

Rethinking Lambeth's Local Economy

Opportunities to grow our local energy economy




TRANSITION TOWN
BRIXTON
REconomy Project

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The energy we are using

When we think of electricity and gas we traditionally think of it as a resource that comes from somewhere else, that we pay what we pay and that's it. But as climate change has become recognised by the mainstream this is beginning to change; as the increasing cost of hydro-carbon based energy starts to take up a noticeably larger chunk of their income, people are beginning to rethink their relationship with power generation and how they maintain their comfortable living environments.

Between nationally available government subsidies to encourage us to generate our own electricity, and local authorities giving out free insulationⁱ to all residents, saving them hundreds of pounds of energy bills, we are slowly turning the juggernaut and finding cost effective ways of reducing the impact we make, and protecting ourselves from changing energy markets.

Before we look at the opportunity within Lambeth to create both jobs and achieve sustainability, it is worth recalling some facts about where our energy is coming from, and what we're doing with it.

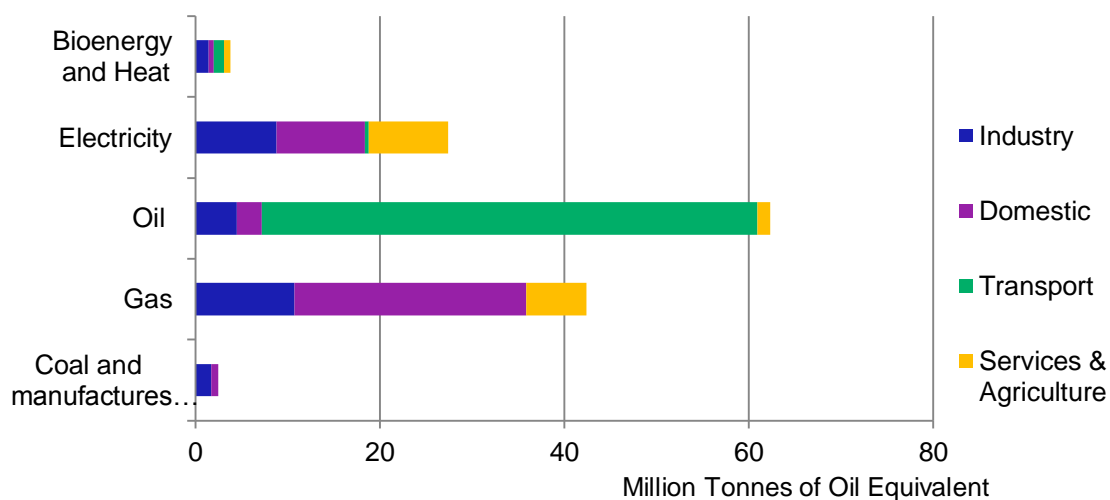


Figure 1-1 Final Energy Consumption 2011ⁱⁱ

As we see from the chart above, energy consumption in the UK is used for a wide variety of purposes. The majority of energy usage in the home is through gas and electricity usage, whilst 85% of all oil consumption is used for transportation.

With a target of 80% emissions reduction by 2050 for the UK, this means we not only need to improve the way we generate our electricity, but also reduce the energy we have to put into our buildings to keep them warm. Given how difficult it will be to remove oil from our transport system, if we are to make these emission reduction targets, it is probable that emissions caused by energy usage in the home will need to reduce by more than 80%.

In 2011 9.4% of electricity in the UK came from renewables,ⁱⁱⁱ but 75% of that was from bio-energy – historically landfill gas but increasingly millions of tonnes of imported wood to be burnt in ancient coal generating plants such as Drax Power Station at about 37% thermal efficiency. This exponentially growing market is already causing logging of biodiverse old growth forests in the southern US to be replaced by monocultures of fast growing trees.^{iv} The carbon in the trees is released as well as soil carbon in creating the plantation – which may never be reabsorbed. It also reduces net forest cover. This all creates a carbon debt which may not be repaid for decades or even centuries, at a time when we need to be drastically reducing emissions. Generating 'renewable' electricity this way is as bad or worse than burning coal.^v Anything that reduces our demand for grid electricity by energy efficiency or local real renewable generation helps reduce the global impacts of inefficient centralised energy generation.

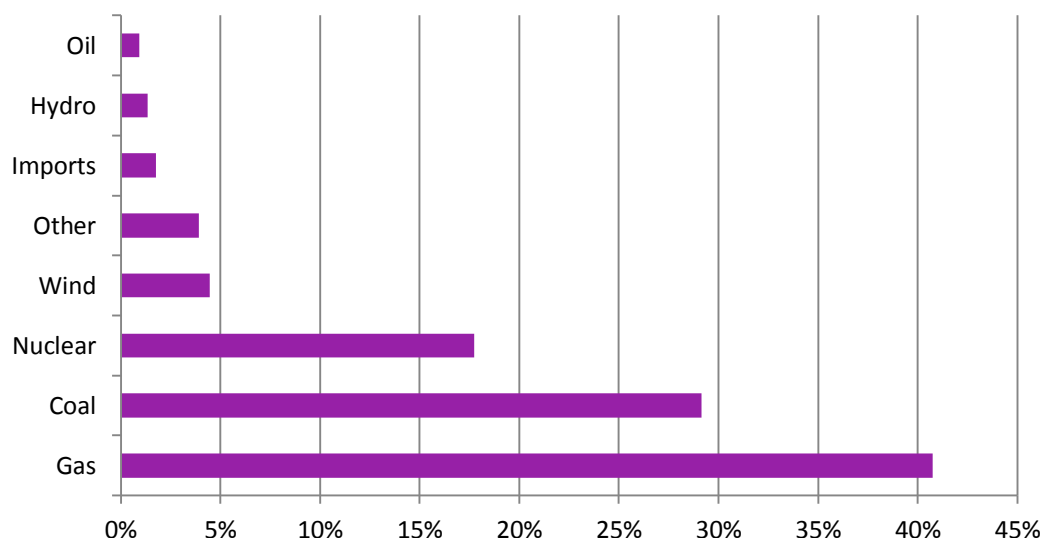


Figure 1-2: DECC breakdown of Power generation by type^{vi} (2011?)

In comparison to our 9.4% renewable energy generation in the UK, Denmark generates nearly 30% of its energy through wind turbines as part of 44% of their electricity usage coming from renewables. Portugal and Spain's economies may not be doing terribly well, but during the boom times they both managed to ensure they could achieve 50% and 30% (respectively) of their energy needs through indigenous renewable energy generation.

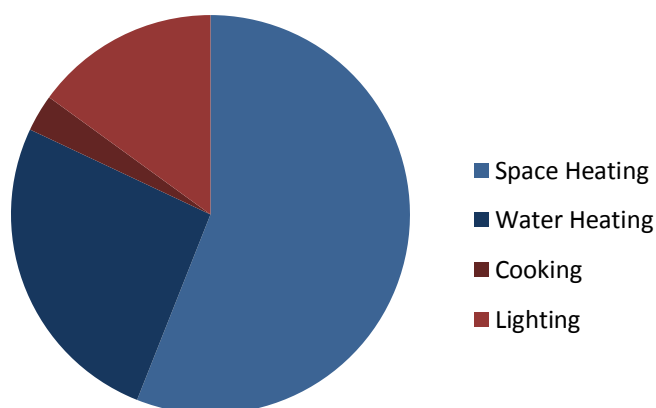


Figure 1-3: House hold energy usage by ^{vii}

When we look at how we use our energy, we see that a sizable proportion of the energy that we take out of the earth is used to keep our living space warm.

In the UK in 2011, we were a net importer of around 400 Terawatt hours of gas. 30% of that can be accounted for by domestic gas usage.

Nationally, domestic energy use breaks down to around three kW of gas for every kW of electricity. Even with a 40% efficient conversion rate from fossil fuel energy to electricity in the home, we still use more energy from gas. With around a third of that electrical energy also coming from natural gas, it quickly becomes obvious that we are critically dependent upon vast quantities of an ever scarcer resource.

Whether it's keeping ourselves warm, or supplying ourselves with electricity, this report will guide you through the opportunities that we currently have to make the most out of these changing times.

How much is it costing us?

The existing model involves us generating energy from reducing resources which, as the middle classes expand globally, are becoming increasingly expensive due to increased demand. We continue to burn a finite resource to keep inefficient homes warm.

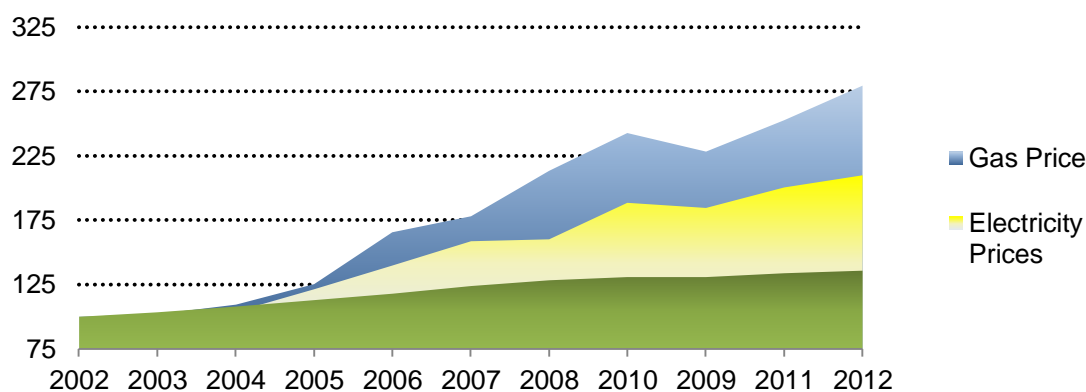


Figure 1-4: Indexed increases in Gas, Electricity and Income for the 10 years from 2002¹

As the graph above shows, the price we pay for electricity and gas is increasing at a far higher rate than our incomes. Whilst the median income has only increased by 32% over the last ten years, electricity prices have more than doubled whilst the price of gas has increased by 175%. There is no guarantee incomes will not fall as the economy continues to be affected by energy prices among other things. Scarcity against rising demand will ensure energy prices continue to rise.

In the following chapter we will examine how much money we are allowing to leave Lambeth to pay for this energy, and later in the report we will explore the opportunities to increase employment and reduce poverty within Lambeth by generating our own energy and improving energy efficiency in the home.

Local action matters

Using funds being made available at a nation level, we can explore how much of the money we spend on energy can be prevented from leaving the borough and turned into local economic activity.

Through improvements to our housing stock we can reduce the amount of energy required to heat them. Can the Green Deal and Energy Carbon Obligation be used to generate employment and local economic growth? We believe we not only can, but must to prevent rising levels of fuel poverty.

The rising cost in energy means the benefit we can get from generating our own energy increases. Already we are exploring how community owned electricity can ensure that not only the wealthiest are benefiting from subsidised generation payments, which is often the case. This is demonstrated by a direct correlation between the number of solar installations and the wealth of a given area in the UK.

Some caveats before we start

Our aim in this report is to estimate how much of the money that is currently leaving Lambeth can be redirected into the pocket of local residents and provide local jobs and opportunities for new enterprises, rather than feed the profits of large energy companies.

Already you have read many facts based on centrally sourced data sets. These central government sourced statistics provide a snapshot of the current situation.

At a national level we can be pretty sure that they give a fair reflection of the picture of our energy economy as a whole but the data available at a local level is often based on models of usage and is therefore less reliable.

Throughout this report we will do our best to highlight doubts, and where possible round figures to a representative level of accuracy. Some specific doubts about the data picture within Lambeth are highlighted below.

At present, Lambeth cannot fully interrogate how local data is derived. The council has non-standardised methods for the collection of data, the result being multiple gaps in the baseline information held.

The following areas were previously highlighted as gaps in the data in the un-adopted Lambeth Energy Strategy 2010 prepared by Christine Kinnear (ex-energy strategy officer in Lambeth):

¹ Indexing sets different prices to 100 at a given date, in this case 2002 and shows relative change.

- The information needed to provide a true picture of the council's own estate energy usage and costs is not readily available in a form that can be easily interrogated.
- At present, there is no clarity on how business energy use is broken down between the 10,000 businesses in the borough.
- It is unknown how much energy is consumed by private sector housing. Additionally, in the social housing sector, the information is not available to accurately breakdown energy use by housing block or site.
- There is no central database to track changes to the council's estate.
- The potential for district heating is not fully understood. Positively, properly used, the Decentralised Energy Master Plan (DEMaP) project has the facility to change this.
- Collection of data on renewable installations is based on national statistics for registered installations at Local Authority level.

Without a comprehensive baseline, it is not possible to determine the true current status. Without this we are able to carry out a modelling exercise to estimate, but not truly quantify the savings and opportunities.

Conscientious readers would be right to keep this in mind, but they should also observe that the potential gains we can make are so large that the errors in the data become negligible.

The Green Deal alone, with its easy access to credit, and a payment plan offset against savings in the cost of our energy bill helps to demonstrate that home improvements are guaranteed to provide benefits. If that money can be spent with local businesses, then that money can also go to work within the local economy.

If local people are being paid to carry out these improvement works, in a localised economy, then this money circulates helping to create more wealth locally. To achieve this we will require reskilling, capacity building, and improving accessibility to the market for local traders through promotion of local businesses.

It is now recognised that there is a significant benefit to the local economy when money is spent at locally owned businesses rather than with large chains that are 'centrally contracted'² and so do not spend their income locally.

The New Economics Foundation (NEF) has explored the effect of this and has developed a model called the 'local multiplier effect'^{viii}. Figure 1-5 below shows some basic examples of how local businesses keep money in the local economy.

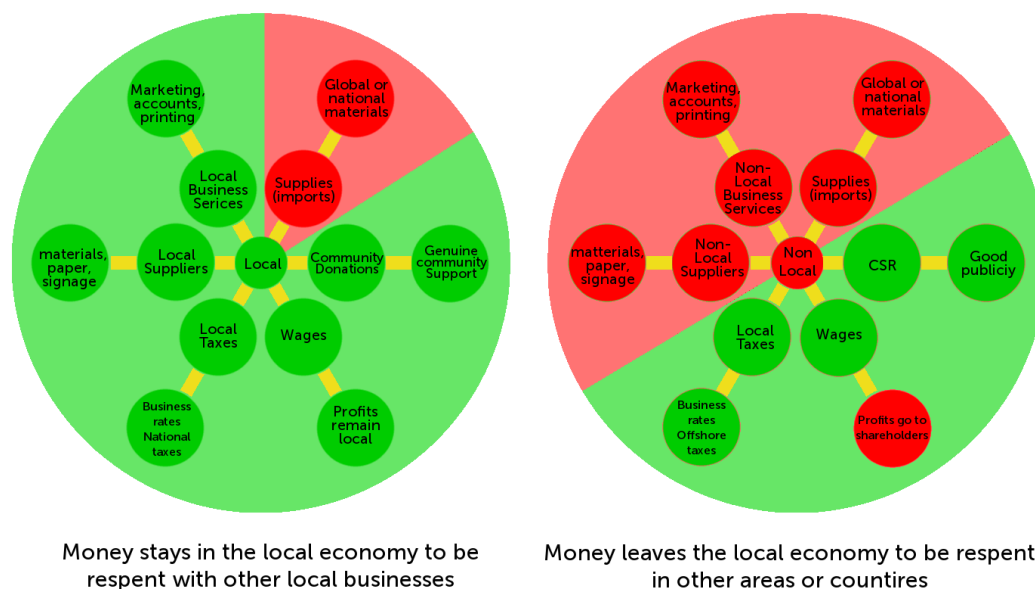


Figure 1-5: Basic local economic multiplier diagram

If we do not proactively engage with the opportunities currently available then we will find that living in our increasingly expensive dwellings will become less and less comfortable or even a health hazard, increasing the number of people facing the 'heat or eat' dilemma of fuel poverty. This will also reduce disposable income which further reduces economic activity. It has also been suggested that as budgets are squeezed it is rent and council tax that are not paid thus reducing revenue for the Local Authority and potentially leading to homelessness if rent is unpaid.

² Large chains generally do not use local wholesalers or distribution companies.

2 LAMBETHS CURRENT ENERGY ECONOMY

Natural Gas

Domestic usage of natural gas in the UK market accounted for around 33% of total demand^{ix} with a further 19% of the market being non-domestic usage.³

This means the UK market for domestic gas usage is on a par with electricity generation, which amounts to around 35% of total demand.^x

Of the 800 TeraWatt hours⁴ of Gas Energy used within the UK we have seen that a significant proportion of it is used to heat space or water. A conservative estimate would suggest we convert 65% of our domestic gas energy into making our homes warm.

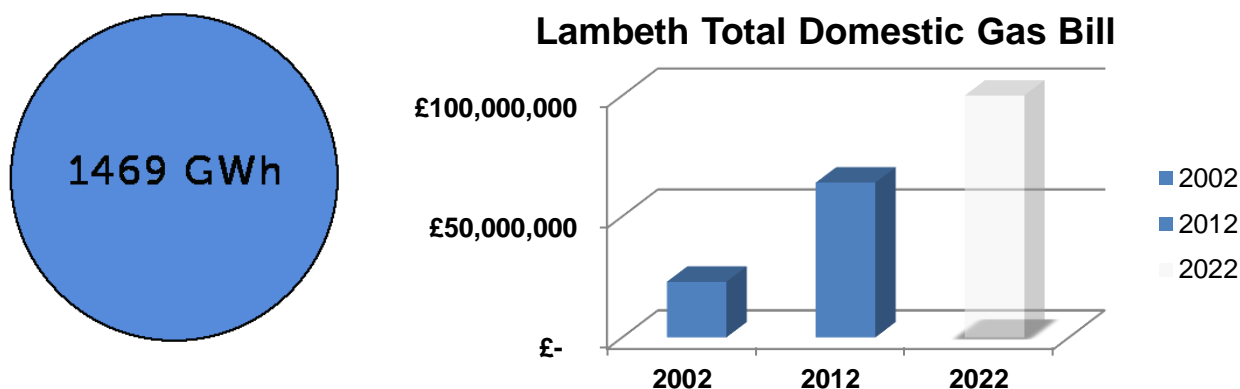


Figure 2-1: Total gas usage by domestic users in Lambeth^{xi}

Regional breakdown provided by DECC suggest that within Lambeth we use around 1469 Million kWh of gas each year. At current price rates this amounts to around £64 million pounds spent by Lambeth residents on heating water, their homes or on cooking.

We don't know how much this gas will cost us in ten years' time.

Given that there are no gas suppliers operating out of Lambeth, we can be almost certain all that money leaves the borough with no local benefit at all.

Although there is little possibility to stop this money escaping once we have used the gas, there is much that that can be done to reduce the total amount that we require.

If most of the energy we gain from gas is used to keep us warm, improving our houses' ability to retain that heat will save us much money. The investment required to reduce the amount of gas required for heating space will not only save residents money, but can also be put to work to increase employment in the borough thereby significantly increasing local benefit. If local businesses are used to carry out what is required make our homes sustainable, then increased employment can be achieved across the borough.

In section 3 we will explore what the existing data tells us about our housing stock, and quantify the potential savings which could be gained by improving its energy efficiency. In section 5 we will also explore the additional benefits which could be gained through employing local businesses to carry out the work required to make our homes efficient.

Lambeth currently spend around £64 million per year on gas, most of this energy is used to heat space or water. The price paid for the 1,469 GWh of energy they use has doubled in the last ten years.

³ Non domestic usage exclusive of electricity, heat generation, and Iron & Steel production

⁴ TWh signifies Terawatt hours, or 10,000,000,000 hours of a 100 watt light bulb or one thousand million kWhs.

Electricity Consumption

As we have already seen, most of the electricity we draw off the grid comes from sources that are both finite and cause greenhouse gas emissions.

With our ever increasing cloud of gadgets, changing the light bulbs is not going make the problem go away.

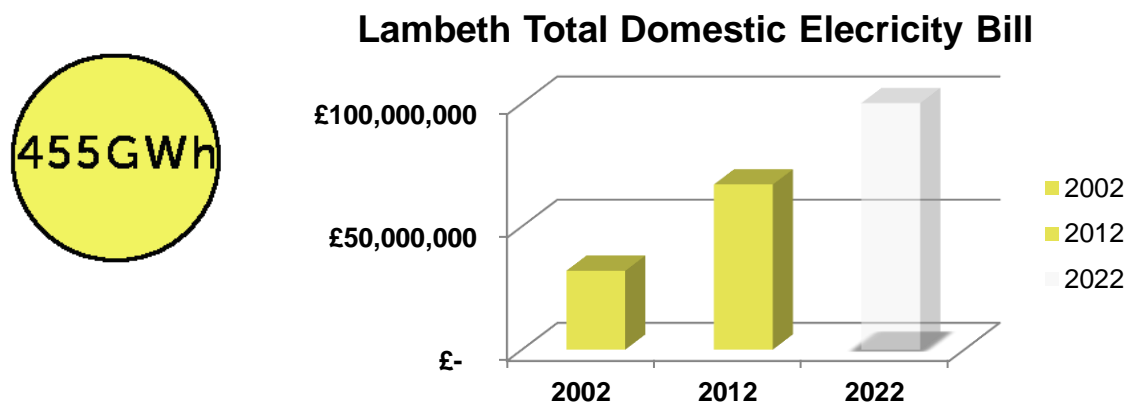


Figure 2-2: Total electricity usage by domestic users in Lambeth^{xii}

DECC statistics on electricity show that throughout the borough we use around 455 Million kWh of electricity. At average unit rates for 2012, this would make the boroughs domestic electricity bill about £67 million.

A cursory look at usage averages provided at quite localised level, DECC provide consumption figures for smaller areas than electoral Wards, suggests that electricity usage increases with income across the borough and as a general trend across London.

The rates that people pay for this electricity varies drastically depending on their payment methods. Those paying by direct debit make an average saving of 11% compared with those on quarterly bills or prepayment meters.

This often leaves the most vulnerable liable to pay the most.

Electricity Generation

Looking around the borough you occasionally see somebody who is already generating some of their own electricity.

National statistics from DECC^{xiii} state that at the end of 2012 around 236 domestic feed in tariff Photovoltaic (PV) generating sites have been created in Lambeth. Although we were not able to find the figure on PV installations which are not registered for feed in tariffs, we do know that more exist. Assuming those we know of are average installations of 3.2kW systems^{xiv}; each should be generating around 2500 kWh per annum. This makes an estimate of around 604MWh generated from small scale domestic PV.

In addition there are 16 non-domestic installations registered. The national average size for non-domestic feed in tariffs is 34kW systems; although we know Brixton Energy have installed larger power plants we will use this average for consistency. This would mean there is 544kW of capacity with an expected annual output of 430MWh

This means at present we can only conclude that we currently around 1.0 GWh of power a year, less than a tenth of one percent of our domestic electricity requirements.

In section 5 we will examine the potential to significantly increase this capacity and examine the mechanisms to ensure all residents benefit from this change.

Lambeth currently spend around £67 million per year on electricity for the home. Of the 455GWh we demand for household devices, we only generate around 1.0Gwh within the borough.

3 ABOUT OUR HOUSING STOCK TODAY

Tenure and Type

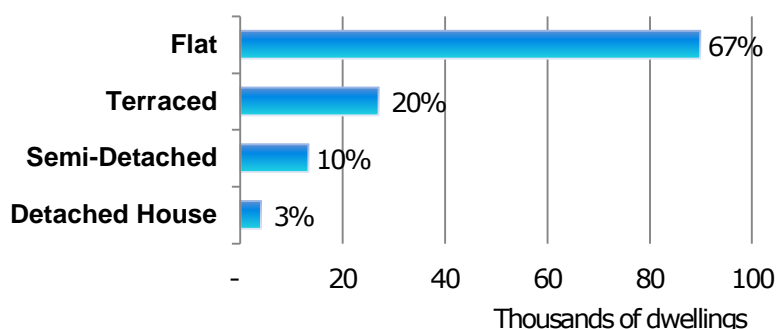


Figure 3-1: Chart showing dwelling types in Lambeth.^{xv}

According to the 2011 Census responses the vast majority of the dwellings across the borough are flats, with 67% being recorded as such. With the full 2011 Census release still pending, we are not yet able to assess what proportion of the population live in the various dwelling types.

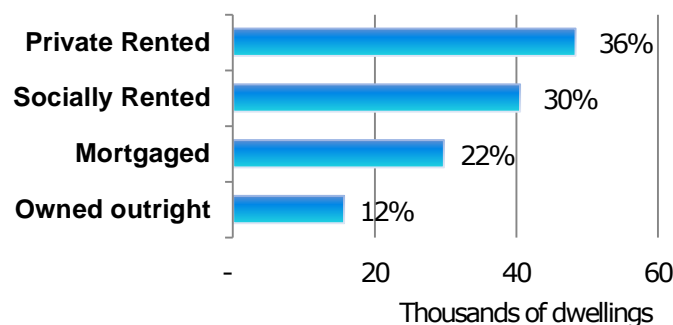


Figure 3-2: Chart showing dwellings by ownership type.^{xvi}

Ward level data from 2010 suggest that there are now more than 130,000 dwellings within the borough of Lambeth, around 90,000 private sector dwellings. Around 60% of these are now privately rented. Current proposals at a national level could lead to this market becoming far more active in energy improvement, but more of this later.

Investigating the housing stock has proved to be one of the more frustrating areas of research whilst compiling this report. With the latest report for London's housing stock not releasing a full data-set in machine readable format, and conflicting data in earlier reports we have had to make some value judgements on the data.

Using London wide maps based on a 2010 Energy Saving Trust⁵ modelling exercise carried out in conjunction with the Greater London Authority, it has been possible to make some broad assumptions about the housing stock in the borough. Even with additional datasets, mainly from 2003, we must accept that our final figures are roughly indicative.

It has been stated that as much as 58% of the housing stock predates 1919 and is solid walled and therefore hard to treat of energy efficiency, although data from the 2010 modelling suggest that this percentage is actually 62%. Of the remaining properties with cavity walls, figures from the 2010 modelling suggest that 69% remain unfilled. It should be noted that previous stock surveys have suggested this to be only 50% with empty cavities.

Again an earlier stated figure suggests 45% of dwellings do not have a loft, and the 2010 report suggests a similar value of 52%. Either way it seems around half of our dwellings supposedly have lofts, which seems unlikely when 67% of dwellings are flats.

Either way it would appear that the lofts we do have are still significantly under insulated, with around 75% having less than 150mm of insulation compared to current recommendations of 270mm.

⁵Investigations into acquiring this data suggest the raw data is only available at considerable cost.

Lambeth has a lower proportion of double glazed homes than the national average, Only 47% of the housing stock was thought to have double glazing, with this dropping to 22% in the private sector. It should be noted that this is old data and there has been significant work carried out in social housing stock with regard to replacing old windows.

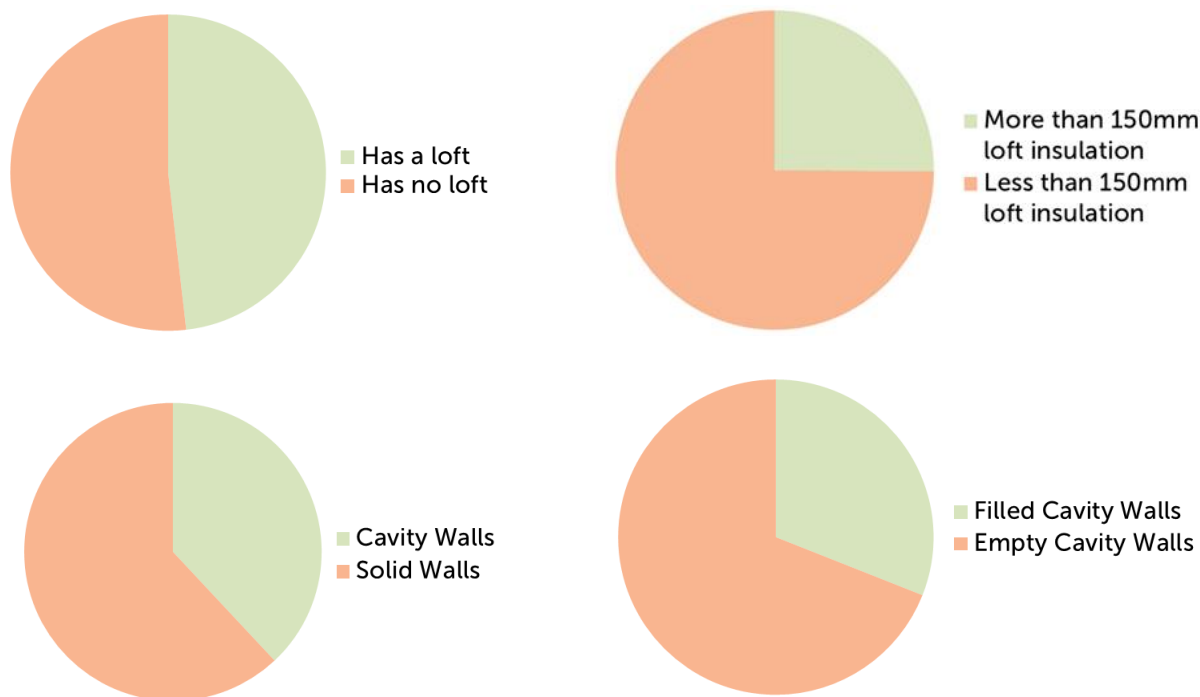


Figure 3-3: State of Lambeth’s housing stock (from Greater London Authority Maps)

Energy rating our housing stock

The Standard Assessment Procedure (SAP) is the methodology used by the Department of Energy & Climate Change (DECC) to assess and compare the energy and environmental performance of dwellings. Its purpose is to provide accurate and reliable assessments of dwelling energy performances that are needed to underpin energy and environmental policy initiatives.

Shown below is a standard energy efficiency rating certificate modified to show the stated SAP rating^{xvii} for owner occupied, privately rented, social landlords and council houses in Lambeth respectively. As we see, our social housing sector does slightly better than our private housing sector, but neither average is high.

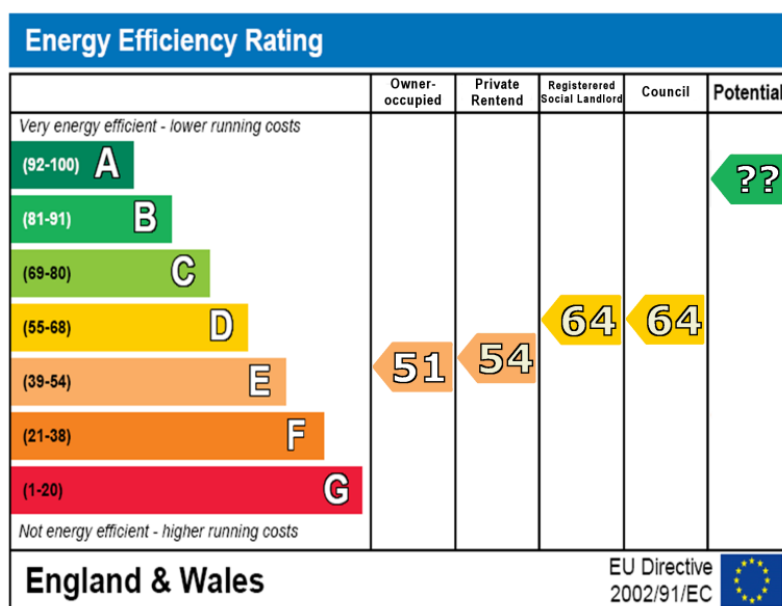


Figure 3-4: Average Energy Efficiency ratings in Lambeth

Given this low average rating we probably still have a lot of easy gains to make, with relatively cost effective ways to improve our homes' energy performance. Below are some examples of what effect some changes could have on our energy bills today.

Condensing Boiler	*47 SAP points	£225+ per year
Cavity Insulation	*13 SAP points	£100-£125 per year
Roof Insulation	*10 SAP points	£100-£125 per year
Cylinder Stat & Insulation	*8 SAP points	£100-£125 per year
Double Glazing	*4 SAP points	£10-£15 per year
Low Energy Lighting	*2 SAP points	£10-£15 per year

Table 3-1: Average SAP points and annual savings^{xviii}

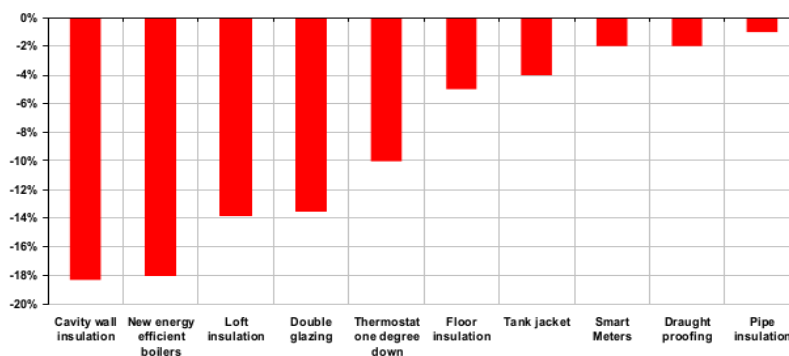


Figure 3-5: Average savings for British gas customers 2006-2009

While useful to show the potential savings, these figures do not help us prioritise local actions to improve energy efficiency over a wide range of dwelling types. What is needed is a survey that does this by evaluating ease of application and return on investment in money and carbon terms.

We had been warned that SAP surveys don't do this and our experience of Green Deal surveys is that they don't do it adequately either. Anecdotally, they often disregard the lowest tech and least expensive, which often have highest return on investment

The SAP figure improvements provided in Table 3-1 are noted as being only estimates and may be inaccurate. For instance the SAP rating gives draught proofing only a 2 point benefit. Other evaluations put the benefits very much higher. Before engaging on this project it we were warned that the data coming from these inspections can be inconsistent at best and possible provide a false picture at worst. This is highlighted by the following comment in the 'Refit West: Update from the front'^{xix} line report: "An independent survey needs to empower and to present the options to the homeowners and that current tools are insufficient. Surveys need to identify the opportunities presented by planned maintenance and upgrades."

Although some of these problems only become apparent when researching the retrofit markets, a survey carried out by YouGov for the Great British Refurb campaign^{xx} found that there is a distinct variation on whom the public would trust to deliver home improvements under a Green Deal type scheme. The fact local authorities or councils were clearly deemed the most trustworthy, but still by less than half the respondents, demonstrates the insecurity felt by the public about energy improvements to their homes.

Looking at the data provided by British Gas about savings made by their customers also highlights these issues. All the evidence from the various case studies which have been reviewed for this report suggests that the gains that can be made from energy efficiency improvements to a property are specific to property type. It would appear serendipitous that British Gas' data suggests that a service they provide is one of the best things you can do to improve energy efficiency in the home. It is also surprising that the figures they provide for draft proofing are so low, at only 2% energy efficiency improvement.

The case studies presented by Refit West^{xxi} suggest significantly higher savings can be achieved by improving airtightness whilst a study by BRE estimated consistent savings of around 30% where a distinct improvement in airtightness were found through the use of draft proofing around windows and doors^{xxi}.

Even with these inconsistent figures on the benefit of draft proofing, we can be sure that it is a vital part of any energy improving programme, there is no point stopping heat from escaping through your roof if there is a chilly north-easterly breeze blowing through your living room. Draught proofing is also exceptionally effective in cold windy weather when heat can be actively sucked out of a building. It greatly improves comfort and well-being as well as saving energy. Conservation of energy within a building should usually be a first step and could for example result in being able to specify a smaller boiler.

In the following sections we examine the potential economic activity we can generate through retrofitting our homes, and the following section reviews the potential for renewable energy in the borough

Following this we will set out some simple ways we could help residents navigate the pitfalls in this flawed energy assessment system, which is a must when you consider the amounts they may be considering spending and/or borrowing on improving the efficiency their home.

As we have seen, there is much work to be carried out to our housing stock to ensure it is fit for the future, particularly as it is estimated that somewhere between 70-80% of our current housing stock will still be in use in 2050

4 MAKING OUR HOUSING STOCK SOUND

Previous sections have explored the state of our current housing stock (demand) and then the potential for us to generate some of our own energy here in Lambeth (supply). Now we will see what we can do to reduce demand, to ensure our homes need as little energy as possible, how much that might cost, and how we can ensure as much of the capital investment required to achieve it can be put to work creating jobs for local people.

Having already discussed some of the problems with assessing the potential benefits and costs of energy saving intervention, we need to examine what can be done at scale to address the big inadequacies in our housing stock. Given that we are using data based on a modelling exercise carried out by the Energy Saving Trust for the GLA to assess the needs of the properties, we will also use their estimates on the costs and benefits of energy saving interventions. All the data below is based on their figures unless otherwise stated and can be reviewed on their website. As before we should remember these figures are indicative but are accurate enough for the purposes of this report.

Draft proofing

Unfortunately we do not have an assessment of the number of properties within Lambeth which have already had draft proofing treatments.

What we do know is the payback for this intervention is almost instant. The average materials cost for draft proofing an average home is around £100 and the savings are £60 a year off your energy bill.

If this message can be spread across the borough, with support for tenants in convincing landlords and funding secured to support those living in poverty, within 2 years every household in Lambeth could already be making significant savings on their energy bills.

Of course many people may want draft proofing professionally installed for them. It is estimated that a professional would be expected to charge a £100 labour cost for this service.

With no comprehensive data on what houses in Lambeth could benefit from draft proofing, we have assumed that at the very least the majority of homes without double glazing can benefit from treatment. With a comprehensive programme on-going to replace social housing stock windows, this leaves us with the 78% of private houses which are recorded as not having double glazing.

Based on the assumption that only 25% of these will decide to have this work carried out professionally, a minimum of 19,000 homes would still provide local economic benefit from draft proofing to reduce their energy consumption.

If we assume it takes a day for each property, at a £100 a day, this would generate the 75 years' worth of full time employment.

Loft Insulation

Data used suggest there are 47,000 dwellings with lofts that have less than 150mm of loft insulation, and around 10% of these have less than 50mm.

The cost of boosting a loft with 150mm of insulation to 270mm could be up to £300, but we will assume £200 for our model. Boosting those with 50mm or less it is predicated to cost at least £300. Doing it yourself would save around half that cost.

Experience tells us that these figures do not tell the whole picture, with possible additional costs for removing and reinstating items stored in the loft, along with any modification which might be required to maintain storage if insulation thickness is greater than the depth of the rafters could also generate further economic activity.

The savings a household can make each year from boosting their insulation levels vary depending on the starting point. For those who have less than 150mm it may be as little as £25 a year, for those with less than 50mm it could be as much as £180.

If all these lofts could be treated, various economic activity generated around work to 47,000 homes is likely to value at least £10 million.

Although the savings and overall cost of carrying out this work vary with the level of thickness of insulation required, the time to carry out this measure would not, meaning improving moderately well insulated lofts would need to be carried out in conjunction with other work.

Again we can assume that it would cost around £100 a home to do the work, meaning we could create full time employment for 180 people for a year.

Wall insulation

With loft insulation and draft proofing it is a pretty simple exercise to assess the potential savings and opportunity available in the borough. Draft proofing can be carried out to individual properties and so easily charged to an individual. The same will be true for the majority of lofts most will be on houses, and even where houses are split into a small number of flats it would appear a relatively simple exercise to find a way to split costs between two or three households. If that could not be agreed then there is a good chance those living on the top floor would accept the savings are sufficient for them to cover the costs alone.

The relative costs and benefits of wall insulation will require us to make further assumptions based on the data that we have. We know the split between solid walled and cavity walls within the borough but not what type of dwellings they relate to ie house or flat. For the purposes of our model we will simply split the wall types between different dwellings.

Another barrier to estimating this market is that there is very little evidence on how owners of flats will feel about splitting the costs for an entire building, one of the major flaws of the Green Deal is that it could only take one dissenter to stop an entire block of flats from insulating their walls. This will be discussed further in the final section of this document, where we will discuss options for funding the work outlined in this section.

Cavity Walls

A cavity wall is pretty easy to identify by the pattern of the brickwork but where the home owner is unsure if the building has filled cavities, more investigation is required.

A cursory search on the internet suggests there are currently no cavity wall installers operating in Lambeth although this may not be the case.

Our data suggest that 35,000 dwellings in Lambeth currently have untreated cavity walls. With heavy plant and experience required to carry out this work we can safely assume that very few home owners would attempt to carry out this work themselves.

If we assume empty cavity walls are split evenly amongst the different dwelling types in Lambeth then we estimate that there would be 23,000 flats, 7000 terraced houses, 3450 semi-detached and 1000 detached houses which require cavity wall insulation.

The average cost to fill the walls of an average detached house is £500, we will therefore assume that with only 3 walls a semi will cost £375, and a terraced house will cost £250⁶. With the economy of scale offered by a block of flats we estimate £100 per dwelling to insulate flats.

Savings to our average home from filling these cavities are £140 per year, and for simplicity in our model we will assume that these savings reduce at the same rate as the cost of insulating them.

Unlike with our previous model we do not have costs for DIY installations so cannot definitely split our labour costs for this work. But assuming 2 people employed for a day per average house which means 40% of the cost of this work goes on labour.

If all the empty cavities in Lambeth were to be filled our model suggest we would be able create 230 years' worth of full time employment.

Solid Walls 62% of Lambeth dwellings are solid walled, often referred to as hard to treat. That equates to 82,000 dwellings. In order to insulate them it requires something to be fixed to the walls, either rendered or clad external insulation panels, or some form of internal insulation fixed to the inside of the walls.

The relative merits and barriers to using either type of insulation are varied and numerous. During our research we have found some doubt whether the assumed insulating properties of untreated walls are correctly estimated, with one report suggesting many are better at retaining heat in the home than they are given credit for. Those with a specific interest in this area are recommended to consult the Refit West reports referenced earlier in this document or the more specific Solid Wall Insulation in Scotland^{xxii} produced by Change Works.

We will continue with our simplistic model which will assume that solid wall buildings are proportioned equally amongst the dwelling types in the borough and that half will have internal insulation and half external. With no figures on solid walls which have already been insulated in the borough we will assume that the current number is negligible.

⁶ This does not take into account end terraces but we do not have data on average terrace length

Internal Solid Wall Insulation

We assume 41,000 of our solid wall dwellings will use the less expensive internal wall solution to improve their homes efficiency. Split between dwelling types we have 27,000 flats, 8000 terraced houses, 4000 semi-detached houses and 1200 detached.

Our base figure for internal insulation is £7,000, with a similar proportional split to the cavity wall costs we assume a semi-detached house costs £5,000, a terraced house costs £3,500 and a flat costs £1,400.

The estimated savings from these interventions is distinctly higher than cavity wall insulation with an average gas heated home expected to save around £460 pounds per year.

If we stick to our conservative estimate of labour accounting for 40% of this work, externally insulating half the solid wall homes in Lambeth would provide 1600 full time jobs for a year at £100 per day.

External Solid Wall Insulation

That leaves 41,000 of our solid wall dwellings using the more expensive external wall solution to improve their homes efficiency. Split between dwelling types we have 27,000 flats, 8000 terraced houses, 4000 semi-detached houses and 1200 detached.

Our base figure for external insulation is £12,000, with a similar proportional split to the cavity wall costs we assume a semi-detached house costs £9,000, a terraced house costs £6,000 and a flat costs £2,400.

The estimated savings from these interventions are again distinctly higher than cavity wall insulation with an average gas heated home expected to save around £490 pounds per year.

If we stick to our conservative estimate of labour accounting for 40% of this work, externally insulating half the solid wall homes in Lambeth would provide 2750 full time jobs for a year at £100 per day.

Boilers and tank insulation

As we have already seen, there are significant benefits which can be achieved by installing more efficient boilers. Ensuring hot water tanks are properly insulated has an almost instant payback time. Unfortunately for our modelling purposes we do not have data on the current efficiency ratings for Lambeth's boilers or how many homes still have (un-insulated) hot water cylinders and are therefore unable to estimate the potential in this market.

What we do know is that an average of 10% of all properties does not have any form of central heating. Fitting energy efficient boilers and heating within these homes, along with the upgrade of old boilers where needed, could provide another significant source of employment.

Double Glazing

On average homes can save around £170 per year by replacing single glazed windows with well fitted double glazing or £105 with secondary glazing. With only 22% of our private housing stock having double glazing this means there are around 70,000 homes could benefit from double glazing. The cost of this is hard to measure with varying prices depending on the type of installation and numbers of windows in a dwelling. These variations also mean that payback on windows can vary widely between properties.

	Draft Proofing	Loft Insulation	Cavity Wall Insulation	External Solid Wall Insulation	Internal Solid Wall Insulation	Totals⁷
Number of Dwellings receiving improvements	19,000	47,000	35,000	41,000	41,000	183,000
Total Cost	£3,800,000	£10,000,000	£15,000,000	£179,000,000	£104,500,000	£320,000,000
Total Wages Paid	£1,900,000	£4,700,000	£6,044,642	£71,635,200	£41,787,200	£130,000,000
Full Time Employment (Years)	75	180	230	2,750	1,600	5,000
Total Household Saving per Year	£1,140,000	£1,903,000	£4,231,000	£7,312,000	£6,865,000	£22,000,000
Total Energy Saved per year (% Lambeth Total Heating)	1%	4%	10%	17%	16%	33%
Estimated carbon reduction (tonnes)	1900	7600	16900	29300	27500	83,000
Years to get payback	3.3	5.2	3.6	24.5	15.2	15
Year to cover material payback	1.7	2.7	2.1	14.7	9.1	8.8

Table 5-1: Potential savings, job create and payback time for various energy saving measures.

A brief comment on new builds

If Lambeth were to follow national trends, around 26,000 new dwellings will have been built by 2050, at current rates within Lambeth it would be nearer to 40,000 new properties.

Even if these homes were not to add any additional dwellings to the total number of around 135,000 dwellings, between 70% and 80% of our existing homes will still be used in 2050. Although the measures outlined above will go a long way to making these homes energy efficient and liveable, we must ensure that any new housing stock performs even better.

Another imperfect way of measuring energy efficiency, BREEAM certification is often used to demonstrate the effect new developments have on the wider environment, inclusive of elements such energy efficiency or effect on the local ecology.

The graph below shows the total numbers of BREEAM certificates issued at planning and following construction. As can be seen there has been significant variations between what is being promised by developers, and what is signed off at the end of the build.

⁷ All totals rounded to reasonable level of accuracy.

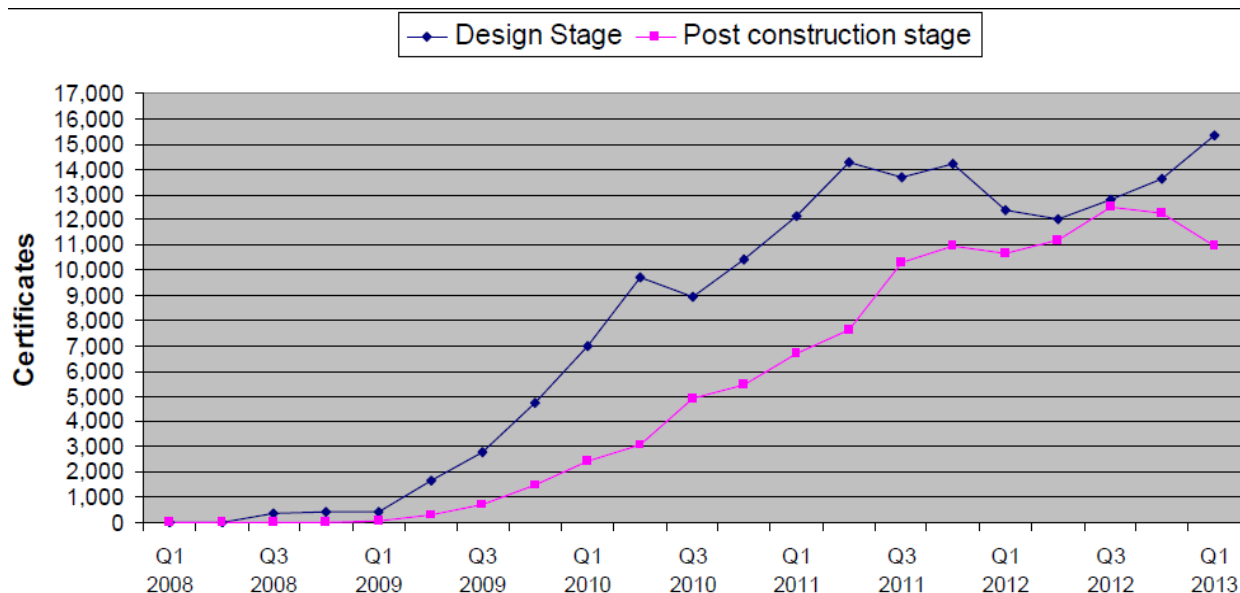


Figure 4-1: BREEAM certificates issued at planning & Post construction

This failing of new housing stock is also highlighted by the average SAP rating of 78.4 which, although significantly higher than the averages of our existing housing stock, is still only category C for energy performance certification.

To ensure new housing meets the standards required to maintain our comfortable living standards in the future we must ensure that what is built lives up to the designs which are submitted at planning. Best use of the planning laws must be made to this end; where possible those involved with retrofitting our existing stock could work with Lambeth Planning to help ensure exacting standards are met.

If we have trained workers surveying and installing retrofit treatments to our existing housing stock, every effort should be made to provide them work within new build schemes. By ensuring we have a highly skilled workforce ready to work on these new build projects, we can leave developers no excuses to skimp on energy efficiency.

How do we get past the barriers to sustainable housing?

The figures presented in the previous section are at the conservative end of the range of potential economic activity that could grow out of making our homes more sustainable. If works can be financed and residents can be educated to carry out the work, there is a huge potential for job creation. The strength of the market is demonstrated by continued growth in the green economy throughout a sustained period of economic contraction or stagnation within the wider economy. Between 2007 and 2010 economic turn over in the green economy rose by 14%, whilst GDP shrank by around 3%.^{xxiii}

Much of that growth may have been through government subsidies that have been drastically reduced, but there have also been significant reductions in the cost of solar generation in that time, and there now ways of financing energy efficient retrofit even if home owners do not have the capital that many home improvement projects require.

To further increase the proportion of the capital spending which benefits the local economy, setting up a local Green Deal bank or working with national bodies Transition Network to find a more equitable way to fund these projects should also be considered as long term projects. These schemes may be able to reduce insecurity around changing subsidies and high interest rates on Green Deal loans.

What is often overlooked is that frequently there is a knowledge gap with consumers about how to maximise their benefit from renewables or home efficiency improvements. For example, the return a consumer can get from PV on their roof is maximised by switching as much electricity usage as possible to the day, and that installing external wall insulation will have very little benefit if leaky sash windows are not replaced or draft proofed.

Consumer confidence

We have already touched on some nationally recognised issues of trust and understanding of potential gains, particularly in relation to energy inspections, but before we outline the next steps that can aid Lambeth in becoming a beacon borough for sustainable energy consumption we must first recognise what may stand in our way.

Starting at the beginning, issues with consistency and trust exist around energy saving advice at present. If we were to subsidise training for a group of SAP inspectors who, although working independently and being paid by households,

would ensure we have an accurate record and common methodology across the borough. Having a Coop Council or Transition Town stamp of approval could drastically increase homeowners trust, as demonstrated by respondents to the Great British Refurb's^{xxiv} survey on attitudes to the Green Deal.

Do we have the capacity to carry out this work?

Local economic development can only be gained from these works if we have the skills within the borough to carry them out.

Several local people who work in this area claim that the Lambeth College renewables training centre is massively under used. We need to understand why this is and promote its potential.

Further opportunities to provide learning facilities should be grasped through partnerships with learning providers, work which is already being carried out by Lambeth's Green Skills Partnership. Learning in this area needs to be holistic so that you are not only training people the skills to draft proof a house or insulate a loft, but also business management and finance skills so they feel confident to work as independent consultants and contractors.

Many of our houses are hard to treat

With a large percentage of solid wall houses in the borough, with their associated additional costs to insulate, there will be a lot of work to do to convince people to invest in energy efficient properties and encourage uptake of the finance mechanisms such as the Green deal.

Lambeth also has 8 conservation areas which legally removes the option of externally insulating the fronts of those homes. On the other hand there are a growing number of internal insulation options, which admittedly have a range of effectiveness, and also a range of level of disruptiveness to the household.

Where residents might not accept the idea of temporarily leaving their home and removing their belongings to allow solid block internal insulation work, they might be more interested in flexible rolls of thermal insulating material which goes up in a similar manner to wall paper.

Does the funding available work for our residential mix?

Whilst reviewing funding options available to the Borough it has become clear that many people criticise the Green Deal. One of the biggest criticisms is that the interest rates on the loans are far higher than the average market rates. The process change from the previous system has also been managed very badly meaning a massive drop in works being carried out.

Figures attributed to the Cavity Insulation Guarantee Agency suggest that cavity wall installations fell 97 per cent in April 2013^{xxv} compared with the same month in 2012. Nationally 1,138 installations were completed in April 2013, down from 49,650 in April 2012.

Where home owners are likely to stay in their homes for a long time it may well be worth them taking out a private loan for the energy efficiency improvements and we should not be afraid to advise this.

The major benefit of the Green Deal though is that it is attached to a home, so if you stop living somewhere you stop paying for improvements, and it has a very low credit rating requirement. Guidance states that 80% of people would be eligible for a Green Deal loan, considering only 69% of the population own property this means practically all the private housing stock should be eligible for a loan providing they meet the 'golden rule' of being able to pay for the work within 25 year though energy savings is in place.

One of the benefits of the Green Deal is that landlords can use it to improve their properties and then it is paid off through costs attached to their tenant's monthly gas and electricity bills.

Further changes to regulations in 2016 will mean that landlords will not be able to refuse reasonable requests to improve the energy efficiency of their property. The facility to force a landlord into taking out a Green Deal needs to widely be marketed to Lambeth tenants to ensure this opportunity is not lost.

There is also a massive barrier to flat owners taking advantage of the Green Deal in that it will require all residents in a block to agree to sign up to it for some improvements. To facilitate this, the Transition Streets model needs to be promoted, where residents are encouraged to get together to work together towards improving energy efficiency in a single street. Lambeth could pioneer the idea of Transition Blocks, where private flat owners act in the same way.

How do we ensure social housing is not left out?

Funding for social housing stock improvements is still a problem. The Energy Company Obligation (ECO) is designed to provide opportunity in this area. ECO is the Government's new domestic energy efficiency programme designed to replace the previous obligations of CERT (carbon emission reduction target) and CESP (community energy savings programme), both of which came to a close at the end of 2012.

2.2 ECO creates a legal obligation on the big six energy suppliers to reduce carbon emissions and fuel poverty by improving the energy efficiency of domestic households through the establishment of three distinct targets:

- **The Carbon Target** (20.9 million lifetime tonnes of carbon dioxide, worth some £760m/year in funding). Focusing on hard to treat homes and, in particular, measures that cannot be fully funded through the Green Deal as they do not meet the 'golden rule'. Solid wall insulation and hard-to-treat cavity wall insulation are the primary measures that the Government intends to be funded under this target. Other insulation measures and connections to district heating systems are also eligible as secondary measures if they are promoted as part of a package that includes solid wall insulation or hard-to-treat cavity wall insulation (the primary measures).
- **The Carbon Savings Community Target** (6.8 million lifetime tonnes of carbon dioxide, worth some £190m/year in funding). Focusing on the provision of insulation measures and connections to district heating systems to domestic energy users that live within an area of low income (the lowest 15% of areas ranked on the Index of Multiple Deprivation). This target is very similar to the previous CESP obligation.
- **The Home Heating Cost Reduction (Affordable Warmth) Target** (£4.2bn of cost savings, worth some £350m/year in funding). Requiring energy suppliers to provide measures which improve the ability of low income and vulnerable households (the 'Affordable Warmth Group') to affordably heat their homes via the promotion of heat qualifying actions. A heat qualifying action is the installation of a measure that will result in cost savings; or the replacement or repair of a qualifying boiler. This target is aimed solely at the private sector.

Within the council a working group has been set up together with Lambeth Living to maximise ECO funding for Lambeth's own housing stock (to dovetail into the current Lambeth Housing Standard programme).

For the private sector they have a memorandum of understanding with Climate Energy to deliver Affordable Warmth in Lambeth under the banner of Coldbusters - their private sector team can refer people who could qualify for this to Coldbusters, and they are looking into targeting people on qualifying benefits with a mail out early autumn.

How much these funds can achieve if distributed evenly is questionable. A quick review of Lambeth Index of Multiple Deprivation finds 31 eligible super output areas. These areas would be eligible for £1.2 million if they were to get an even share of the Carbon Saving Community Target, or the equivalent £55 per household per year.

It should also be noted that delivery of these projects are managed by the energy companies. It would be advisable for the borough to ensure they carry out surveys too to ensure they get the most effective benefits from these funds. Having energy companies carry out improvements may also cut out the possibility of ensuring work goes to local residents.

The feed in tariff has nearly halved for solar photovoltaic

A lack of clarity about the value of the feed in tariffs and eventual 44% cut in the unit rate paid have had a decimating effect on solar PV installations nationwide with some reports claiming that installation rates have dropped by as much as 75%.

Many people who may have installed a system at the old rates are currently unsure on whether it is still financially worth installing one now. What has been less widely reported is that the initial cost of a system has also dropped by around 30% since the introduction of the tariff.

This reduced feed in tariff rate now means when looking at solar as a purely financial investment the return on a solar panel is probably lower than which could be gained through more traditional investments, but an efficient, well-placed 3kW system could still be expected to pay for itself within 11 years. The nearer you get to the 4kW maximum the better return you get and with the facility to pay for panels using the Green Deal, and the more cunningly you use your electricity the greater the return.

This reduction in the financial gains that can be made from individual solar installations means that there are more compelling arguments for the Transition Streets model, encouraging rows of terrace houses to install community power plants to reduce individual installation rates can help increase annual returns on investments.

5 THE FOLLOWING SECTION EXAMINES THE ELECTRICITY GENERATION POTENTIAL WITHIN LAMBETH, BOTH FROM SMALLER SCALE DOMESTIC INSTALLATIONS, AND THE LARGER SCALE BUSINESS OR COMMUNITY OWNED PROJECT. WE WILL ALSO LOOK AT OTHER POSSIBILITIES FOR GENERATING ELECTRICITY WITHIN THE BOROUGH. RENEWABLE ENERGY POTENTIAL

We also need to ensure that our energy supply is secured for the future. The UK's relatively low levels of investment in renewables will mean consistent rises in the unit price we pay for electricity pegged to the rising cost of primary energy. If we don't want to continue the trend of the last ten years, a doubling in energy costs, we need to start generating electricity locally.

In this section we will explore the potential and practicality of renewable generation in Lambeth, along with a brief note on why other potential electricity sources have been discounted as inappropriate for our urban environment.

Photovoltaic Generation

Domestic Photovoltaic Generation

Lambeth has high levels of poverty in some areas, with a significant proportion of the population living in social housing. There are also plenty of owner occupiers and privately rented homes in the borough.

For the purposes of this report we will assume that flats are more difficult to fit solar panels on due to leasehold/freehold issues and the shared responsibility to maintain the roof. As we saw in section 3, 38% of the dwellings in the borough are houses which is about 44,000 properties.

Given the potential for shading with our high density of houses and flats, and the fact that a proportion of these houses will not have roofs facing in the correct direction, we will take a conservative estimate of 1 in 4 of these houses has the potential for an efficient solar installation.

This would still mean we have around 11,000 homes in Lambeth which could potentially benefit from a PV installation on the roof. Assuming a 3.2kW average^{xiv} installations then they would have a combined generating capacity of 35MW which could be safely expected to generate 28 GWh each year, or an additional 4% of our current electricity requirements.

It should also be noted that 60% of these houses are terraced houses. Solve the problems of installation for one house you have in principle solved it for the row which creates opportunities for economies of scale, clubbing together to buy panels, order scaffolding, commission one installer to do all etc.. Although bringing together all the households in a street may have some complications, it also has potential social and financial benefits. A pilot programme called Transition Streets^{xxvi} in Transition Town Totnes, has recently helped facilitate this kind of energy generation. Working in this way is not only a chance to find economies of scale, but can help form stronger local communities.

Although Solar Photovoltaic installations are not as profitable as they once were, under the original feed-in tariff regime, there is still a possibility of making a good return on investments. Making this clear to home owners, especially those considering taking advantage of the green deal, is the first step towards increased uptake.

Brixton Energy

Brixton Energy have already started to change our relationship with electricity within the borough. Through community-funded projects they have already installed over 134kWp of solar power generation. This installation provides a 3% return to investors and energy from the installations is used to provide power to communal areas within the blocks of flats on which they are installed.

Beyond the small reduction in energy cost to the residents of the block, and the returns received by investors in the installations, Brixton Energy also provides a community energy efficiency fund (CEEF).

With only two installations completed, this fund had already been used to provide:

- **Work experience:** Brixton Energy Solar 1 Co-op provided Kevin Wilson of Neville House a two-week work placement with Southern Solar on the renewable energy installation.
- **Home Energy Audits:** Two home energy audits were conducted at Elmore House and Styles Gardens that included installation of energy saving measures such as energy efficient light bulbs and energy saving power down plugs.

- **Energy surveys:** During the last eight months, the Brixton Energy team has conducted energy surveys on the estate that demonstrated that more than half of those residents spoken to were interested in information on saving money on energy bills and related project activities.
- **Energy Advice sessions:** Six energy efficiency advice sessions were delivered at the Brixton Customer Centre on Brixton Hill. A total of 132 people were spoken to, of which a significant number were spending more than 10% of their income on space heating and electricity.
- **Local leadership:** Two members of the Brixton Energy management team are residents of the Loughborough estate and continue to be involved in the decision making and development of the projects.
- **Community events:** The team delivered a series of events that included draught-proofing workshops, information on energy efficiency and advice on reducing energy bills. These events were held at the Transition Town Brixton 'Shared Space' events at the Loughborough Centre.

CEEF funding is designed to provide low cost energy saving measures, like draft proofing, or to ensure the correct guidance reaches residents about other potential energy saving measures and ways of funding this work. The primary advantage of this scheme

Preliminary work carried out by Brixton energy estimates that there is a potential for at least 100 roofs suitable for large scale photovoltaic generation. Brixton energy is aiming to install around 25 Photovoltaic installations by 2016. This would require them to raise around £1.6 million in funding over that period.

They also proposing to raise further funds for cooperative CHP plants and solar thermal in stallions,

They estimate, the CEEF, that they will be able to provide over 100 youth internships in that period and invest money for 4,000 energy efficiency surveys, giving a further 100 work placements and 60 internships whilst saving 1500 tonnes of carbon per year.

Solar Thermal

Direct payback for solar thermal does not add up when only looking at money saved in water heating costs due to long payback times. Even with subsidies available in the form of the Renewable Heat Incentive (RHI) and Renewable Heat Premium Payments for installation they struggle to justify themselves financially.

Current incentives offer 17.5p/kWh and cash back upon installation which, if coupled with savings made if installed at the same time as photovoltaic, could just about make the case that it makes financial sense to install a system.

There is also another way solar thermal could earn its keep, beyond reducing reliance on gas. Hybrid systems of PV and Solar Thermal (HPV) could potentially improve the efficiency of PV by taking thermal energy away from the cells helping them to remain at optimal operational temperature.

Heat storage

One of the main barriers to gaining much from solar thermal is that it is at its most productive when there is the least demand for heat. Apart from hot water for washing up or taking a shower we have very little demand for heating in the summer.

A solution to this is to have a large volume of water that stores the thermal energy and other systems use the ground for storage usually in tandem with a ground source heat pump. A more space efficient method is to store the thermal energy with a substance that goes through a phase change which can hold the thermal energy and can be ten times more efficient than a water heat store.

The technology for this is still nascent and the infrastructure required, with a need for a large storage tank, can be prohibitive but with many unused basements across the borough the development of this technology should be watched closely. We have an important pilot project in the borough, in Poplar Road, carried out by Green Structures which has built phase change material into retrofits of underfloor heating^{xxvii}.

The best, simplest, most reliable way of storing heat in a building is in the well-insulated thermal mass of the fabric of the building. Even better if it can be passively collected through south facing triple glazed windows..

Combined heat and power

Combined heat and power (CHP) allows us to generate electricity at the same time as deriving thermal energy in homes and businesses by burning natural gas. CHP would have some practical applications within Lambeth, and there is plenty of research done with London^{xxviii} into its potential as shown in a comprehensive heat map of London. The report for Lambeth recommended 8 priority areas, assessing heat requirements for 594 buildings with a combined heat demand of over 243,000MWh

Large upfront capital costs of infrastructure, large scale disruption and lack of readily available sustainable fuel sources within the borough means that payback of a scheme of this nature would need to be carefully examined. It is appropriate where there is already centralised heat delivery to a large building or housing complex and the boiler is due for replacement. Hyde Farm Climate Action Network (CAN) have done a lot of work on the cost of a new district heat network. There is a pioneering CHP installation on an estate in Lambeth that sadly has never realised its potential. There is learning to be had from that scheme. It was installed without any extra insulation of the flats as this was deemed the most carbon effective use of the capital spend.

Other issues with centrally sourced heating would also need to be addressed, with a tendency for recipients of centrally sourced heating tending to have fewer concerns about their energy usage.

The massive infrastructure requirements would provide a serious driver to creating jobs, but the delivery of this project would almost certainly be outsourced if it was to be implemented on a scale as outlined in the Lambeth report. This would mean careful attention would need to be made to ensuring some of the jobs created by the project went to local businesses and workers.

Assessing the cost and possible gains of a complex project such as CHP is beyond the scope of this report.

Wind Generation

The use of small scale wind generation has so far not been proved to provide sufficient pay back to be a worthwhile investment. A great example of its failing is provided by evidence from the 3 Acorns Eco-House project^{xxix} which installed a domestic turbine for £2,800 and only generated 16kWh in the first year of use.

Although there may well be sites in Lambeth that would be suitable for larger scale generation, planning restrictions and a safe assumption of local objection would make any proposed scheme unlikely to succeed within a dense urban setting such as Lambeth

Other renewables

Although there may be some potential for tidal generation at the Thames Barrage, although not even touted as a pioneer project at this point, the potential for Lambeth to tap into the Thames energy reserves in the north of the borough is effectively zero.

Energy to waste is a current buzz topic. Lambeth is tied into a 25 year contract to send all its waste to incineration. Gasification is still an unproven technology at scale. Anaerobic Digestion has local possibilities especially if tied into a reliable organic waste stream (eg from Brixton Market).

Biomass incentives may be rather appealing under current subsidies but with a very limited biomass supply in an inner city borough this could never provide a sustainable solution to heat generation.

In a similar vein, although some locations in the UK are viewed as having Geothermal potential, Lambeth isn't one of them. There may however be some potential to harvesting the energy generated within the underground to heat a small number of spaces in the not too distant future.

Objective	Case Studies	Future Projects	Actions		
			Immediate	Should Start Soon	Next three years
INCREASE CONSUMER CONFIDENCE IN ENERGY SAVING			<p>Engage Lambeth resident SAP inspectors to ensure consistency in reporting</p> <p>Produce advice outlining benefits of utilising Green Deal for all Lambeth Residents</p> <p>Link with 'Build It' scheme which has recently secured funding to provide training to renovate long term empty dwellings and ensure these become model eco homes of as many different types of property as are available</p>	<p>Train additional inspectors who are supported by Lambeth Council</p> <p>Create a data base of SAP inspection by house type as a first port of call for residents considering house improvement</p> <p>Provide training to council workers who already work in the community to provide energy basic energy advice.</p>	<p>Build a local data base of case studies demonstrating savings which can be made through as many different dwelling types as possible, building local residents confidence that the improvements they can make are really worth while</p>
IMPROVE KNOWLEDGE BASE AND SKILLS WITHIN THE BOROUGH	The Green Skills Partnership	Local institute of insulators	<p>Work with Lambeth College to ensure their renewables training centre is creating maximum utility</p> <p>Work with Union Learn to ensure funds available for greenskills learning are secured for Lambeth</p> <p>Provide business training for those with green building skills to support local independent service providers</p>	<p>Create a directory of local installers to help Lambeth businesses be the first choice of Lambeth residents when having improvements carried out on their homes.</p>	<p>Ensure that we have at least one cavity insulation and one external insulation specialist business operating within Lambeth to provide employment to local residents as the market expands</p>
SECURE MAXIMUM FUNDING FOR THE LAMBETHS SOCIAL HOUSING BLOCKS AND SUPPORT GREEN DEAL TAKE UP	<p>Development of a financial resilience officer</p> <p>Adoption and implementation of the Lambeth Fuel Poverty Strategy</p>	Formation of an energy efficiency and renewable partnership	<p>Lambeth are already working towards securing as big as slice of the ECO funding as possible. More advice needs to be given to others on the benefit of the Green Deal</p> <p>Work with Lambeth Living including their community engagement officers to ensure maximum energy efficiency benefit is secured within the Lambeth Housing Standard renovation project.</p>	<p>Work with Zac Munro Architects and the Lambeth Sustainability Forum including:</p> <p>Survey work to identify the most important and biggest gains that can be made in social housing</p> <p>Developing best practise models for different types of social housing.</p>	

			Work with Lambeth Sustainability Forum on the development of the Sustainable Estates Programme		
ENCOURAGE COMMUNITIES TO WORK TOGETHER	Community Draft Busters	Transition Streets	Review the findings from the Totnes Pilot project and explore how this could work for with flats	Secure council officer funding to promote this model of energy improvements	Set up Transition Streets and Transition Blocks across the borough, building community and improving our housing stock in as efficient manner as possible.
RENEWABLES GENERATION	Brixton Energy Repowering London	Brixton CHP Brixton Seasonal Heat Storage	Complete commissioning work to adopt Brixton Energy as a coop council delivery partner for renewable energy installations within the borough	Carry more advanced study into generating capacity within Lambeth Promote benefits of Green Deal for PV installations	Install 25 community owned large solar installations Minimum target of equal capacity in domestic installations
COMBINED HEAT AND POWER INSTALLATIONS	Roupell Park		Carry out a detailed review of the London Heat Map report for Lambeth	Carry out initial cost benefit analysis of the 8 priority areas	Install a community owned CHP plant in one of the 8 priority areas outlined in the London Heat Map

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- ⁱ **Kirklees Council Warm Zones:** <http://www.kirklees.gov.uk/community/environment/energyconservation/warmzone/warmzonemenu.shtml>
- ⁱⁱ **UK Energy in Brief:** https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/65898/5942-uk-energy-in-brief-2012.pdf
- ⁱⁱⁱ **National Renewable Statistics:** <https://restats.decc.gov.uk/cms/national-renewables-statistics/>
- ^{iv} **Logging to meet biofuel demand:** <http://news.mongabay.com/2013/0606-dimitrova-biomass-eu.html#5S23791KTtv2poJ.99>
- ^v **Dirtier than coal:** http://www.rspb.org.uk/Images/biomass_report_tcm9-326672.pdf
- ^{vi} **ibid**
- ^{vii} UK domestic energy consumption by use, Zero Carbon Britain 2030 (2010 data).
- ^{viii} **The money trail:** <http://www.neweconomics.org/publications/money-trail>
- ^{ix} **Energy Trends:** <http://webarchive.nationalarchives.gov.uk/20121217150421/http://decc.gov.uk/assets/decc/statistics/publications/trends/1511-trendsmarch11.pdf>
- ^x **ibid**
- ^{xi} **Middle Layer Super Output Area (MSOA) domestic gas consumption (2011)**
- ^{xii} **Middle Layer Super Output Area (MSOA) domestic electricity consumption (2011)**
- ^{xiii} **Feed-in Tariff statistics:** <https://www.gov.uk/government/statistical-data-sets/monthly-central-feed-in-tariff-register-statistics>
- ^{xiv} **ibid**
- ^{xv} **2011 Census**
- ^{xvi} **ibid**
- ^{xvii} **Fuel Poverty Strategy and Action Plan:** <http://www.lambeth.gov.uk/NR/rdonlyres/CE220EE0-949A-4CC6-83C7-E86B9124D1C2/0/FuelPovertyStrategyandActionPlan2011.pdf>
- ^{xviii} **The energy performance certificate explained:** <http://www.energykey.co.uk/epc.html>
- ^{xix} **Refit West:** <http://www.forumforthefuture.org/project/refit-west/overview>
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