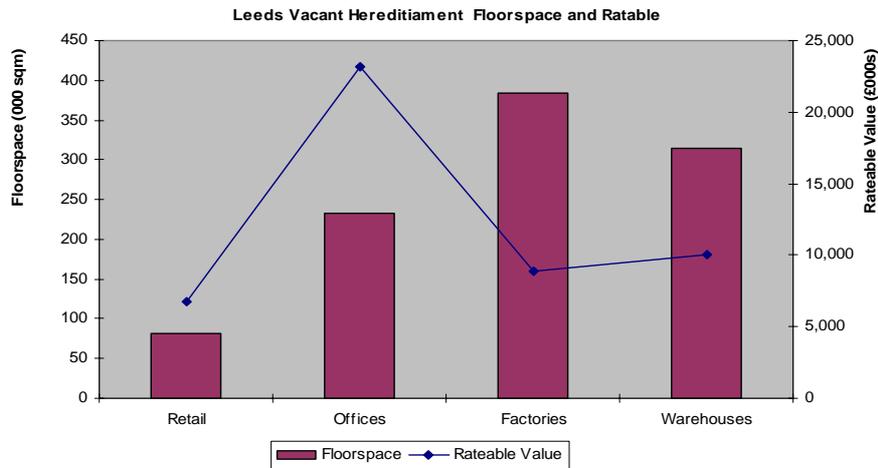


Figure 6

Figure 7 shows proportion of vacant hereditaments at bulk class level. Factories had the highest rate (17.03%) and retail had the lowest (8.13%), almost less than half of the others. There was, however, a higher proportion of total vacant offices in terms of floorspace and rateable values than any other sector.

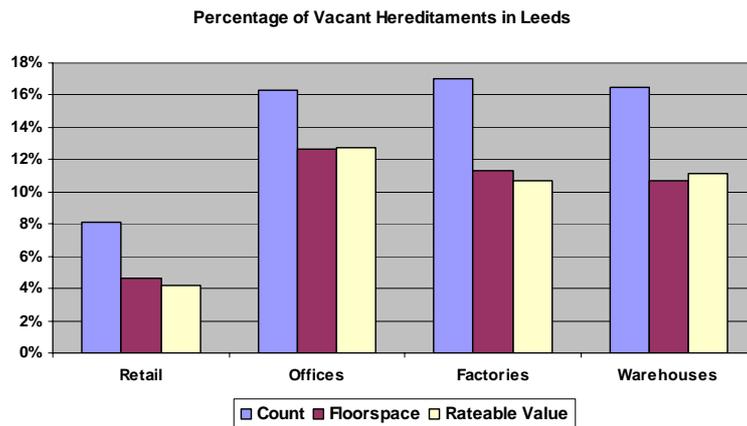
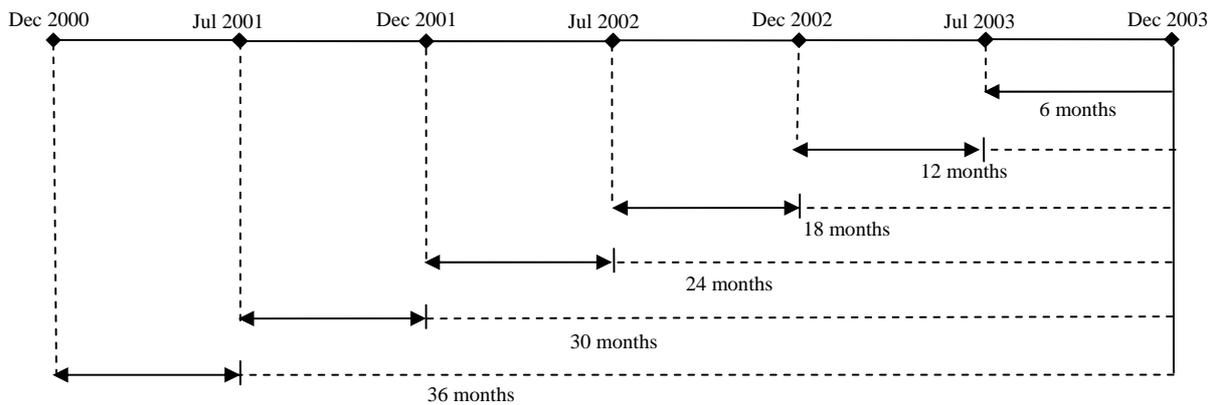


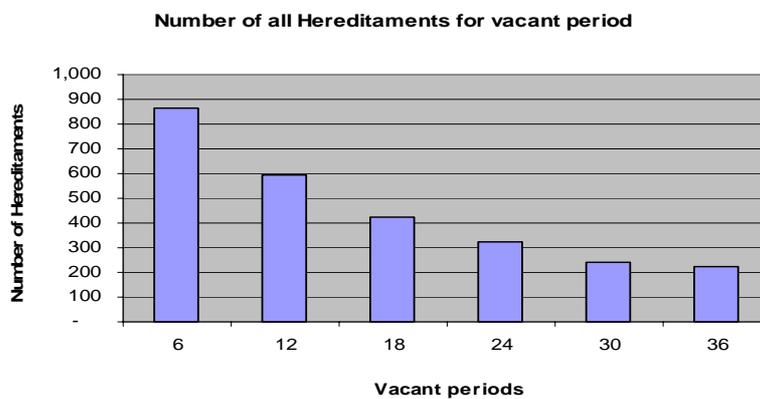
Figure 7

Further analysis was undertaken using the length of vacancy by categorising the vacancy durations into periods of six months up to the 31<sup>st</sup> December 2003. For example hereditaments in the first six months period became vacant between July 2003 and 31 December 2003 and were still vacant on 31 December 2003. It was interesting to see for example how many hereditaments had been vacant for six months, 12 months, and so on, up to 36 months as illustrated in Figure 8. It should be noted that these periods of vacancy do not overlap and the figures can therefore be aggregated.



**Figure 8**

Overall the number of vacant hereditaments reduces as the length of vacancy increases as shown in Figure 9.



**Figure 9**

This is also true at bulk class level with the exception of factories that show some fluctuations as illustrated in Figure 10. A chi-square test of association revealed that there was a relationship between the property types and the categorised vacancy periods (test statistic 53.09, which is greater than the p-value 37.70 with 15 degrees of freedom at a significance level of 0.001).

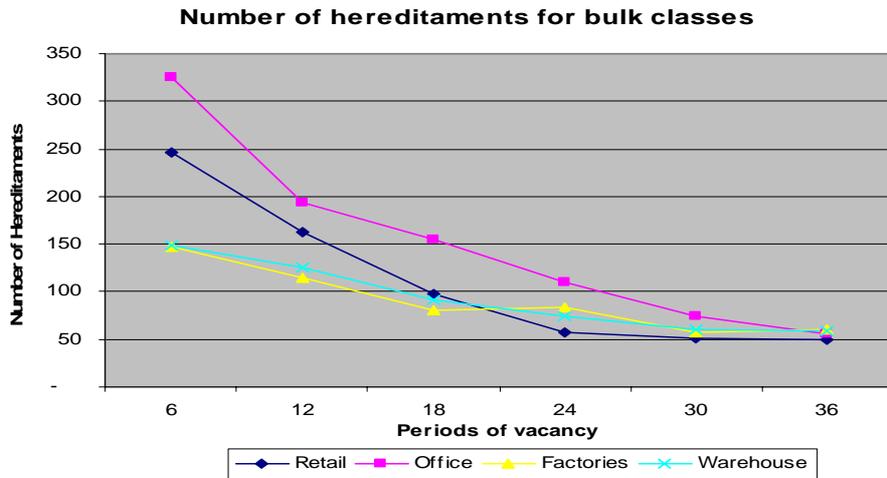


Figure 10

Figure 11 reveals that office floorspace reduced with increasing periods of vacancy. Retail and factory floorspace also show a similar trend, however, both increased slightly between 31 and 36 months vacancy period. The amount of vacant warehouse space fluctuated markedly over the periods. Overall all property types seem to have had steeper decreases in the first two or three periods of vacancy and then levelled off in the last two.

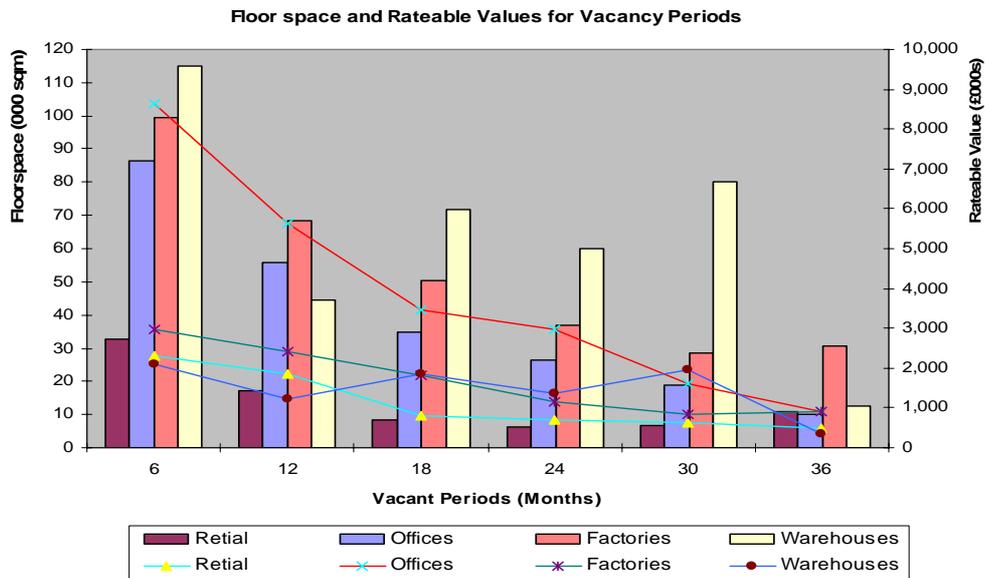
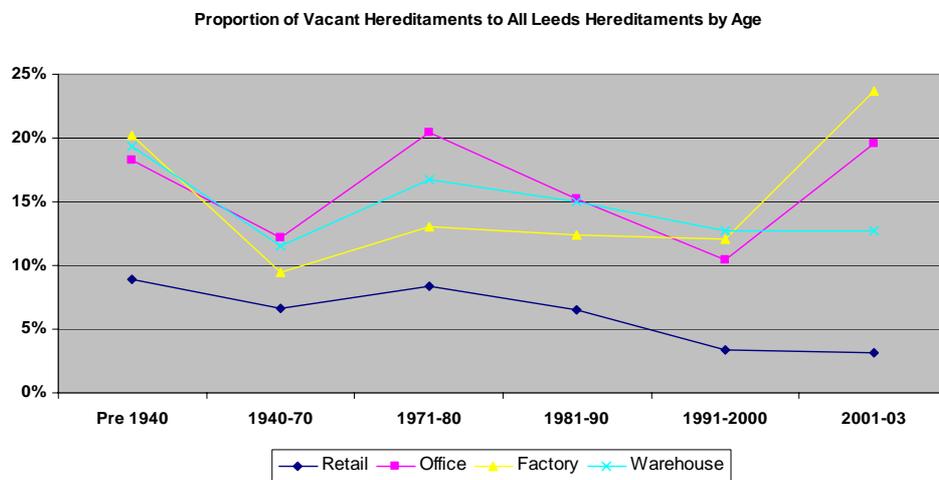


Figure 11

Over the six vacancy periods, total office rateable values showed a dramatic reduction, an average drop of 37% in the first two periods and 44% in the last two periods. Warehouse rateable values also reduced for the first five periods at an average rate of 27% but there was a slight

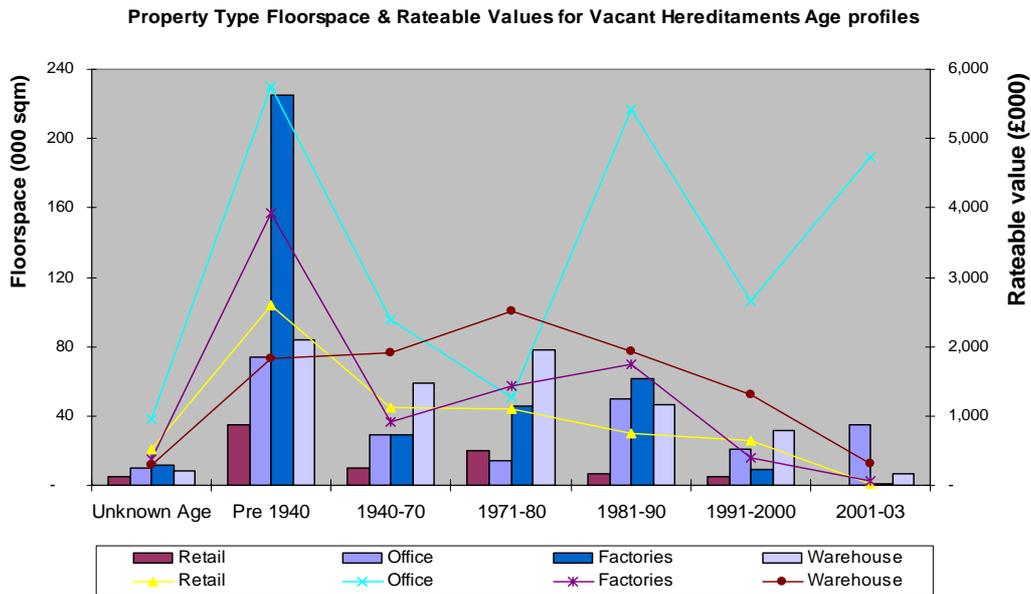
increase in the period of vacancy. Retail rateable values reduced from 6 to 18 months of vacancy periods, the biggest decrease being by 57% between 12 and 18 months periods of vacancy. For the remaining periods of vacancy, reductions for retail were at a reduced rate (an average of 14%). Rateable values for factories fluctuated a lot over the six vacancy periods. The biggest decrease was 81% from the 30 to 36 months vacancy periods.

Figure 12 shows the proportion of hereditaments vacant for specific periods by bulk class for all the age bands. In each age group, retail had the least proportion of vacant hereditaments. For the pre-1940 hereditaments factories had the highest proportion of vacancy, followed by warehouses and then offices. Between 1940-70 and 1981-90 offices had the highest proportion but in the 1991-2000 range the proportion of offices dropped below that of warehouses and factories. For the more recently built (2001-03) hereditaments factories had the highest proportion of vacancy followed by offices and then warehouses.



**Figure 12**

Figure 13 shows the actual breakdown of floorspace and rateable values for bulk classes over the age ranges.



**Figure 13**

Due to some VOA disclosure rules, floorspace data at local authority level for the age group 2001-03 could not be disaggregated by property type (ODPM 2006a). Figure 14 however, shows the proportion for other age groups. Factories followed by offices show the highest proportions of floorspace in the Pre 1940 and 1981-90 age groups. Factories have their lowest proportions in 1940-70 age range and offices in the 1991-2000. For all the age ranges, retail has the lowest proportion of floorspace. Warehouses had the biggest proportion in the 1970-80 age group. Its lowest proportion was in 1991-2000 even though this was higher than the other property types in this age group.

Proportion of Vacant Floorspace to All Leeds Hereditaments Age Group for property types

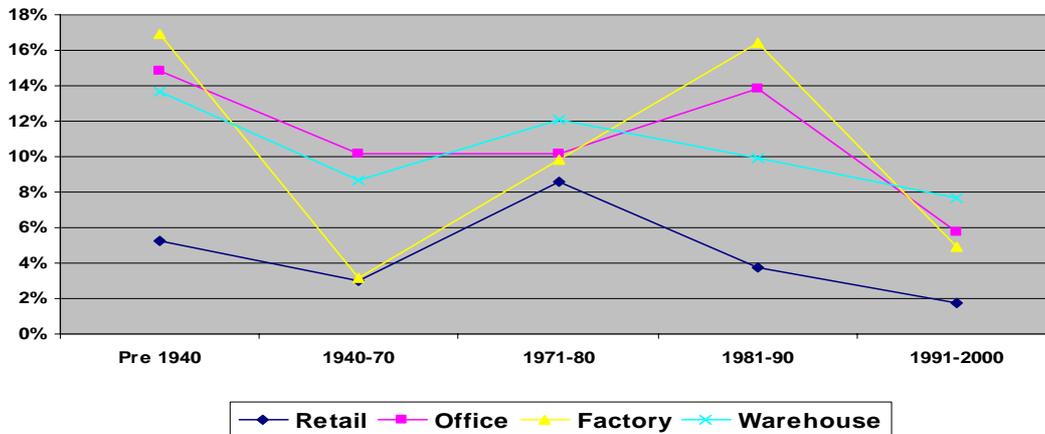
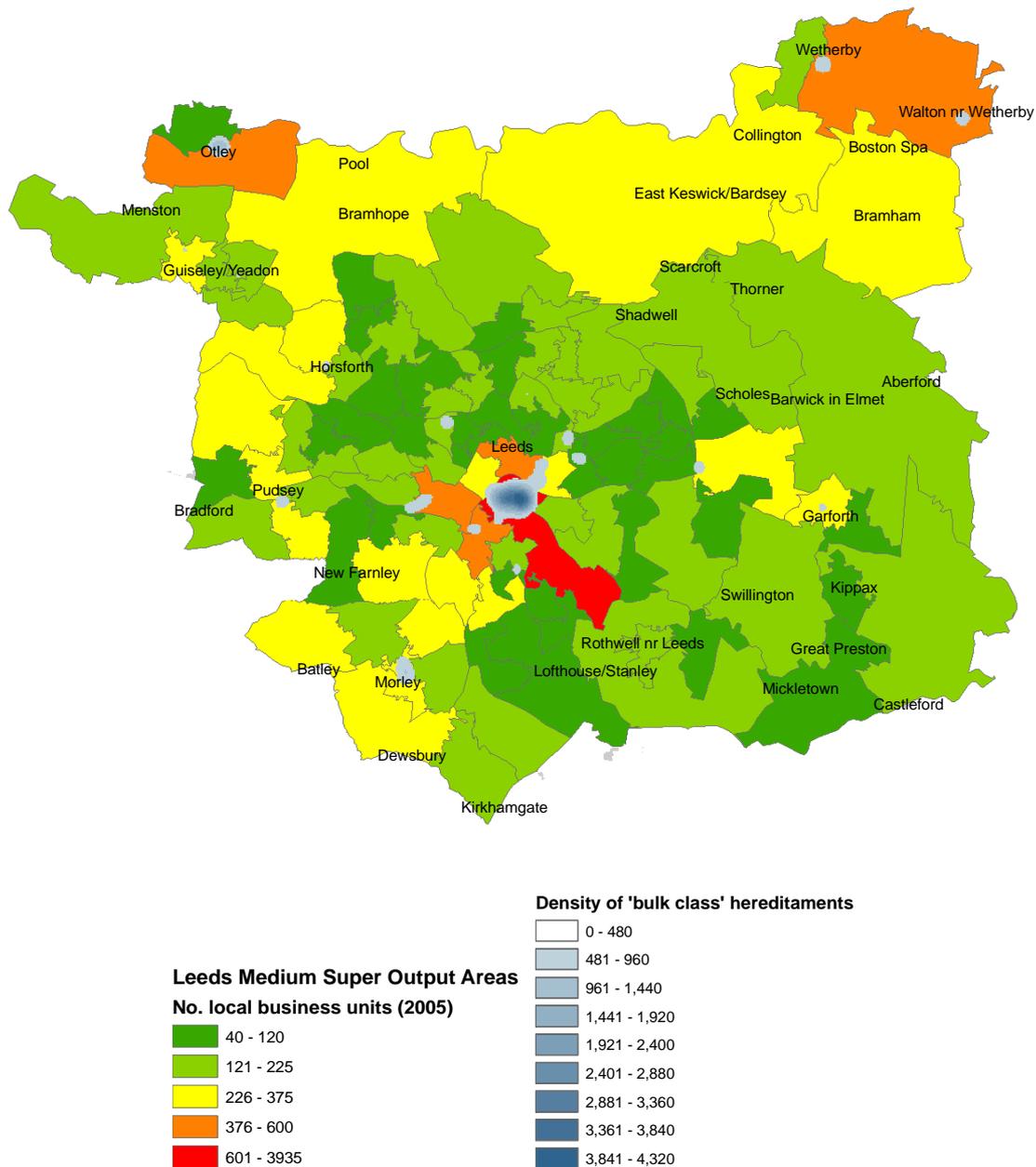


Figure 14

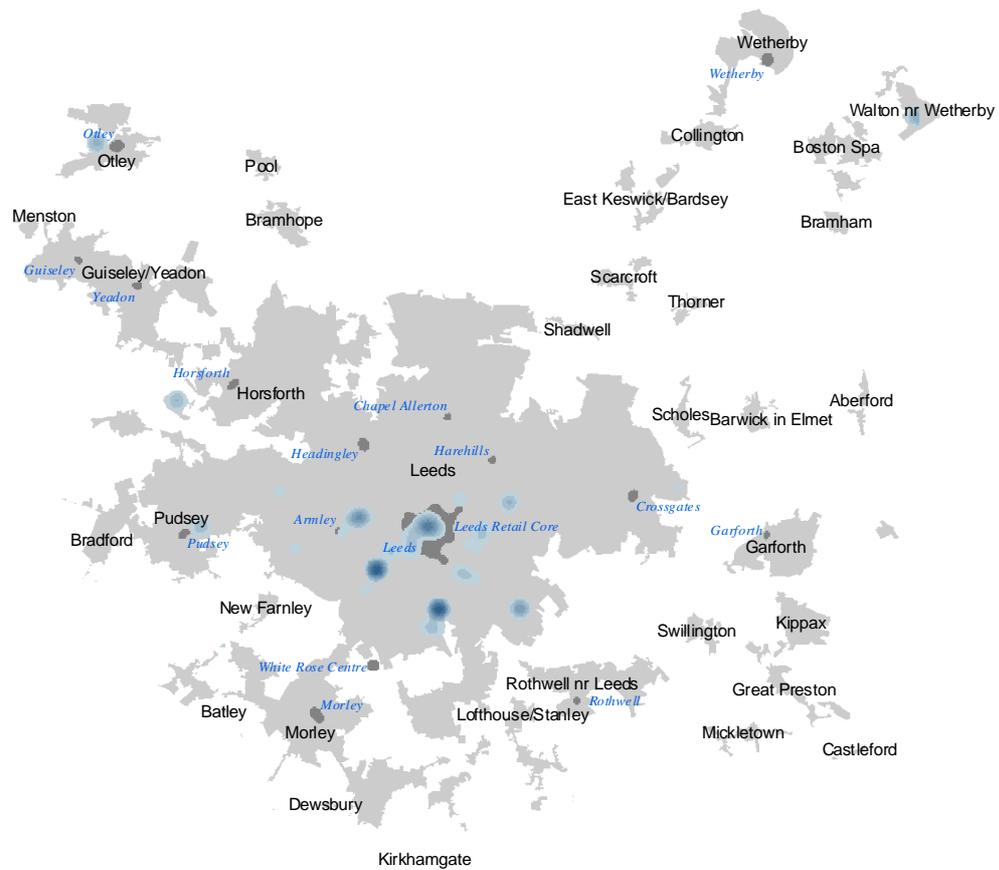
It is useful to examine the location of vacant commercial and industrial premises but there are a few geographical considerations that should be borne in mind before doing so. First, the spatial distribution of business premises is non-uniform; quite simply, we expect to find much greater numbers of premises in urban areas than in rural areas, and central urban areas would obviously have a higher number of premises than peripheral urban areas. So if the distribution of *vacant* premises is mapped then clearly we will find clusters that correspond to this pattern. This non-uniformity of space (O’Sullivan and Unwin, 2003) must be expected when analysing data gathered about human geography at high resolution. Second, care must be exercised over the way in which vacant premises are mapped. A popular way of mapping human geography data sets is choropleth maps but none of the sub-district area boundaries use the distribution of business premises to define them. Most are based on the distribution of resident population (electoral wards and census output areas are the most commonly used) and figure 15 shows the sort of thing that can happen when census output areas (medium super output areas in this case) are used to display the number of local business units in Leeds. The area stretching south east from the centre of Leeds contains a high number of business units but as the overlaid density map shows the vast majority of hereditaments are located in the northern part, in the central urban area.



**Figure 15**

Bearing these issues in mind the method chosen to examine the location of vacant premises was density mapping. This process takes a set of point features and converts them to a cellular grid where each cell is given a value based upon the density of features in its vicinity. The density of point locations can be mapped using simple or kernel calculations and the latter method was used here. In the kernel density calculation a smooth curved surface was fitted over each point based

on a quadratic function. The surface value is highest at the location of the point, and diminishes with increasing distance from the point, reaching 0 at the search radius distance from the point. The volume under the surface equals the attribute value for the point (count, floorspace or rateable value in this case). The density at each output raster cell is calculated by adding the values of all the kernel surfaces where they overlay the raster cell centre. The density of vacant commercial and industrial premises was mapped in terms of number (count), floorspace or rateable value. All three were tried and the most interesting result was obtained by mapping floorspace that had been vacant for three years as at the 31 March 2004, shown in figure 16.



Density of three-year vacancies

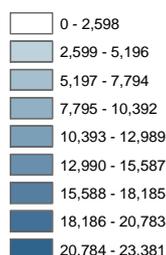


Figure 16

The density map shows the location of clusters of long-term vacant premises and is important from a national and regional perspective. It is also worth looking at the micro-location of long-term empty commercial premises. 224 hereditaments vacant for at least three years and those that were either very large or had a very high rateable value were identified by selecting those that were more than three standard deviations above the average floorspace and rateable value. This returned the seven hereditaments listed in table 1 and the locations of five of the more interesting premises are displayed in the appendix.

	<i>Postcode</i>	<i>Floorspace (m<sup>2</sup>)</i>	<i>Rateable Value (£)</i>	<i>Bulk Class</i>	<i>Use Class</i>	<i>Age</i>
1	LS12 2PY	2,159	19,600	3	B8	1900
2	LS21 2JW	2,333	22,500	3	B8	1900
3	LS10 1TW	3,227	135,000	3	B8	1998
4	LS12 6BE	6,162	99,500	1	AX	1974
5	LS18 4EF	1,903	80,400	3	B8	1987
6	LS1 5QX	1,075	107,500	2	B1	Not known
7	LS1 2HL	1,095	109,000	2	B1	1965

Table 1 - Outliers

## 5. CONCLUSIONS

The ability to switch between broad scale statistical analysis and micro-location analysis of vacant commercial premises using the same data source is a powerful characteristic of this data set. The primary statistical outputs are the number, size and value of non-domestic hereditaments that are vacant over a specified period of time. To put these figures into context they can be expressed as vacancy rates within specified geographical areas such as wards or census output areas. In this way the statistics would form a subset of the annual commercial and industrial floorspace statistics which report the number of hereditaments, their floorspace and rateable value each year classified by use (bulk class) and by location. Investigating vacant hereditaments by making use of various attribute data such as bulk class, period of vacancy and age profile provides a better insight and understanding of the nature of vacant commercial and industrial premises.

The two principal benefits of the vacancy data are the ability to map vacancy up from postcode level to any bespoke or standard geography and to calculate the duration of vacancy. It is therefore possible to determine the intra-urban location and type of premises that have short-term vacancy churn (which might be seen as being indicative of above average economic activity), and those that are vacant for long periods (which may be seen as a less positive effect).

## ACKNOWLEDGEMENTS

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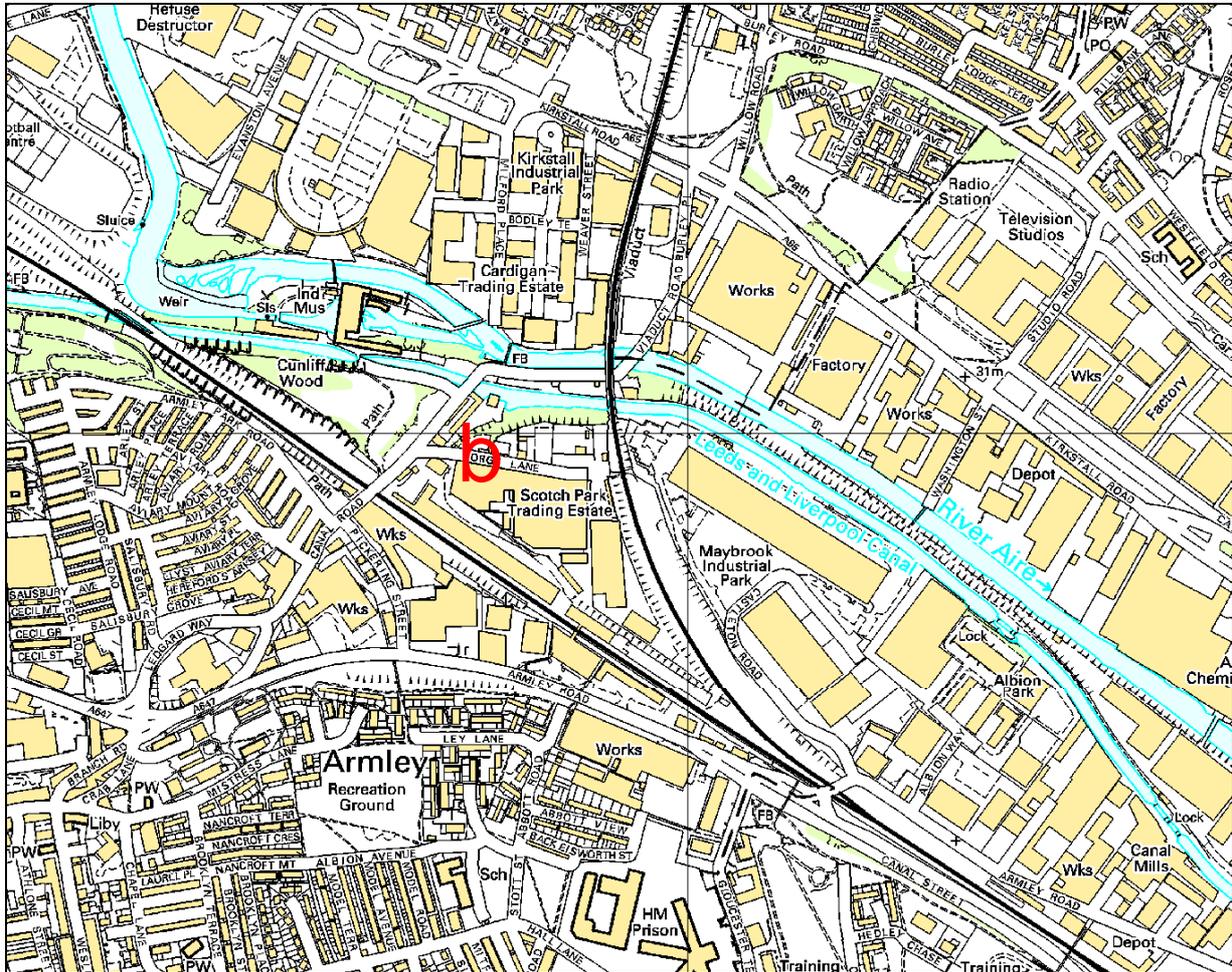
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[www.uwe.ac.uk](http://www.uwe.ac.uk)

## APPENDIX

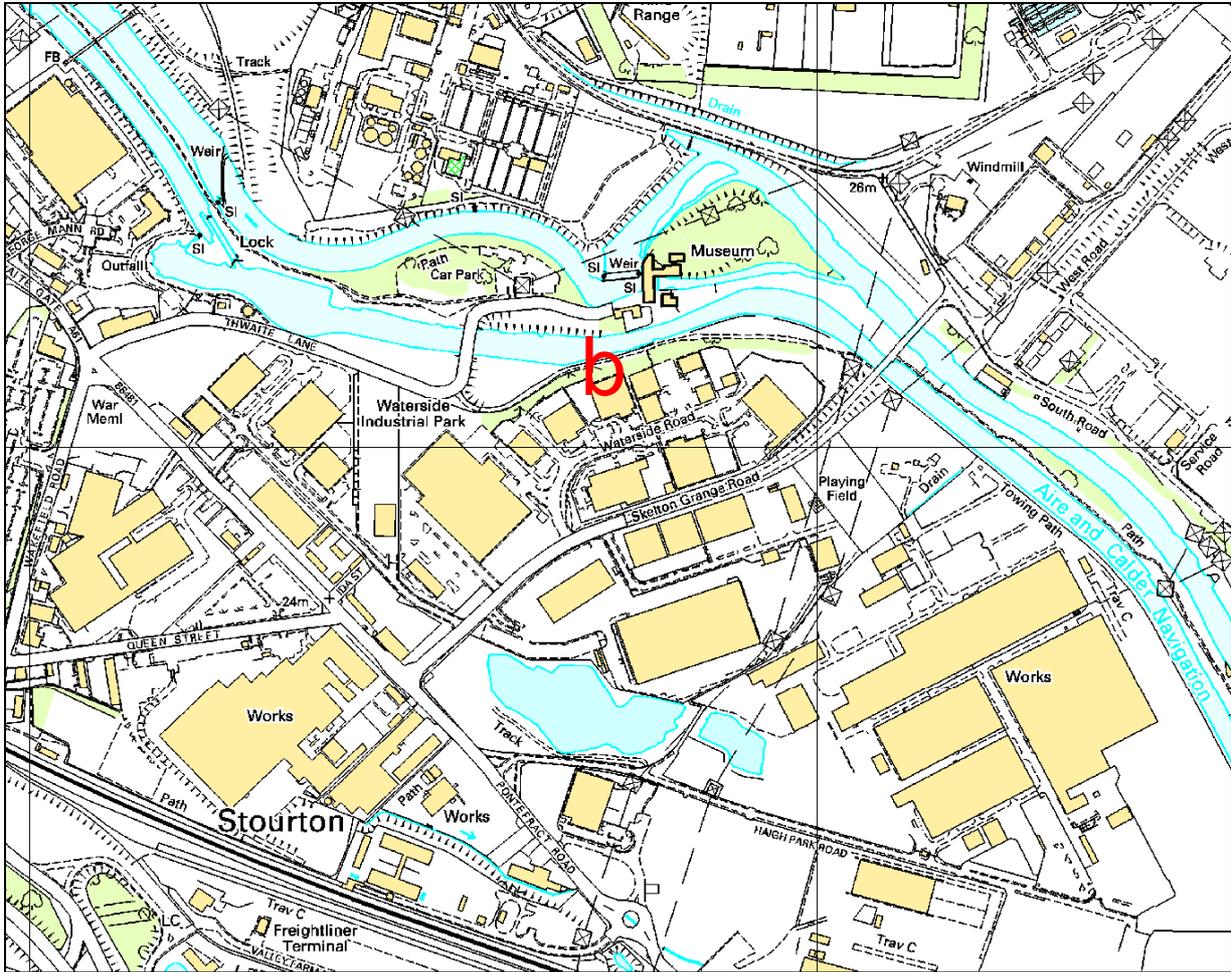
Location of long-term vacant premises with either high rateable value or large floorspace

1.



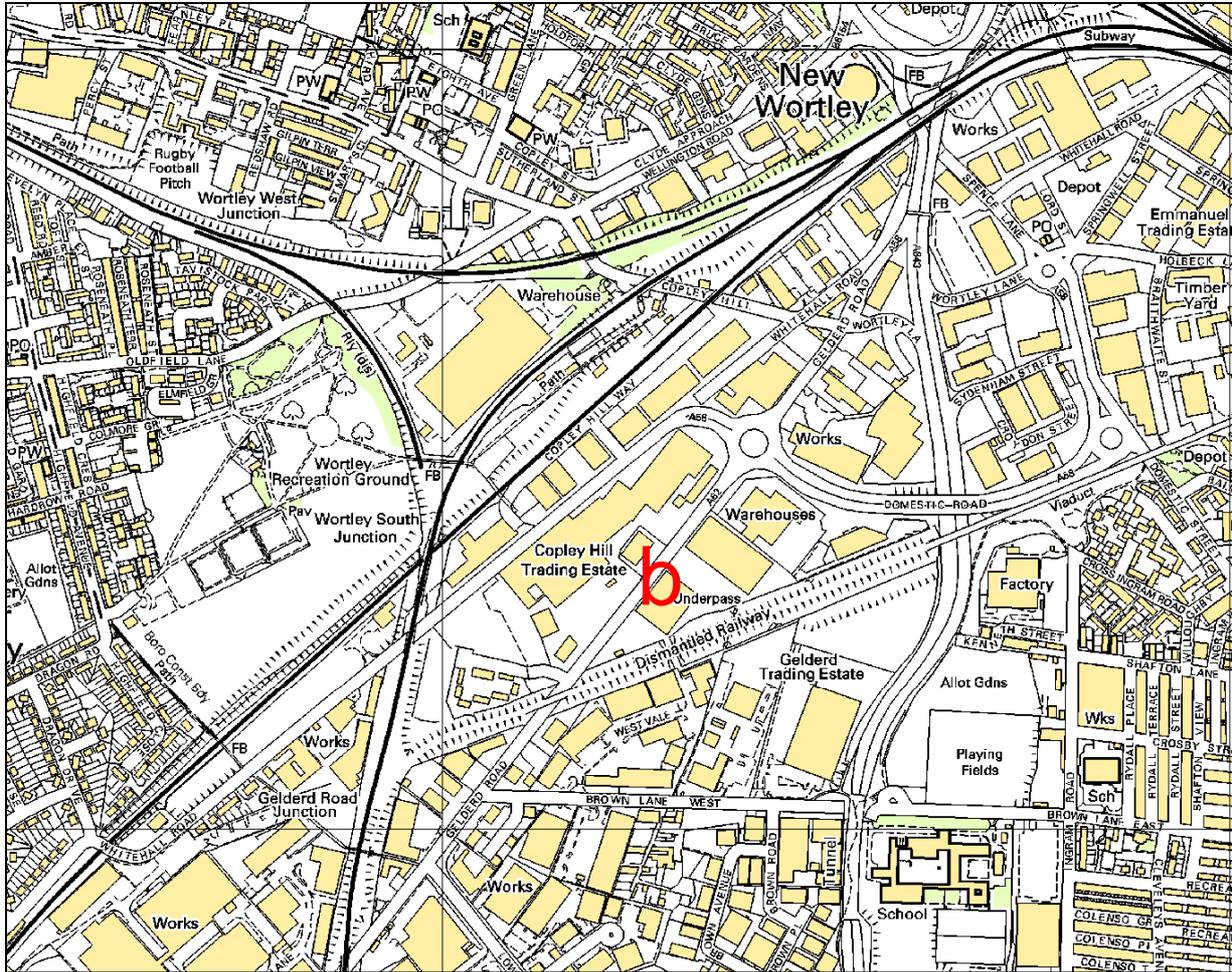
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3.



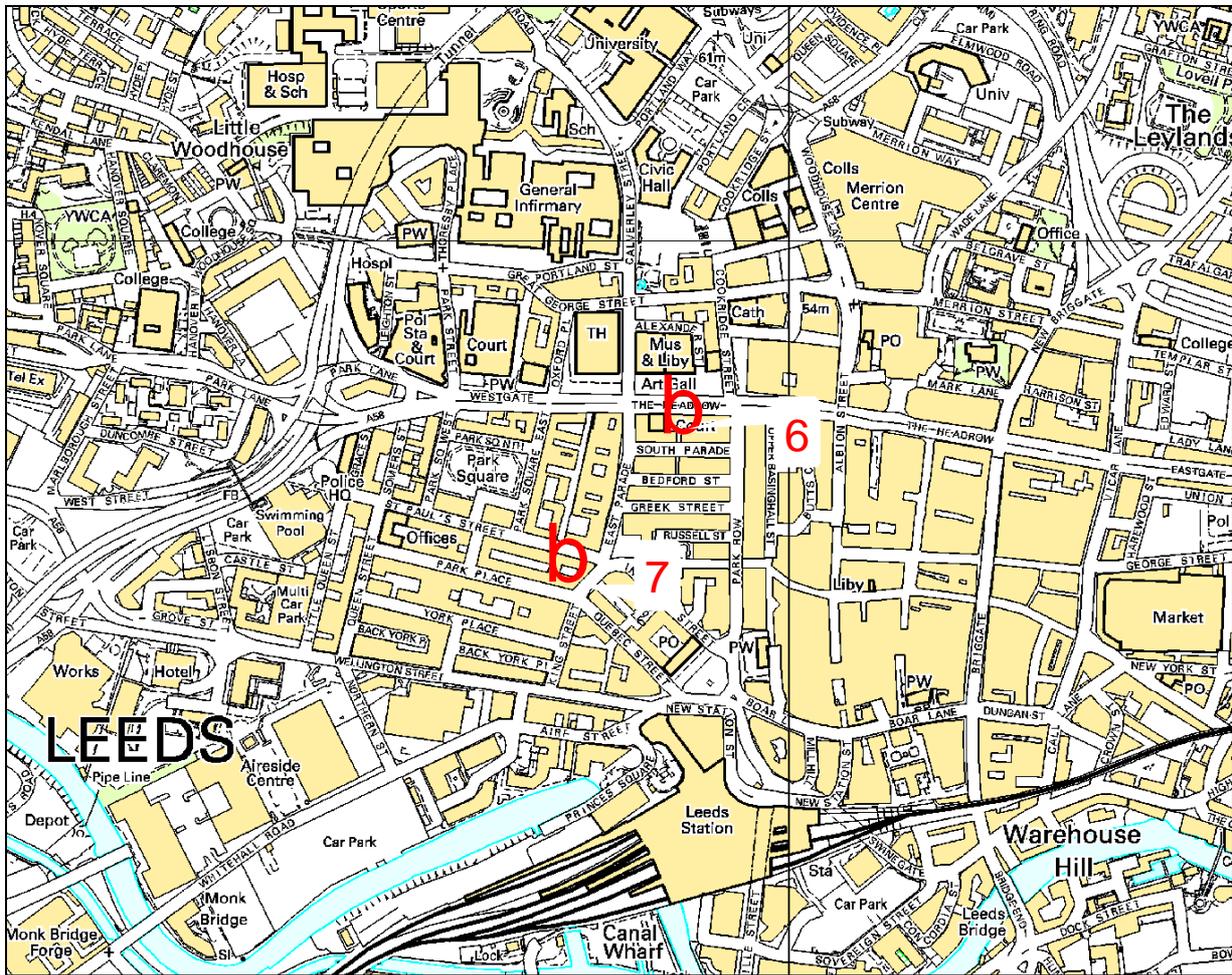
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4.



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6 and 7.



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