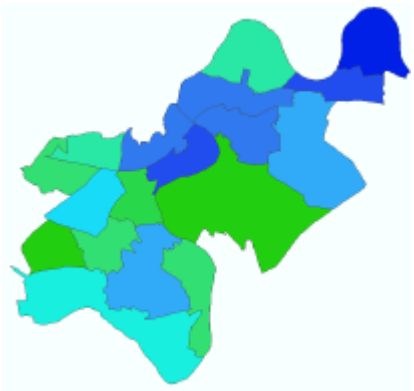
A targeting strategy for domestic energy efficiency in Richmond



An action plan to address domestic energy efficiency locally.

David Shewan
CEN
September 2004

This report is part of the Energy Saving Trust Hotspots Innovation Programme, a partnership between 20 Local Authorities in South West London and Kent

A targeting strategy for domestic energy efficiency in Richmond

Contents

1. Introduction

This report is a detailed analysis of the potential for domestic energy efficiency installations in the borough of Richmond, and has been completed in partnership with the London Borough of Richmond upon Thames as part of the Energy Saving Trust Hotspots Innovation Programme.

The report provides a profile of the neighbourhoods in the borough where there is most potential for the installation of domestic energy efficiency measures by residents. It is the aim of the report to provide a framework for the coordinated promotion of energy efficiency measures in the borough.

In particular, the report identifies 'HotSpots' for energy efficiency targeting. These area areas where the promotion of energy efficiency measures will be most effective.

1.1 Background: the Hotspots project

The report has been completed as part of the Hotspots project. The project is a partnership of organisations in South West London and Kent with an interest in domestic energy efficiency. The project is designed to bring together the large amount of data that has been collected about domestic energy efficiency in order to target the promotion of energy efficiency measures to residents.

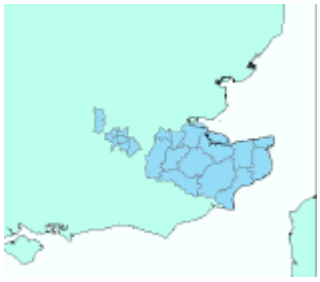
Many organisations in the public sector have responsibilities and commitments to facilitate energy efficiency improvements in domestic homes. Key among these organisations are Local Authorities, regional Energy Efficiency Advice Centres, Energy Suppliers, and the Energy Saving Trust. These organisations typically also collect data to provide tailored advice to householders, or to measure progress towards HECA and other statutory targets. However, the data has typically not been used to target the installation of measures in households.

The Hotspots project meets this opportunity, and will facilitate energy efficiency improvements in domestic homes by collating this householder data in order to find and target the geographical areas with most potential for energy efficiency improvements. The project will also provide match funding to assist promotional activities in each partner borough in terms of part-funding for promotional activity from the Energy Saving Trust and up to 60% subsidies on energy efficiency measures for householders through EDF Energy's Energy Efficiency Commitment funding.

The project represents a partnership between 20 partner Local Authorities and two partner Energy Efficiency Advice Centres with support from EDF energy and the Energy Saving Trust. The project is part-funded by the Energy Saving Trust until 2006, and aims to provide a framework which the project partners can use for the coordination of the facilitation of energy efficiency improvements in domestic homes.

1.2 Project partners

The project is led by Creative Environmental Networks and the London Borough of Hillingdon, and receives core funding from the Energy Saving Trust. Creative Environmental Networks is a not for profit environmental company that runs the two regional Energy Efficiency Advice Centres in South West London and Kent.



The following organisations are project partners. The project covers the area of the 20 Local Authority partners below.

- Ashford Borough Council
- Canterbury City Council
- Creative Environmental Networks
- London Borough of Croydon
- Dartford Borough Council
- Energy Saving Trust
- Gravesham Borough council
- Kent Energy Centre
- Royal Borough of Kingston upon Thames
- London Borough of Hillingdon
- Maidstone Borough Council
- Medway Council
- London Borough of Merton
- London Borough of Richmond upon Thames
- Sevenoaks Borough Council
- Shepway Borough Council
- London Borough of Sutton
- Swale Borough Council
- Thanet Borough Council
- Tonbridge and Malling Borough Council
- Tunbridge Wells Borough Council
- London Borough of Wandsworth

2. Analysis

The analysis below uses existing datasets to determine the areas of Richmond where there is maximum potential for the uptake by householders of domestic energy efficiency measures.

2.1 Summary

The first part of the analysis aims to find the areas of the borough where the domestic housing has high potential for energy efficiency improvements. The analysis has focussed on loft and cavity wall insulation potential (see section 2.1.2).

The analysis has only been possible where there is sufficient Home Energy data coverage, so before the analysis was started the data coverage was investigated (see section 2.2). The analysis concluded that in Richmond the data coverage is in general very good: there is sufficient data to conduct a meaningful analysis at ward level, even for an analysis at census output area level across most of the borough. A census output area is a sub-ward classification, containing approx. 60-200 households as illustrated in Figure 1. (Appendix 2 contains suggestions for future data gathering work to make the data coverage uniform.)

Figure 1: Richmond: ward boundaries shown in black; census output area boundaries shown in grey

This analysis of home energy efficiency potential by ward is described in section 2.3, and by census output area in section 2.4, and HotSpot areas at each level are tentatively identified in these sections. The patterns of uninsulated lofts are likely to be quite independent of the pattern for houses with uninsulated cavity walls so the analysis has been conducted in two parts. The analysis by census output area has higher spacial resolution, so is potentially more useful for targeting. However, there are more data points available at the ward level, so the data is more reliable. This issue is discussed in detail in the sections below.

The second part of the analysis (see section 2.5) concerns population, housing type, and tenure. The strategy is designed with the overarching aim of reducing CO_2 emissions through improved energy efficiency, and the demographic data has been used to target the 'able to pay'. We are aiming to target residents with the aim of maximum uptake of energy efficiency measures, so we should seek:

- householders who own or who are buying their home
- householders who have significant disposable income
- householders who live in houses rather than flats.

Census data has been used to produce this population / housing type / tenure analysis. It has then been used as an overlay for the home energy efficiency data: in this section the HotSpots tentatively identified in sections 2.3 and 2.4 are confirmed or discarded based on the suitability of the population, housing type, and tenure.

The strategy is not designed to target fuel poverty, although it acknowledges that there is scope for a similar approach to target people who have to use a large proportion of their income to keep their homes sufficiently heated. We aim to publish a sister strategy designed to take this approach before the end of 2004.

2.1.1 Data sources

The data analysis has made use of three main data sources. These are:

- Home Energy Check data, collected by the local Energy Efficiency Advice Centres and owned by the Energy Saving Trust; this data has only been available at ward level, but this may change in future editions of the strategy.
- Home Energy Survey data, collected by the Local Authorities in order to report on the energy efficiency of the borough to the government, and meet their Home Energy Conservation Act (HECA) responsibilities;
- Data from the 2001 Census, available from the Office for National Statistics.

There is potential for additional data to be integrated with the report. Additional Home Energy Survey and Home Energy Check data will increase the significance of the analysis. If original data can be incorporated from the Local Authority's Home Condition Survey this will also increase the significance of the analysis. We are working to progress this work and will aim to incorporate this information into the second editions of these Strategies in 2005.

2.1.2 Choice of energy efficiency measures

Although there are a wide variety of energy efficiency measures available for housing, the study has focussed on loft and cavity wall insulation, as they are both effective and cheap compared with other measures, especially in the present climate of increasing fuel prices. Loft and cavity wall insulation are

available to householders for about £300 per measure before subsidies. Through Hotspots, subsidies of 40-60% will be available allowing the measures to pay for themselves within 2-3 years. This makes them suitable as investment measures, and promotion to householders will result in high takeup.

Measures such as efficient heating systems, double glazing, and solid wall insulation are all comparable with loft and cavity effective in terms of energy efficiency but are typically more expensive by a factor of 4-10. This makes them measures that should be installed during the normal course of household refurbishment and maintenance, rather than as an investment measures. Potential for installation of these measures has therefore been judged outside the scope of this study.

2.2 Data Coverage

The Home Energy data coverage in Richmond is reasonably good.

When the data was collated by ward, the 95% confidence intervals were calculated as being similar to or smaller than the size of the 10 category classification intervals used in the analysis below.

When the data was collated by census output area, the confidence intervals were larger. For the purposes of the analysis below, 6 categories have been used, and census output areas have been excluded from the analysis where their 75% confidence interval was significantly larger than the size of the category classification intervals. However, only 295 of the 608 census output areas in Richmond have been excluded; this makes it among the best surveyed boroughs in the Hotspots area.

[Appendix 1 contains suggestions for future data gathering work to make the data coverage uniform.]

2.3 Housing analysis by ward

The ward level data analysis has been conducted using Home Energy Check data from the Energy Saving Trust and Home Energy Survey data, collected by the Local Authorities. The data is a compilation of data collected between 1999 and 2004.

2.3.1 Cavity Wall insulation

The map (figure 2) and table (table 1) overleaf show the proportion of unfilled cavity walls in Richmond by Ward.

The map shows that the three cavity wall 'Hotspots' wards with most potential are also three of the four wards in the borough with lowest data coverage (as shown by the bold outlines). For this reason the three wards with the next most cavity wall insulation potential are also provisionally designated hotspots.

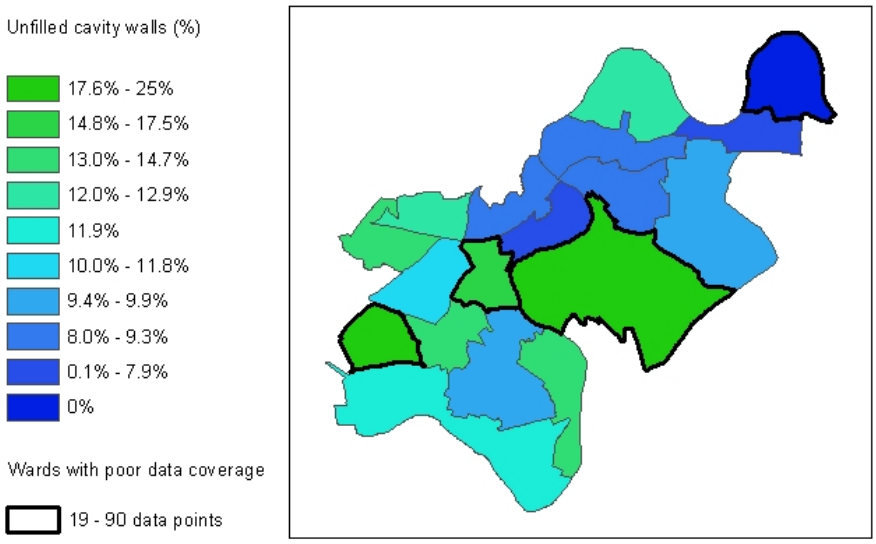


Figure 2: proportion of unfilled cavity walls in Richmond by ward

Table 1 shows that Richmond has reasonably low cavity wall insulation potential compared with most of the other boroughs within the Hotspots study. (A typical borough has wards with insulation potential ranging from 10% to 35%). However, this is as expected, as Richmond is fairly urban, and table 1 certainly shows a wide range of potential, which will be useful in targeting marketing.

Ward Name	**Housing with unfilled cavity walls**
Ham, Petersham and Richmond Riverside Ward*	***25%***
Hampton North Ward*	***22%***
South Twickenham Ward*	**17%**
Fulwell and Hampton Hill Ward	**14%**
Hampton Wick Ward	**14%**
Heathfield Ward	**14%**
Kew Ward	**12%**
Whitton Ward	12%
Hampton Ward	11%
West Twickenham Ward	11%
East Sheen Ward	9%
South Richmond Ward	9%
St Margarets and North Twickenham Ward	9%
Teddington Ward	9%
North Richmond Ward	8%

Mortlake and Barnes Common Ward	7%
Twickenham Riverside Ward	7%
Barnes Ward*	0%

Table 1: proportion of unfilled cavity walls in Richmond by ward. Wards marked * have less than 90 data points.

Based on this data, the top 2 wards (those with potential of 20% or more) are tentatively designated 'Hotspots'.

2.3.2 Loft Insulation

The map (figure 3) and table (table 2) overleaf shows the proportion of completely uninsulated lofts in Richmond by Ward. The map shows that the uninsulated loft 'Hotspots' have a very different pattern from the cavity wall insulation 'Hotspots'. The four wards in the borough with low data coverage are indicated with bold outlines.

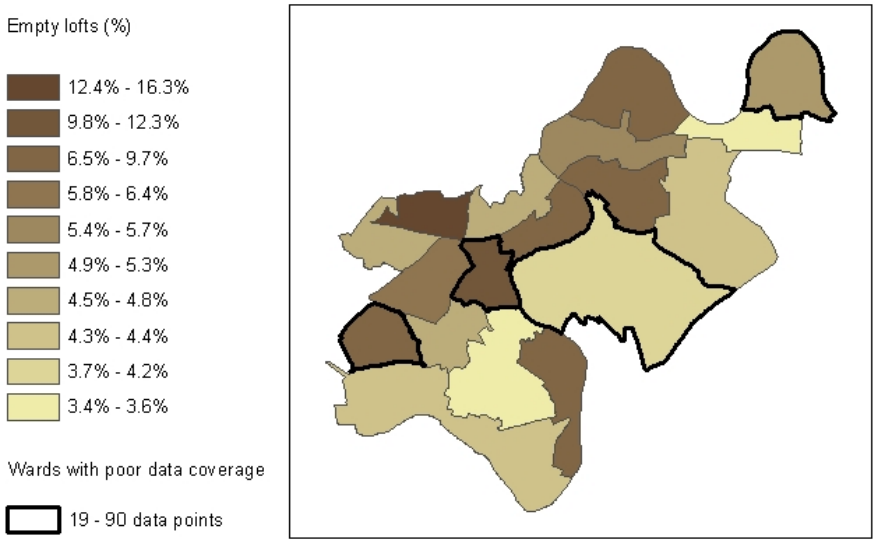


Figure 3: proportion of empty lofts in Richmond by ward

Table 2 overleaf shows that Richmond has reasonably high loft insulation potential compared with most of the other boroughs within the Hotspots study. (A typical borough has wards with loft insulation potential ranging from 1% to 10%). This is as expected, as Richmond is fairly urban. The four wards with highest potential are provisionally labelled Hotspots.

Ward Name	**Housing with empty lofts**
Whitton Ward	***16%***
South Twickenham Ward*	***12%***
Hampton North Ward*	***9%***

Kew Ward	***8%***
Hampton Wick Ward	7%
South Richmond Ward	7%
Twickenham Riverside Ward	7%
West Twickenham Ward	6%
Barnes Ward*	5%
North Richmond Ward	5%
East Sheen Ward	4%
Fulwell and Hampton Hill Ward	4%
Ham, Petersham and Richmond Riverside Ward*	4%
Hampton Ward	4%
Heathfield Ward	4%
St Margarets and North Twickenham Ward	4%
Mortlake and Barnes Common Ward	3%
Teddington Ward	3%

Table 2: proportion of empty lofts in Richmond by ward

2.4 Housing analysis by census output area

A census output area is a sub-ward area classification, containing approximately 60-200 households as illustrated in Figure 1 on page 5. There are 608 census output areas in Richmond, of which 313 have sufficient data points for analysis (see section 2.2). The census output area data analysis can be used in combination with the more broad brush ward level analysis in order to inform a very effective targeting approach, with general publicity across the HotSpot wards, and specific publicity to individual houses in the Hotspot census output areas.

2.4.1 Overview

The census output area level data analysis has been conducted using Home Energy Survey data, collected by the Local Authority. The data is a compilation of data collected between 1999 and 2004.

As described in the data coverage section (section 2.2) the confidence intervals were rather larger for the data when collated by census output area than by ward. For this reason, for the purposes of the analysis below, 5 categories have been used, and census output areas have been excluded from the analysis where their 75% confidence interval was significantly larger than the size of the category classification intervals. On the maps in this section these census output areas are left blank.

There are too many census output areas to be feasibly listed in the text (as the wards were listed in section 2.3), but the wards have been shown on the maps labelled with the numbers given in table 3 overleaf.

Ward Name	Ward Code
Barnes Ward	0
East Sheen Ward	1
Fulwell and Hampton Hill Ward	2
Ham, Petersham and Richmond Riverside Ward	3
Hampton North Ward	4
Hampton Ward	5
Hampton Wick Ward	6
Heathfield Ward	7
Kew Ward	8
Mortlake and Barnes Common Ward	9
North Richmond Ward	10
South Richmond Ward	11
South Twickenham Ward	12
St Margarets and North Twickenham Ward	13
Teddington Ward	14
Twickenham Riverside Ward	15
West Twickenham Ward	16
Whitton Ward	17

Table 3: key to the ward labelling in the maps of this section

NB The maps in this section have the potential to be misleading due to the fact that census output areas have similar populations but rather different areas depending on population density. This means that larger areas on the map marked with shading indicating high potential do not necessarily indicate large potential, and for the purpose of targeting, small areas may be better. For this reason census area boundaries are shown on all maps.

2.4.2 Cavity Wall insulation

Figure 4 overleaf shows the pattern of potential for cavity wall insulation in Richmond by census output area.

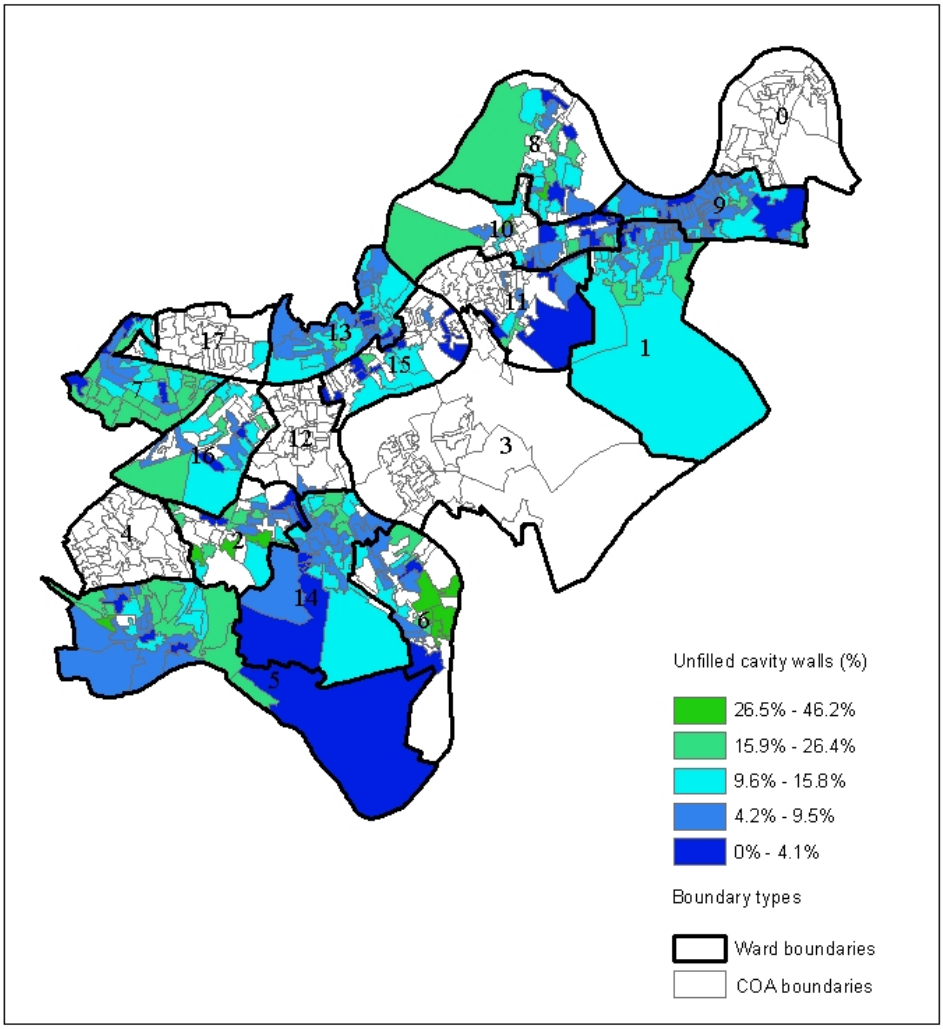


Figure 4: proportion of unfilled cavity walls in Richmond by census output area. Wards are labelled using the key numbers in table 3.

This analysis does broadly agree with the ward level analysis. However, this is not the rule, and the pockets of very high potential are rather discreet, and are not confined to the Hotspot wards.

The main map shows high potential in East Teddington, Hampton Hill, with some larger areas of lower potential also in Hampton and West Twickenham. In addition there are small pockets of fairly high potential scattered across the borough.

The census output areas with more than 26% potential are listed in table 4 below, and are tentatively designated ‘Hotspots’. This information in itself is

not transparent, but has been included because the Census Output area codes can be used by Local Authority data departments to produce mailing lists of individual houses.

Census output area code	Housing with unfilled cavity walls
00BDFY0021	31%
00BDFY0006	27%
00BDGA0020	33%
00BDGC0001	38%
00BDGC0004	27%
00BDGC0020	46%
00BDGC0025	28%
00BDGE0024	30%
00BDGG0010	42%

Table 4: cavity wall insulation tentative 'Hotspot' census output areas

2.4.3 Loft insulation

Figure 5 below shows the pattern of potential for loft insulation in Richmond by census output area. The areas of high potential are fairly evenly scattered throughout the borough.

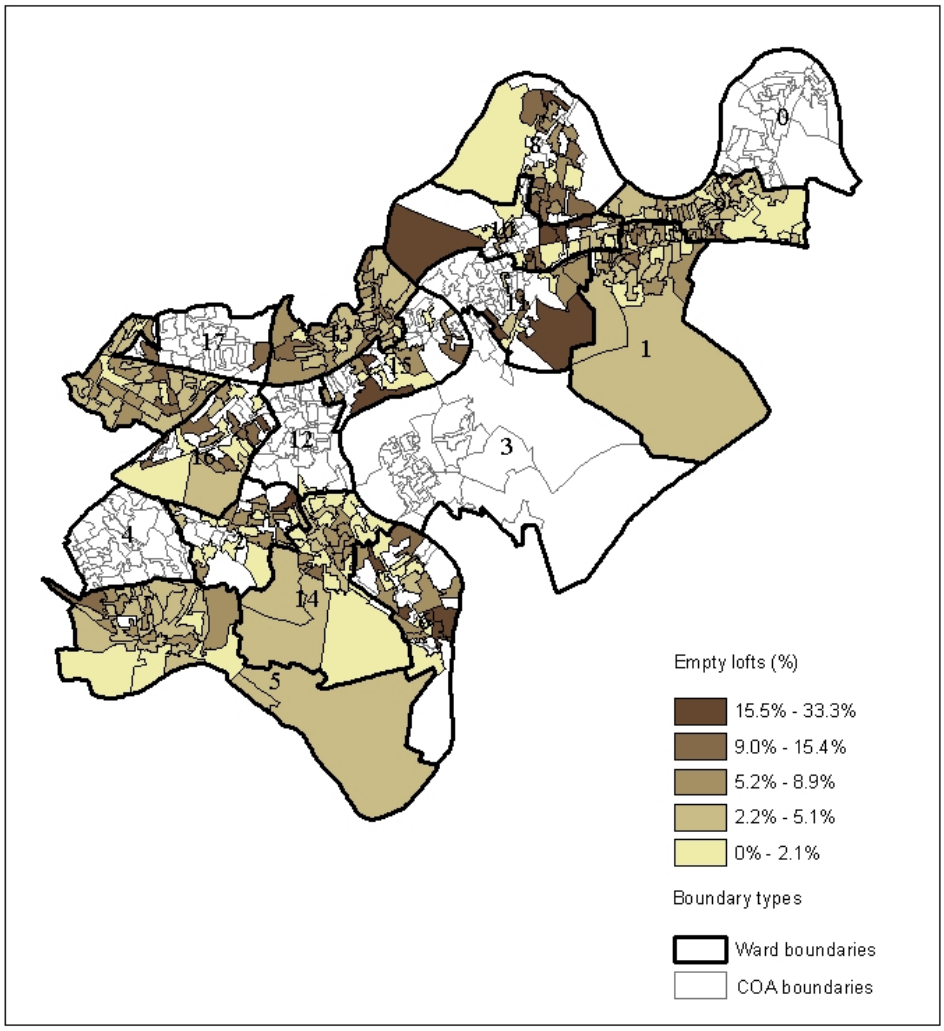


Figure 5: proportion of empty lofts in Richmond by census output area. Wards are labelled using the key numbers in table 3.

The census output areas with more than 15.5% potential are listed in table 4 overleaf, and are tentatively designated 'Hotspots'. As for the Cavity Wall insulation, the information in table 5 is in itself is not transparent, but has been included because the Census Output area codes can be used by Local Authority data departments to produce mailing lists of individual houses.

Census output area code	Housing with empty lofts
00AHGM0041	41%
00AHGZ0022	31%
00AHGZ0035	37%
00AHGZ0044	31%
00AHGZ0052	25%
00AHHB0016	26%
00AHHC0019	25%
00AHHC0020	27%
00AHHC0022	25%
00AHHC0042	29%
00AHHD0003	31%
00AHHD0005	27%
00AHHD0007	35%
00AHHD0008	30%
00AHHD0023	25%
00AHHD0041	45%

Table 5: loft insulation tentative 'Hotspot' census output areas

2.5 Demographic analysis

The demographic analysis has been conducted to screen the hotspots identified in the previous sections for the purposes of targeting. The census in 2001 provides a huge variety of demographic information, including information about:

- economic activity of householders
- tenure of households
- type of household (ie houses or flats)

We are ideally seeking:

- householders who can afford to pay for measures
- owner occupier householders

In addition, for cavity wall insulation we are seeking householders who live in houses rather than flats.

In general Richmond has a high proportion of householders in the higher income brackets, a fairly high level of owner occupancy, and a low number of houses rather than flats.

2.5.1 Analysis at ward level; confirmation of 'HotSpots'

Cavity wall Hotspots

All of the provisional cavity wall hotspot wards have favourable housing and population for a promotion of cavity wall insulation, and are therefore confirmed as Hotspots.

Ward Name	Housing with unfilled cavity walls
Ham, Petersham and Richmond Riverside Ward*	***25%***
Hampton North Ward*	***22%***

Table 6: cavity wall insulation 'Hotspot' wards

Loft Insulation Hotspots

All of the provisional loft insulation hotspot wards have favourable housing and population for a promotion of cavity wall insulation, and are therefore confirmed as Hotspots.

Ward Name	Housing with empty lofts
Whitton Ward	***16%***
South Twickenham Ward*	***12%***
Hampton North Ward*	***9%***
Kew Ward	***8%***

Table 7: loft insulation 'Hotspot' wards

2.5.2 Analysis at census output area level; confirmation of 'HotSpots'

The census output areas tentatively identified as Hotspots were filtered using census data.

Cavity wall Hotspots

All census output areas with less than 50% of householders:

- in the upper income groups
- owner occupiers
- houses (rather than flats)

were removed from the original list of proposed Hotspots. This excluded 6 of the originally proposed 9 Hotspot census output areas. The remaining areas are confirmed as 'Hotspot' areas, and are shown in Table 7 below.

Census output area code	Housing with unfilled cavity walls
00BDFY0021	31%
00BDGA0020	33%

00BDGE0024	30%

Table 7: cavity wall insulation 'Hotspot' census output areas

Loft Insulation Hotspots

All census output areas with less than 50% of householders:

- in the upper income groups
- owner occupiers

were removed from the original list of proposed Hotspots. This excluded none Hotspot census output areas. All of these are therefore confirmed as 'Hotspot' areas, and are shown in Table 8 below.

Census output area code	**Housing with empty lofts**
00BDFY0024	30%
00BDGC0001	16%
00BDGC0004	18%
00BDGC0014	18%
00BDGC0028	33%
00BDGE0031	23%
00BDGG0005	18%
00BDGG0012	20%
00BDGG0018	25%
00BDGG0019	20%
00BDGG0032	21%
00BDGJ0016	18%
00BDGJ0022	20%
00BDGM0011	16%
00BDGN0005	18%

Table 8: loft insulation 'Hotspot' census output areas

3. Proposed action plan

The HotSpots project is conceived as a tool for Local Authorities, Energy Efficiency Advice Centres, Regional Authorities and so on to use in the effective promotion of energy efficiency measures to householders. The Hotspots project has some budget for publicity, but we aim to work closely with Local Authorities and other interested partners to

The Hotspots project has a publicity budget over 2 years to promote energy efficiency measures using the findings in each of the 20 partner Local Authorities. This budget will be divided as evenly as possible between the partner areas and will be used to fund core activities as described below. However, there will be considerable scope for the core activities to be significantly strengthened by linking closely with energy efficiency promotional activities of Local Authorities and other partners.

There is considerable scope for additional activity to link with each of the activities described below. CEN can provide support with this, from providing lists of Hotspot areas not yet mailed, to providing designs and materials and support with complementary activities.

Timescale
We plan to conduct the publicity in October, November, and early December 2004, to coincide with the onset of winter.

Branding
As demonstrated in this report, the cavity wall insulation hotspots and the loft insulation hotspots are quite different. With this in mind we will be aiming for two discrete messages.

We will be aiming to support the brands currently existing (the Richmond council EnergySmart scheme), but we are keen to use an attention grabbing message that links the local area directly. We propose a ‘(many people in XXX area) haven’t got much upstairs’ ‘teaser’ message for loft insulation, and a ‘(many people in XXX area) have got cavities?’ ‘teaser’ message for cavity wall insulation.

Activity 1: Press releases.
We plan three press releases between October and December. These will be sent direct to local papers, and in partnership with Local Authority press officers.

We hope to be able to work with the councillors of Hotspot wards in press release related publicity activities.

Activity 2: Direct mailings
We plan to write to about 1250 households in Hotspot areas in each borough. There would be potential to target additional households with Local Authority support.

Activity 3: Street / outdoor posters
We are planning two or three street / outdoor posters (to be displayed in bus shelters, shopping areas, etc) in hotspot areas. The poster design will be customised to suit the specific area where the poster is located. There would be potential for additional posters with Local Authority support.

Activity 4: Targeting of discrete districts.
We plan to distribute leaflets and small posters and through local distribution points (such as libraries, restaurants, shops) in Hotspot areas of the borough. The posters will be designed with the messages already described, and will be customised to the local area. If the distributions could be arranged by the Local Authority we could divert budget to other activities.

We have not got resources to distribute letters and leaflets to houses in Hotspot areas, but we would recommend this activity in small Hotspot areas, and would provide support with materials.

Activity 5: Advertisements in Local Authority magazines.
We plan to arrange an advertisement and some editorial about the project in the Local Authority magazine.

Appendix 1: Future work

Additional data

Additional data gathering

Of the total 608 census output areas in Richmond, 295 have less than 10 surveys each and a further 82 census output areas with less than 20 surveys. If future data gathering mailings were to concentrate on these census output areas, the data analysis would be much more reliable, and would be possible across the whole of Richmond with greater precision.

We can provide details of these areas, including mailing lists or lists of full postcodes of the households within these areas, on request.

Home condition survey

The Local Authority home condition survey includes information that could be used to increase the data resolution of future strategies. However, we have had compatibility problems with home condition survey databases. If we can access home condition survey data in a suitably compatible format we will incorporate it into the HotSpots project.

Evaluation and future strategy editions

We are planning to publish a second HotSpots strategy in September 2005.

This will include any extra data that we can access in the meantime, and the strategy will also include an evaluation of the energy efficiency promotion outlined in section 3 for the winter of 2003 / 2004. This will give us a good indication of the effectiveness of the HotSpots approach, which may be modified based on the findings of this strategy.