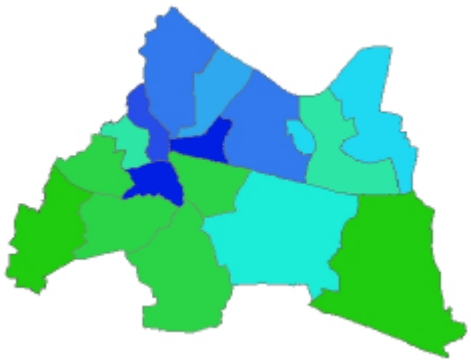
A targeting strategy for domestic energy efficiency in Dartford



An action plan to address domestic energy efficiency locally.

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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 Dartford

Contents

1. Introduction

This report is a detailed analysis of the potential for domestic energy efficiency installations in Dartford, and has been completed in partnership with Dartford Borough Council 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.

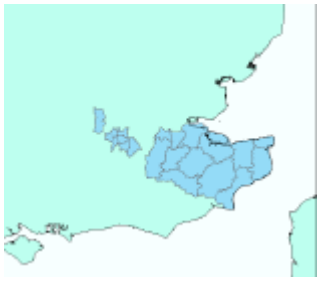
The Hotspots project meets this opportunity, and will facilitate energy efficiency improvements in domestic homes by collating this householder data in order to find and target the geographical areas with most potential for energy efficiency improvements. The project will also provide match funding to 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 Dartford 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 2.2.2).

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 Dartford 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 1 contains suggestions for future data gathering work to make the data coverage uniform.)

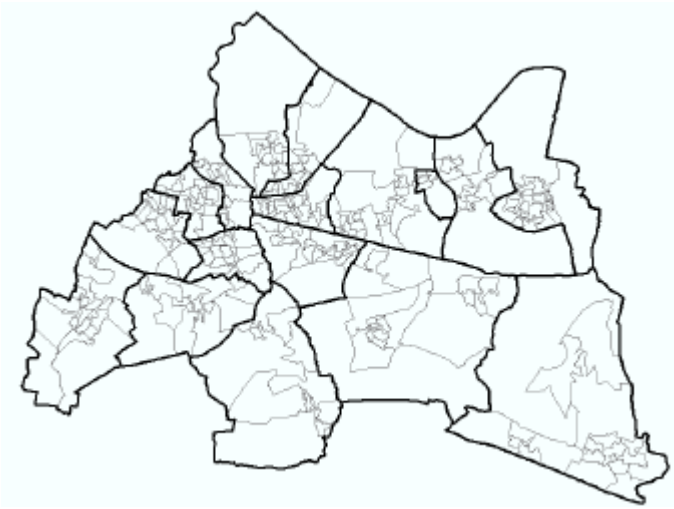


Figure 1: Dartford: ward boundaries shown in black; census output area boundaries shown in grey

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 Dartford 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 59 of the 284 census output areas in Dartford have been excluded; this makes it one of the best surveyed borough of all the Hotspots boroughs.

[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 Dartford by Ward.

The map shows that the cavity wall 'Hotspots' wards are concentrated in the South part of the borough, with quite a clear divide with the north of the borough.

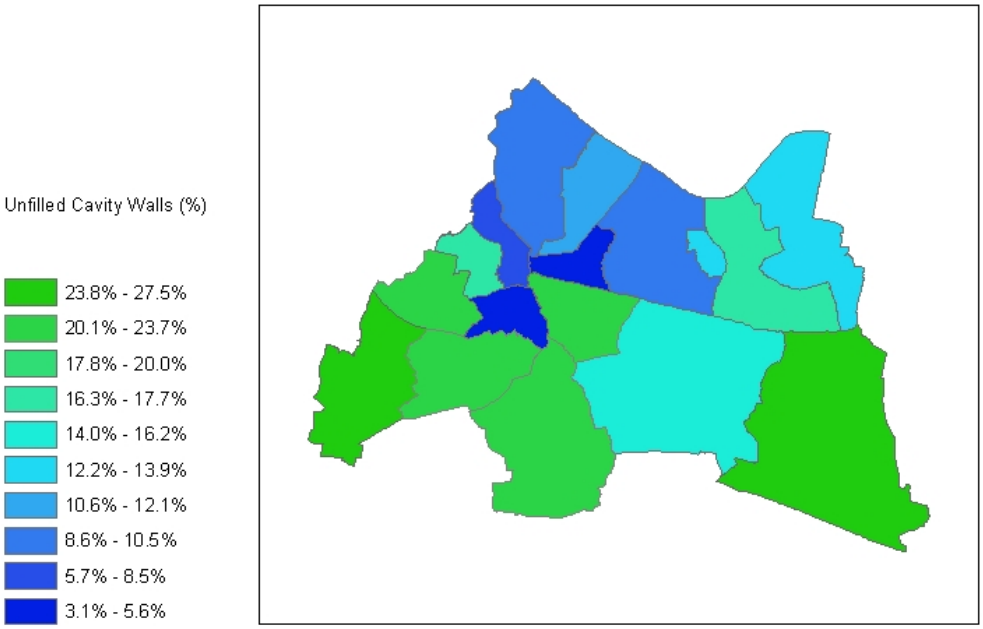


Figure 2: proportion of unfilled cavity walls in Dartford by ward

Table 1 shows more specifically that there is a dramatic range in the potential for cavity wall insulation in the various wards, with 3.4 times more potential on Joydens Wood Ward (27%) compared with Princes Ward (3%).

Ward Name	**Housing with unfilled cavity walls**
Joydens Wood Ward	***27%***
Longfield, New Barn and Southfleet Ward	***26%***
Sutton-at-Hone and Hawley Ward	***23%***
Brent Ward	***21%***
Heath Ward	20%
Wilmington Ward	20%
Greenhithe Ward	17%
West Hill Ward	17%
Bean and Darenth Ward	16%
Castle Ward	13%
Swanscombe Ward	13%
Joyce Green Ward	10%
Littlebrook Ward	10%
Stone Ward	10%
Town Ward	8%
Newtown Ward	5%
Princes Ward	3%

Table 1: proportion of unfilled cavity walls in Dartford by ward

Based on this data, the top 4 wards (those with potential higher than 20%) 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 Dartford by Ward. The map shows that the uninsulated lofts have a very different pattern from the cavity wall insulation ‘Hotspots’. In addition it shows that Dartford in general has very well insulated lofts, and no wards have more than 10% uninsulated lofts.

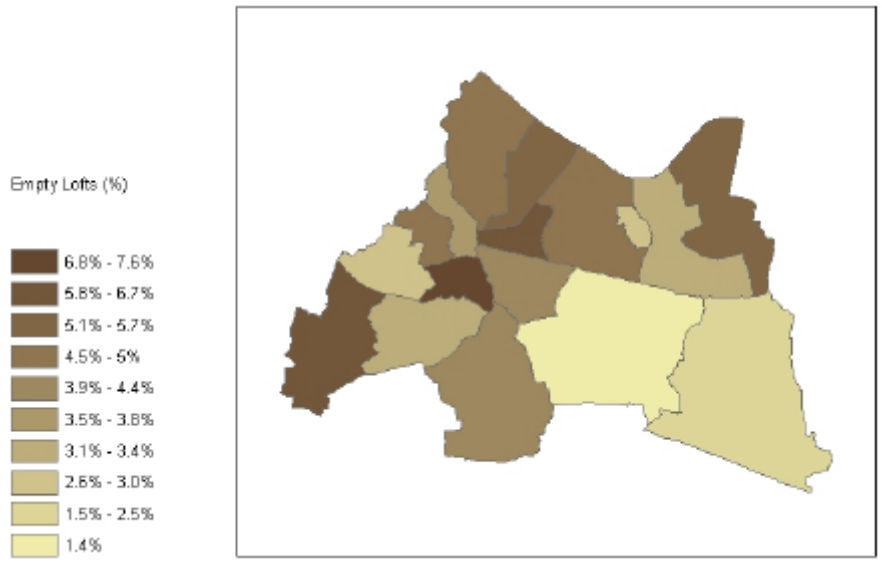


Figure 3a: proportion of empty lofts in Dartford by ward

However, the partly insulated lofts have a rather different pattern, rather similar to the cavity wall pattern.

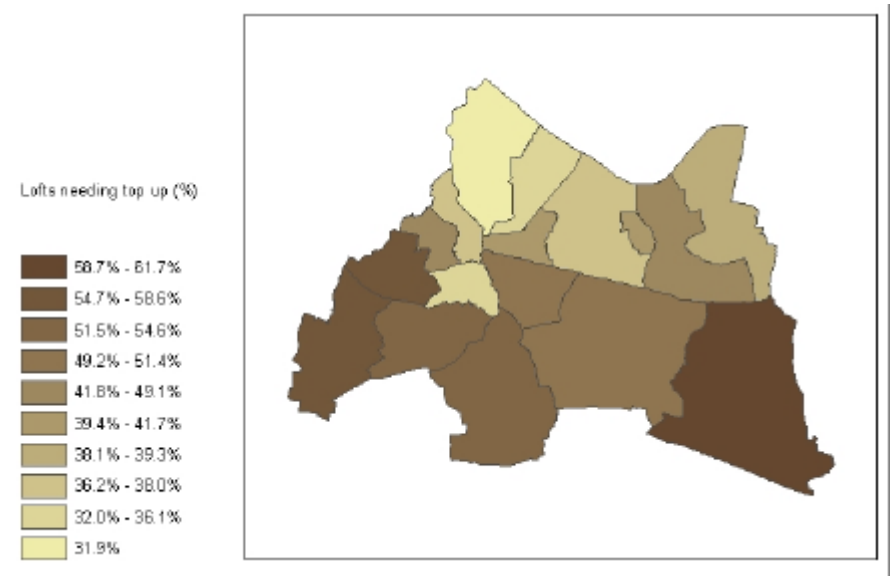


Figure 3b: proportion of lofts with less than 4” insulation in Dartford by ward

Table 2 shows the actual proportions of insulated houses in Dartford.

Ward Name	Housing with empty lofts	Housing needing top up insulation (4 inches or less)
Longfield, New Barn and Southfleet Ward	2%	61%
Joydens Wood Ward	6%	58%
Heath Ward	2%	57%
Sutton-at-Hone and Hawley Ward	4%	54%
Wilmington Ward	3%	54%
Bean and Darenth Ward	1%	51%
Brent Ward	4%	50%
West Hill Ward	5%	49%
Greenhithe Ward	3%	48%
Newtown Ward	6%	41%
Castle Ward	3%	40%
Swanscombe Ward	5%	39%
Stone Ward	4%	37%
Town Ward	3%	37%
Littlebrook Ward	5%	36%
Princes Ward	7%	35%
Joyce Green Ward	4%	31%

Table 2: proportion of empty lofts in Dartford by ward

No wards are designated ‘Hotspots’, but the data shows that it would probably be worth promoting loft insulation alongside cavity wall insulation, with emphasis on topping up partially filled lofts.

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 284 census output areas in Dartford, of which 225 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
Bean and Darenth Ward	0
Brent Ward	1
Castle Ward	2
Greenhithe Ward	3
Heath Ward	4
Joyce Green Ward	5
Joydens Wood Ward	6
Littlebrook Ward	7
Longfield, New Barn and Southfleet Ward	8
Newtown Ward	9
Princes Ward	10
Stone Ward	11
Sutton-at-Hone and Hawley Ward	12
Swanscombe Ward	13
Town Ward	14
West Hill Ward	15
Wilmington Ward	16

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 Dartford by census output area.

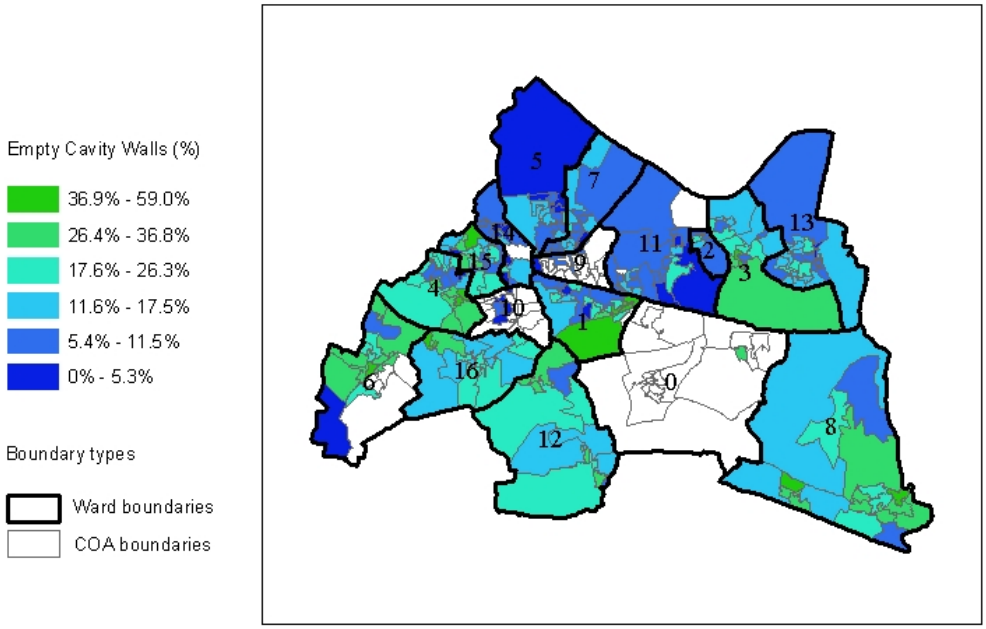


Figure 4: proportion of unfilled cavity walls in Dartford by census output area. Wards are labelled using the key numbers in table 3.

This analysis does emphasise the general Southern concentration of potential for cavity wall insulation shown in the ward 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 pockets of the Sutton at Hone and New Barn areas, as well as across Joydens Wood and the southern suburbs of Dartford.

The 40 census output areas with more than 30% 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
29UDGB0019	43%
29UDGD0003	34%
29UDGA0003	50%
29UDGA0005	50%
29UDGA0017	33%
29UDGB0004	38%
29UDGB0014	40%
29UDGB0015	45%
29UDGD0012	41%
29UDGE0002	36%
29UDGE0003	35%
29UDGE0005	45%
29UDGE0006	33%
29UDGG0001	30%
29UDGG0002	30%
29UDGG0003	32%
29UDGG0005	58%
29UDGG0006	33%
29UDGG0008	31%
29UDGG0011	32%

Census output area code	Housing with unfilled cavity walls
29UDGG0013	60%
29UDGG0014	33%
29UDGG0017	75%
29UDGG0018	33%
29UDGJ0001	30%
29UDGJ0003	34%
29UDGJ0004	35%
29UDGJ0008	32%
29UDGJ0014	40%
29UDGJ0015	37%
29UDGL0007	33%
29UDGL0008	40%
29UDGN0003	34%
29UDGN0005	32%
29UDGN0012	34%
29UDGR0003	39%
29UDGR0010	36%
29UDGR0017	30%
29UDGS0007	33%
29UDGS0008	41%

Table 4: cavity wall insulation tentative ‘Hotspot’ census output areas

2.4.3 Loft insulation

Figure 5 shows the pattern of potential for loft insulation in Dartford by census output area. The broader pattern agrees with the analysis by ward with potential concentrated in the Wards already identified as Hotspots.

There is, however, an interesting pattern that emerges within this trend. The areas with maximum potential (for convenience highlighted blue on Figure 5) are tiny, and fairly evenly sprinkled within the provisional Hotspot wards. The areas with medium potential, however, are comparatively large and fill up much of the rest of the Hotspot wards. This would seem to support a ‘broad brush’ approach to promoting loft insulation in the hotspot wards, complemented by a highly targeted approach for the small and scattered areas of very high potential.

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

The 27 census output areas with more than 9.5% potential are listed in table 4 overleaf, and are tentatively designated 'Hotspots' although typically Hotspots in other boroughs have been designated as those with more than 25% potential. 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 unfilled cavity walls
29UDGA0003	25%
29UDGB0007	12%
29UDGD0012	10%
29UDGF0013	12%
29UDGF0014	10%
29UDGG0001	13%
29UDGG0009	12%
29UDGG0018	11%
29UDGH0005	11%
29UDGH0015	10%
29UDGK0010	50%
29UDGK0012	40%
29UDGK0013	16%
29UDGK0016	50%

Census output area code	Housing with unfilled cavity walls
29UDGK0017	25%
29UDGK0020	33%
29UDGK0023	20%
29UDGL0002	16%
29UDGL0004	11%
29UDGL0007	33%
29UDGL0009	25%
29UDGL0010	50%
29UDGL0013	14%
29UDGM0004	12%
29UDGP0008	10%
29UDGP0009	12%
29UDGP0012	10%

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 Dartford has a varied proportion of householders in the higher income brackets, a varied level of owner occupancy, and a varied number of houses rather than flats. This is all positive for the project.

2.5.1 Analysis at ward level; confirmation of 'HotSpots'

Cavity wall Hotspots

The owner occupancy, income levels, and proportion of houses are all high in the wards tentatively identified as hotspots, and they are all confirmed as hotspots.

Ward Name	Housing with unfilled cavity walls
Joydens Wood Ward	27%
Longfield, New Barn and Southfleet Ward	26%
Sutton-at-Hone and Hawley Ward	23%
Brent Ward	21%

Table 6: cavity wall insulation 'Hotspot' wards

Loft Insulation Hotspots

There are no 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 2 of the originally proposed 40 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	Census output area code	Housing with unfilled cavity walls
29UDGB0019	43%	29UDGG0011	32%
29UDGD0003	34%	29UDGG0013	60%
29UDGA0003	50%	29UDGG0014	33%
29UDGA0005	50%	29UDGG0017	75%
29UDGA0017	33%	29UDGG0018	33%
29UDGB0004	38%	29UDGJ0001	30%
29UDGB0014	40%	29UDGJ0003	34%
29UDGB0015	45%	29UDGJ0004	35%
29UDGD0012	41%	29UDGJ0008	32%
29UDGE0002	36%	29UDGJ0014	40%
29UDGE0003	35%	29UDGJ0015	37%
29UDGE0005	45%	29UDGN0003	34%
29UDGE0006	33%	29UDGN0005	32%
29UDGG0001	30%	29UDGN0012	34%
29UDGG0002	30%	29UDGR0003	39%
29UDGG0003	32%	29UDGR0010	36%
29UDGG0005	58%	29UDGR0017	30%
29UDGG0006	33%	29UDGS0007	33%
29UDGG0008	31%	29UDGS0008	41%

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 8 of the originally proposed 27 Hotspot census output areas. The remaining areas are confirmed as 'Hotspot' areas, and are shown in Table 8 below.

Census output area code	Housing with unfilled cavity walls
29UDGA0003	25%
29UDGB0007	12%
29UDGD0012	10%
29UDGG0001	13%
29UDGG0009	12%
29UDGG0018	11%
29UDGH0005	11%
29UDGH0015	10%
29UDGK0010	50%
29UDGK0012	40%

Census output area code	Housing with unfilled cavity walls
29UDGK0013	16%
29UDGK0016	50%
29UDGK0017	25%
29UDGK0020	33%
29UDGK0023	20%
29UDGL0004	11%
29UDGM0004	12%
29UDGP0008	10%
29UDGP0012	10%

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 Dartford council KASH 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 284 census output areas in Dartford, 59 have less than 10 surveys each and a further 20 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 Dartford 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.

Of interest in particular is the fact that the census output areas with poor data coverage are clumped very strongly with poor data coverage across large areas. This has implications for other potential uses of the data.

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.