Sheffield Hallam University | Centre for Regional Economic and Social Research

BETTER HOUSING, BETTER HEALTH IN LONDON LAMBETH

THE LAMBETH HOUSING STANDARD HEALTH IMPACT ASSESSMENT AND COST BENEFIT ANALYSIS






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FEBRUARY 2018

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//ACKNOWLEDGEMENTS

The study was inspired by Su Gomer, Assistant Director of Housing Capital and Asset Management for the London Borough of Lambeth. She saw the need for 'joined up' investment in the policy domains of housing, crime and health, and the importance of cost-benefit analysis in a period of pressure on public finances. The report itself is a collective effort, drawing on feedback from housing tenants and leaseholders and the creativity and expertise of many officials in Lambeth. Special thanks to Shah Hassan, Business and Transformation Officer, who was invaluable in opening doors and helping us keep on track as the study progressed from inception to final report.

Tom Tyson, strategy team leader, and his colleague Helen George in the Partnerships and Commission Division, provided data on Lambeth's socio-economic context and the Borough Council's policies for meeting the challenges of a diverse, often deprived population with diminishing public resources. Summaries of the housing investment programme, which forms the centrepiece of our report, were supplied by Shah Hassan and Neil Griffiths, Investment and Contract Performance Team Manager, with additional financial information from accountant Shafiq Khan. Head of Housing Communication, Marek Effendowicz, reconciled investment figures with public documents and supplied the illustrations of aids and adaptations to improve the lives of disabled tenants.

Tim Fairhurst, North Area Housing Manager, helped provide a practical overview of how the investment programme was being implemented and put us in touch with tenants and leaseholders willing to reflect on their experience. Gerlinde Gnicwosz gave an overview of the special circumstances of the Cressingham Gardens Estate and Stephen Gyte, chair of the Lambeth Leaseholders Council gave us the perspective of leaseholders. We thank all the individual tenants whose interviews gave us an insight into the renewal process and changes in their living conditions.

The projected impact of the investment programme on crime and fear of crime is an important chapter of our report. Kristian Aspinall, Lead commissioner for Community Safeguarding, together with his colleague Calvin Mclean, provided helpful insights into the prevalence and prevention of acquisitive crime in Lambeth homes. Christine Jacobs, Environmental Team Manager and Linda Elliot, Estate Pride Manager, looked forward to further reductions in crime against the person when in future, the environment of council estates is remodelled.

Compared with our previous Health Impact Assessments, we advanced our knowledge of the impact of housing investment on Safety and Independence, especially of older people. David Worrall, lead commissioner for Neighbourhood and Growth provided information on investment in Sheltered Housing for older people, Sue Winter, manager of the Borough's Occupational Therapy Service and Manju Dhar, Home Improvement Agency Manager, analysed the programme and benefits of aids and adaptations for older people. Besides commenting helpfully on HIA methodology, Veronica Thiel, Public Health Specialist with Southwark and Lambeth Public Health Department, provided good data on the prevalence and prevention of falls.

Jan Gilbertson headed up the research team and managed the project on behalf of the Centre for Regional Economic and Social Research at Sheffield Hallam University. Dr. Aimee Ambrose, Nadia Bashir and Dr. Mike Foden interviewed residents and drafted the chapter on the process of renewal. Professor Geoff Green and Dr. Bernard Stafford interviewed stakeholders, and developed further the methodology for estimating the impact of the investment programme on the health and well-being of residents. Bernard Stafford was responsible for the cost-benefit analysis in the penultimate chapter and Geoff Green for drafting other chapters. All the academic team contributed to the final report. In addition to highlighting the primary impact on the health and well-being of residents, we hope it makes a compelling case for the cost-effectiveness of investing in decent homes.

Jan Gilbertson and Geoff Green
February 2018.

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//EXECUTIVE SUMMARY

Main message: Our indicative cost-benefit analysis shows that Lambeth's Housing Standard (LHS) investment programme will have a major impact on the health and quality of life of council tenants, with wider monetised benefits of £227million for individuals, for the National Health Service, social care services, the Criminal Justice System and the local economy

MESSAGES	RECOMMENDATIONS
• A **'cross-cutting'** approach encouraged Lambeth Borough Council to commission this health impact assessment and cost-benefit analysis of the £490 million plus LHS investment programme	• Lambeth's partner agencies should jointly plan to account for the upstream benefits of housing investment on the downstream health of residents
• The LHS programme delivers monetised social benefits - gains in individual well-being, reduction in demand for health and social care services, less pressure on the Criminal Justice System and a boost to the local economy	• Further cost benefit analysis should assist Lambeth to assess which mix of up-front capital investment reduces long-term revenue costs to public services • Report outcomes will inform future Stock Investment planning
• Investment to raise energy efficiency levels will produce **c£78 million of social benefits** accounted for by induced reductions in cardio vascular and respiratory illnesses, cold home related falls and especially mental illness associated with fuel poverty	• An updated fuel poverty strategy to reduce the mental stress of paying fuel bills is more important than focusing on excess winter deaths
• Remodelling kitchens and bathrooms as a major element of the LHS programme will reduce the risk of trips and falls, encouraging the independence of older people. There will be **c£12 million of social benefits** arising from the reduction of falls alone	• Lambeth should undertake a cost-benefit analysis of how aids and adaptations promote greater independence, with savings to the NHS and social care services
• New windows and doors will improve security, reduce crime and promote feelings of safety, with a major impact on mental health and well-being. **c£137 million of social benefits** are accounted for by well-being gains and reduced demands on the NHS, social services and the Criminal Justice System	• Additional funds available to the LHS programme should maximise the security aspects of wider environmental improvements
• In addition to these monetised benefits, there are non-monetised benefits – fewer demands and less stress on informal carers; community pride in council estates and for Lambeth Council a sustainable asset	• Lambeth should signal council housing as a community asset providing and protecting residents from the downsides of the housing market
• By improving health and well-being and real incomes in Lambeth's deprived neighbourhoods, the LHS programme will maintain the borough's diversity and further integrate council tenants into mainstream economic and social life	• Partnership agencies should maintain their focus on **diversity and equity** by transforming health and quality of life on Lambeth's more deprived estates

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1//SECTION SUMMARY

Introducing this report, we asked *'Does the Lambeth Housing Standard programme make a positive impact on the health and security of Lambeth Council tenants?'* **We conclude 'yes': such investment does have an impact, with the more widespread benefits flowing from improved security.**

Figure 1.1// Components of investment in Lambeth's Housing Standard programme

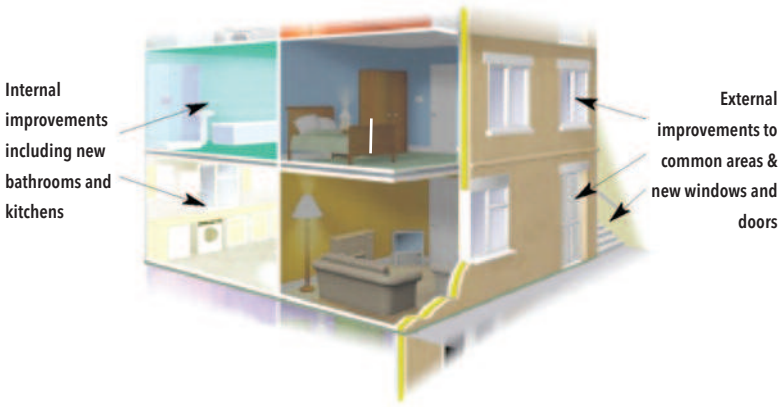


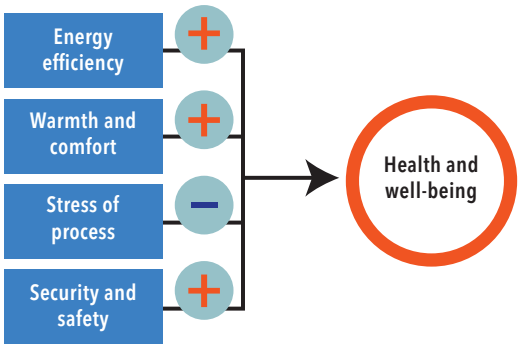
Figure 1.1 shows the principal components of the £490 million Lambeth Housing Standard programme **(LHS)** managed by the London Borough of Lambeth and elaborated in **section 4. Section 5** updates our previous **methodology** based on the governments Housing Health and Safety Rating System. Here we combine Lambeth data on living conditions with scientific evidence on the likely impact on health of improving the housing stock.

Section 6 describes tenants' experience of the modernisation **process** and evidence from similar renewal schemes elsewhere in the UK. **Section 7** shows how improvements to heating and insulation will improve **warmth and comfort** and reduce the likelihood of heart disease and winter deaths of older people. Raised temperatures and better ventilation will reduce damp and mould and the likelihood of respiratory problems, especially childhood asthma. Many more householders will be relieved of fuel poverty with a positive impact on their mental health.

Section 8 shows how investment in remodelling kitchens and especially bathrooms will reduce the likelihood of slips and falls. This should encourage older people to be independent. **Section 9** shows investment in windows and doors will reduce the likelihood of burglary and have a positive impact on the mental health and well-being of occupants and their neighbours. However, the resident interviews in **section 6** illustrate the stressful refurbishment process, which in the short term at least (figure 1.2) may have a negative impact on health and well-being.

An indicative cost-benefit analysis in **section 10** monetises (a) improvements in residents' health (b) savings to the National Health Service (c) fewer working days lost through ill-health and (d) savings in the Criminal Justice System. Improving home security is probably the most cost-effective component of the Lambeth Housing Standard

Figure 1.2// Summary impacts on health



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1//SECTION SUMMARY

programme. And for each of the three key components, the monetary value of improvements in residents' health is bigger than the value to society as a whole.

Two final points about the relatively modest improvements in physical health revealed in sections 7 and 8. First, to facilitate strict cost-benefit analysis, our estimates are confined to those residents previously harmed enough to warrant medical attention. There will be many more beneficiaries who have not sought attention.

Second, physical improvements in warmth, safety and security give residents a greater sense of their 'home as a haven,' contributing to their mental health and well-being. In turn, better mental health enhances the economic and social prospects of council housing estates, helping their integration into the mainstream life of the borough. Such is the 'joined up' thinking pursued by Lambeth Council's Community Plan.

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2//INTRODUCTION

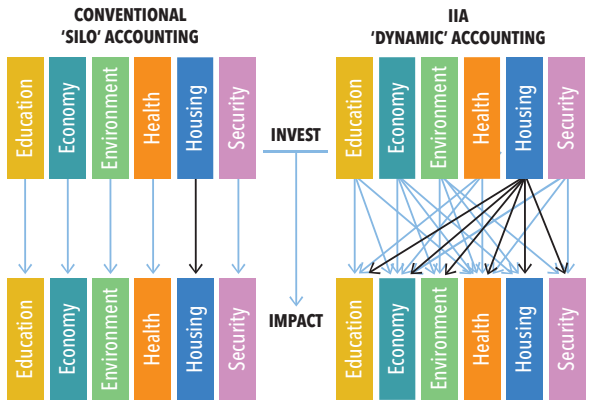
(a) AMBITION

The purpose our report is to illustrate how Lambeth can 'build homes and support healthy lifestyles for everyone.' This is an ambition of Lambeth Council's leader, Lib Peck, in her forward to *Lambeth Council's Community Plan*[1]. Our focus is precisely on how renovating Lambeth's council housing stock can lead to healthier living conditions. Healthier lives are themselves valuable - a marker of humanity. However, in this era of austerity and pressure on public finances, it is also our task to demonstrate how healthier lives contribute to the economy and relieve pressure on health and social care services.

(b) JOINED UP THINKING

Lambeth takes a 'cross-cutting' approach to achieving the ambition of healthier lives. The *Community Plan* acknowledges that action in one sector pays dividends in another (Figure 2.1). Housing, especially social housing, has a big influence on all aspects of community life. The vision of a *'safer and stronger community'* will lead to the outcome of 'People are healthier for longer.' Working together across departments with community partners *'can benefit local people by enhancing the local economy, improving health and well-being and increasing public safety and reducing crime'.*

Figure 2.1// Multiple Impacts of Housing Investment



(c) THE TASK

Lambeth Council is now responsible for a five-year investment programme of more than £490 million to upgrade over 32,000 dwellings to a 'Lambeth Housing Standard.' Wishing to demonstrate the wider impacts, Lambeth Council commissioned the Centre for Regional Economic and Social Research (CRESR) at Sheffield Hallam University to undertake a Health and Crime Impact Assessment of this programme. We build on earlier assessments in Sheffield, Ealing and Leeds. The key question is *'Does the capital investment programme to improve the stock of council housing make a positive impact on the health and security of residents?'*

(d) ROBUST ANALYSIS

Lambeth's Health and Wellbeing Board maintains that *'in the main our health is determined by social and economic factors, the physical environment and our behaviours.'*[2] 'Good housing' is identified as a key determinant. Yet in reality local partnerships have found it difficult to act on the key mechanisms of change which cut across departments and domains. Figure 2.1 shows how 'silo' accounting' can be transformed into 'dynamic' accounting, with collective ownership of investment outcomes. We build our robust analysis on this concept of integrated impact assessment (IIA). Our methodology (explained in section 5) will help Lambeth's *Community Plan*[3] strengthen the connection between housing, security and health.

[1] Lambeth Borough Council (2013) *Lambeth Council's Community Plan 2013-2016*. London Borough of Lambeth.

[2] Lambeth Health + Wellbeing Board (2013) *Lambeth's Cooperative Health and Wellbeing Strategy, 2013-2023*. Lambeth Health + Wellbeing Board.

[3] Lambeth Borough Council (2016) *Lambeth Our Future: Our borough plan 2016/2021.*

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3//LAMBETH CONTEXT

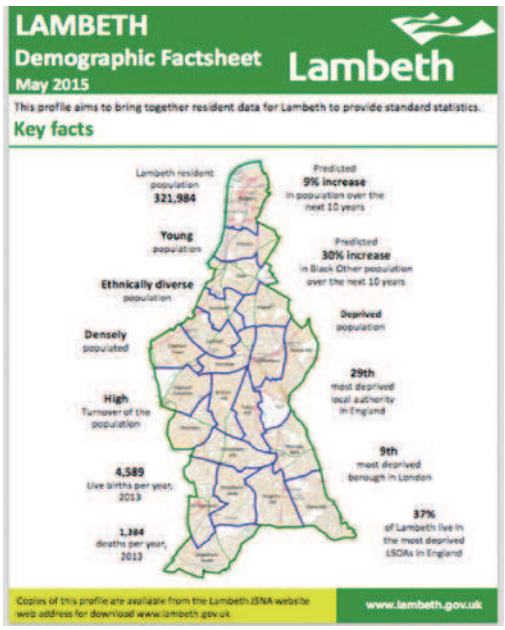
Key message 1: **On current demographic trends Lambeth will sustain a diverse population but struggle to redress economic and social inequalities.**

Key message 2: **Housing quality should make a major contribution both to sustaining diversity, mitigating economic inequalities and reducing inequities in health.**

(a) AMBITION: DIVERSITY AND EQUITY

'Lambeth is one of the most diverse boroughs in the country and equalities is at the heart of our approach [4].' This banner headline on the council's website captures two overarching priorities. First is to celebrate and sustain ethnic, cultural and social diversity – *'in a very real sense it is the world in one borough [5].'* Second is to promote greater equality. *'Like many London boroughs, Lambeth has areas of affluence and areas of poverty, often side by side.'* An ambition is to reduce these economic inequalities. The Lambeth Health and Well-being Board matches this ambition with another: a borough where *'health and well-being is improving for all; and improving fastest for those communities with the poorest health and well-being [6].'*

Figure 3.1// Lambeth Summary Context



(b) TRENDS AND CHALLENGES

The profile in figure 3.1 summarises key features of the borough – densely populated, ethnically diverse, the 29th most deprived local authority in England, an expanding population, especially of black residents of African heritage [7]. These trends are projected to continue, with new waves of migration sustaining ethnic and social **diversity**.

The ambition of **equality** will be more of a challenge. London has a buoyant economy and Lambeth had an employment rate of 78.7% in 2014, the highest of all London boroughs. The labour market attracts many well paid, healthy and affluent residents, putting intense pressure on the housing stock and increasing housing prices and rent beyond the reach of Londoners on average incomes.

In contrast *'there is a persistent pool of economically inactive people with little economic and social mobility and this group tends to experience high levels of social exclusion and poor education, employment and health outcomes [8].'* Many in this pool are council housing tenants and their families, with the majority claiming Housing Benefit. Most are in the bottom 20% of household incomes in England. Council estates dominate the *'eight areas of Lambeth which are among the 10% most deprived in the country [9].'*

Economically deprived districts of the borough tend to have the poorest health. The 2012 Lambeth Health Profile [10] reported life expectancy 5.3 years greater for men in those least

[4] http://www.lambeth.gov.uk/elections-and-council/lambeth-equality

[5] Lambeth Borough Council (2013) *Lambeth Council's Community Plan 2013-2016*. London Borough of Lambeth.

[6] Lambeth Health + Wellbeing Board (2013) *Lambeth's Cooperative Health and Wellbeing Strategy, 2013-2023*. Lambeth Health + Wellbeing Board.

[7] Lambeth Borough Council (2015) *Lambeth Demographic Fact Sheet*. London Borough of Lambeth.

[8] Lambeth Borough Council (2013) *Lambeth Council's Community Plan 2013-2016*. London Borough of Lambeth.

[9] Lambeth Borough Council (2012) *State of the Borough*. London Borough of Lambeth.

[10] Department of Health (2012) Lambeth Health Profile. Department of Health.

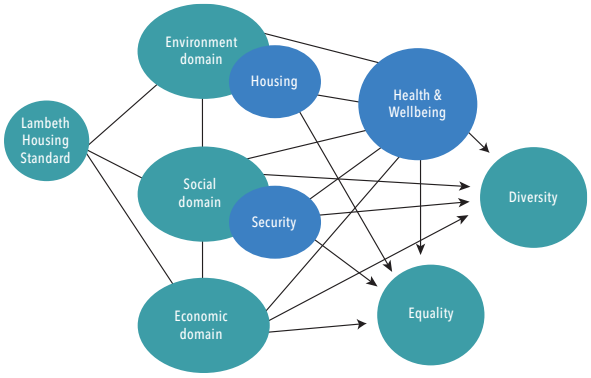
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deprived districts compared with the most deprived. For women the difference is 3.8 years. The Health and Well-being Board points to a dynamic relationship between health and economy, highlighting the link between *'socio-economic stress and poor mental health'* compounded by *'the economic downturn.'* The Board's strategy seeks to break this cycle by pursuing *'health and well-being* ***Equity*** *in all policies.'* And as the World Health Organization maintains, health equity means minimising inequalities in the key determinants of health [11]. Housing is a key determinant. Good housing therefore contributes to greater equity in health.

(c) INVESTMENT

Lambeth's *Community Plan* summarises an overarching strategy for sustaining diversity and promoting equalities with (a) safer and stronger communities (b) cleaner streets and greener neighbourhoods and (c) more jobs. Lambeth's Housing Standard programme can make a significant contribution. Figure 3.2 summarises some of the key dynamics.

Figure 3.2// Impacts of Lambeth Housing Standard



Though our HIA focuses on the impact of improvements to the housing stock on health and well-being, the Lambeth Housing Standard addresses wider estate **environments**. Estate Pride provides an interim upgrading of estate environments, with significant social impact. *'In addition to enabling visible, physical improvements to estates, Estate Pride builds community cohesion and fosters greater inter-generational respect and understanding. It also builds a greater sense of ownership and responsibility among estate communities for their local environment'*[12].

(d) WIN WINS

Following more substantial investment in these estate environments, predominantly in the next phase of redevelopment, *'Secured by Design'* standards should have a positive impact on reducing the high levels of street violence in Lambeth by securing *'resilience in public environments'*[13]. Pedestrian-friendly estates could marginally reduce air pollution hotspots generated by through-traffic[14] and increase walkability,[15] both with a positive impact on health.

The social and economic domains are interlinked. The security section of our HIA focuses on the impact of better designed doors and windows on reducing burglary and improving mental health. However, we also highlight two other forms of security - of tenure and affordable rents. Both should provide a solid base for the pool of economically inactive households to secure employment. Opportunities are on offer from building contractors required to hire a proportion of local labour in refurbishing estates.

There are positive impacts for maintaining diversity. Financially and legally secure council housing protects households against housing market forces which favour more affluent incomers. Refurbishment to a high standard ensures a viable housing stock and sustainable future in Lambeth for poor, vulnerable and predominantly ethnic minority households.

[11] 'Inequities in health are systematic inequalities that can be considered as unfair or unjust. Pursuing health equity means minimizing inequalities in health and in the key determinants of health.' World Health Organization (2013) *Health 2020. A European policy framework and strategy for the 21st Century*. WHO Regional Office for Europe, Copenhagen.

[12] http://cosponsorshipagency.com/2014/03/14/build-it-and-lambeth-living-celebrate-estate-pride-partnership/ (Accessed: 30 May 2016)

[13] Lambeth Community Safety (2015) *Serious violence in Lambeth: needs assessment*. London Borough of Lambeth.

[14] Cleaner Air for London (2015) *Updating and Screening Assessment*. London Borough of Lambeth.

[15] Lambeth Borough Council (2011) *Lambeth's Transport Plan*. London Borough of Lambeth.

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4//LAMBETH'S HOUSING STANDARD PROGRAMME

Key message: **Lambeth's £490 million investment programme to secure a 'Lambeth Housing Standard' for the stock of council housing, should help reduce crime and improve the health and quality of life of residents in the poorest neighbourhoods of the borough.**

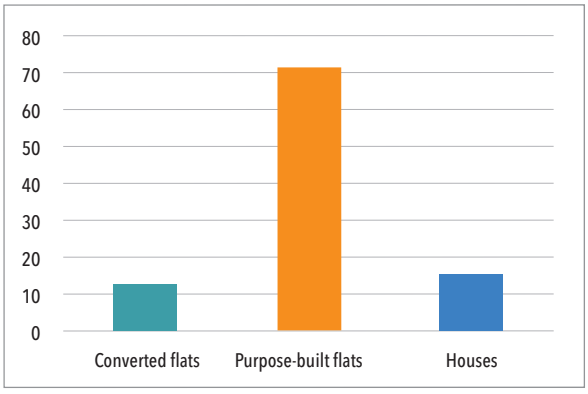
(a) CONTEXT

Lambeth's £490m investment programme was designed to achieve by 2017 a Lambeth Housing Standard (LHS) for all its 23,000 tenanted dwellings and encompass 9000 leasehold dwellings where it retains the freehold interest. The LHS is an enhanced version of the Government's Decent Homes Standard. *Quality and Choice: a Decent Home for All*[16] set out the Government's commitment to bring all social housing up to a decent standard by 2010.

Health and well-being were key considerations in the very first paragraph of the first chapter.

> *'Housing is a basic requirement for everyone. Our homes influence our **well-being**, our sense of worth, and our ties to our families, communities and work. If we live in decent housing we are more likely to benefit from **good health**, higher educational attainment and better-paid work.'*

Figure 4.1// Lambeth Council Stock Profile



Lambeth Borough's holistic approach to equality and sustainability accords with government guidance on the wider impact of decent homes[17].

> *'Delivering Decent Homes is a commitment to the national strategy for neighbourhood renewal and has a key role in narrowing the gap between deprived neighbourhoods and the rest of the country. Delivery needs to be part of a holistic approach to regeneration which is about more than 'bricks and mortar' and which makes the right linkages to wider regeneration objectives such as improving **health** and education outcomes, renewing failing housing markets, tackling poverty, and delivery of mixed and sustainable communities.'*

After years of underinvestment since the high watermark of council housing in 1979, and sales to sitting tenants under the Right to Buy scheme, the Decent Homes Programme presented a good opportunity for Lambeth Borough Council to rehabilitate its residual stock. But there were strings attached to government funding.

In line with Government Policy (and a ballot of tenants and leaseholders) the management of the council's tenanted and leasehold properties[18] were transferred in 2008 to Arm's Length Management Organisations (ALMOs) – 90% to *Lambeth Living* and 10% to *United Residents Association*. The LHS programme was agreed by Lambeth Council in 2012 and delegated to *Lambeth Living* to deliver. In 2015 properties were transferred back and Lambeth Borough Council again assumed direct responsibility for managing and maintaining tenanted units and servicing the freehold interest in leasehold units.

[16] DETR (2000) *Quality and Choice: a Decent Home for All.* (The Housing Green Paper).

[17] Department of Communities and Local Government. (2006) *A Decent Home: Definition and Guidance for Implementation. Update.* DCLG.

[18] Under the Right to Buy Scheme, Lambeth Borough Council retains the freehold and assigns a long lease to the purchasers of dwellings in communal blocks, which may then be bought and sold. The Council retains responsibility and charges for communal services such as lifts and the maintenance of communal grounds.

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Flats are the predominant archetype (84.2%), of tenanted dwellings and all leasehold properties. Most were built after 1945, though 12.6% are conversions of older property. A number of smaller estates are earmarked for demolition and rebuilding by private sector investors to secure higher densities and help meet Lambeth's target for additional housing stock. A flow of Right to Buy disposals to tenants (averaging 250 units annually) is further depleting the council stock.

(b) THE INVESTMENT PROGRAMME

Lambeth's £490 million plus investment programme applies to all 32,000 of the Borough's leasehold and tenanted properties. The objective of *'safe, warm and secure dwellings; homes to take pride in,'* will be secured by the **Lambeth Housing Standard (LHS)**, an enhanced Decent Homes Standard (DHS) approved after consultation with tenants. The main beneficiaries are the 15,095 tenanted dwellings which were assessed as non-compliant with the DHS before the LHS started in 2012. They receive the full LHS/DHS upgrade with an extensive combination of internal and external works. Lesser beneficiaries are the 9000 leasehold dwellings, and 8000 tenanted dwellings already compliant with DHS in 2012. They benefit primarily from communal works to the blocks of flats, 'external' to the individual properties.

Table 4.2// Overall costs of 9 components of the LHS investment programme and their potential impact on living conditions

IMPACT	COMPONENT		COMPONENT INVESTMENT (£million)
Warmth and Comfort	1.	Individual heating	67.7
	2.	Insulation	1.0
	3.	Common boilers	6.9
	4.	Windows*	61.0
Safety and independence	5.	Aids and adaptations	4.9
	6.	Kitchens	70.0
	7.	Bathrooms	6.3
Security	8.	Windows*	61.0
	9.	Doors	21.0
	10.	Common door entry and CCTV	16.8

* Installation of Secured by Design windows impact on both insulation and security

The national DHS provides the foundations for the enhanced LHS. Standards are defined by the Government's *Guidance* and fall into four categories. Dwellings must (a) not contain major hazards causing harm to health (b) be in a good state of repair (c) have modern facilities and (d) have efficient heating. The LHS includes new windows and doors to Secured by Design Standards, CCTV and door entry systems to communal blocks of flats and the renewal of mechanical and electrical components plus improvements to the estate environment.

In combination, all of these components will have an impact on health, and in the widest sense on well-being. Eventually disrepair will compromise the very integrity of the buildings function of providing shelter. Modern facilities are not merely cosmetic. Local authority representatives secured the inclusion of modern kitchens and bathrooms in the DHS, presumably because these contribute to tenants' identification of their 'home as a haven,' promoting the sense of 'wellbeing' and 'worth' identified by the Green Paper as the rationale behind Decent Homes.

However, for the purpose of our Health Impact Assessment we focus on the specific components of the LHS which have a very direct impact on health. These are summarised table 4.2.

The 15095 tenanted dwellings non-compliant with the DHS in 2012 benefit from the full package of components listed in table 4.2. The other 8000 tenanted and 9000 leasehold dwellings will benefit from fewer components. Our method for assessing the impact of these investments, first on living conditions and then on health is guided by the Government's Housing Health and safety Rating System[19] and elaborated in the next section.

(c) WHO BENEFITS?

Lambeth's diversity is celebrated by the council and the housing investment programme will help maintain the economic and ethic mix of its population. The expanding and expensive private residential sector is balanced by the objective of sustaining council housing at affordable rents for some of the poorest residents in the borough and indeed in England. Over 60% of council tenanted households claim Housing Benefit[20], indicating households are in the bottom quintile of English incomes. They are the principal group of beneficiaries of the investment programme to bring council tenanted dwellings up to the LHS. Overall about 70,000, a fifth of Lambeth's 2015 population of 321,000 will benefit.

Older people will also benefit disproportionately from the investment. Figure 4.3 shows 22% of tenants (whose name is on the rental agreement) are over 65 compared with a Borough population of 8% over 65. The two population categories are not strictly comparable, but

[19] ODPM (2006) *Housing Health and Safety Rating System; Operating Guidance.* ODPM Publications

[20] Data on this page is derived from Lambeth Housing Strategy Team (2016) Tenancies and Diversity Digest. Lambeth Borough Council.

Figure 4.3// Age Profile of Lambeth Council Tenants

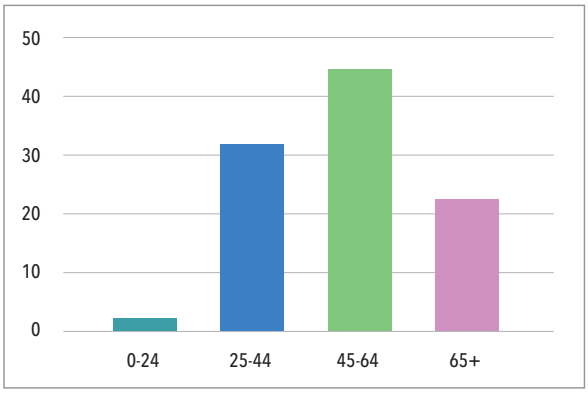
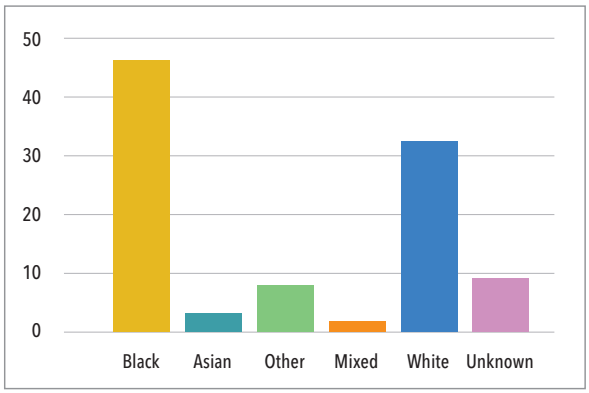


Figure 4.4// Ethnicity of Council Tenants



indicate that council housing does provide a haven for older people - the age group with the highest levels of illness and disability.

Finally, the other outstanding group of beneficiaries is Lambeth's black population. Forty-six percent of tenants are black – of Caribbean and increasingly African heritage – compared with a Borough population average of 30% and an English average of around 4%. Asian tenants are 3% compared with a Borough population average of 8%. White tenants are 33% - predominantly of British heritage - compared with the Borough average of 56%.

To conclude, with such enormous pressure on all types of housing stock in the Borough, Lambeth's housing investment strategy helps deliver the key council values of **equality** and **diversity**.

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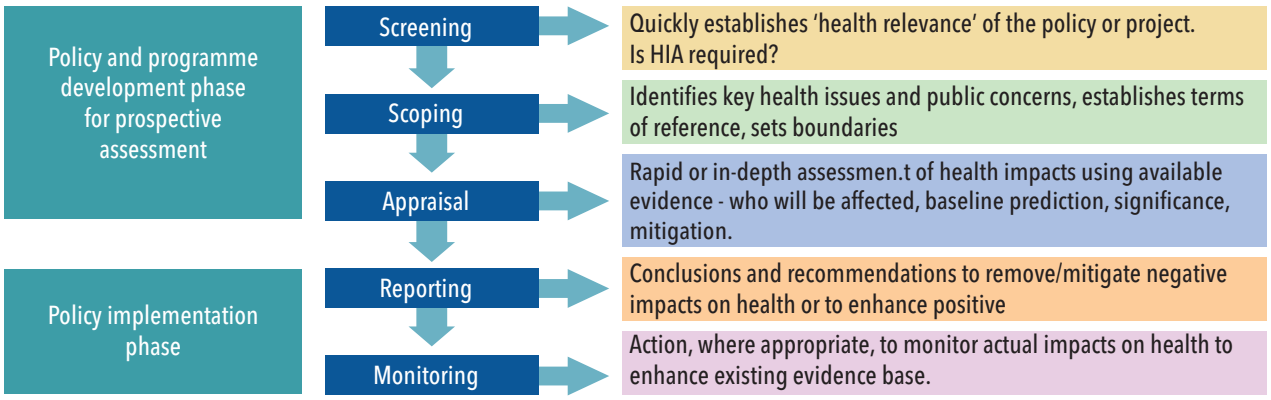
Key message 1: **The national Housing Health and Safety Rating System was combined innovatively with other methods to estimate the health impact of Lambeth's Housing Standard Programme.**

Key message 2: **An indicative cost benefit analysis was undertaken using methods which give a monetary value to gains in personal health status, reduced costs to the NHS and Criminal Justice System, and reduction in working days lost through ill health. These gains are compared with the cost of the programme.**

(a) INTRODUCTION

Following initial 'screening' and 'scoping' exercises, Lambeth Borough Council commissioned a Health Impact Assessment (HIA) of their LHS programme in the Autumn of 2015. This was for the appraisal stage in the five stage process (figure 5.1) recommended by the World Health Organization[21]. Our objective was to quantify the range and scale of health benefits flowing from the LHS programme. But as our proposal made clear, within the limited time and resources available these health impacts could not be measured directly. It just wasn't possible to ask large numbers of recipients whether their health had improved. Instead, the methodology underpinning our appraisal is to estimate the effect of the programme by synthesising and modelling a large body of existing evidence relating housing to health (even though there are relatively few robust intervention studies which assess the impact of housing investment)[22 23 24]. This report is the 4th stage of our Health Impact Assessment.

Figure 5.1// The Process of Health Impact Assessment



[21] http://www.who.int/hia/tools/en/ (Accessed: 24 May 2016)

[22] Hilary Thomson, Sian Thomas et al (2013) Housing improvements for health and associated socio-economic outcomes [Review] *Cochrane Database Syst. Rev.* (2) Art. No: CD008657. DOI: 008610.001002/14651858.CD14008657.pub14651852

[23] Hilary Thomson, Sian Thomas, et al. (2013) Housing improvements for health and associated socio-economic outcomes: a systematic review *Campbell Syst. Rev.* (2), 10.4073/csr.2013.4072

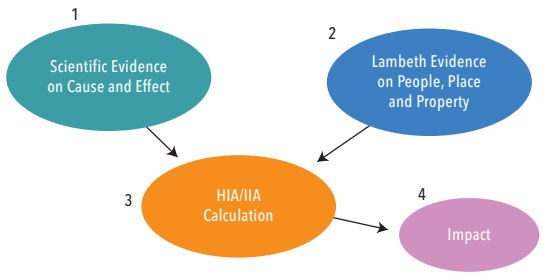
[24] Hilary Thomson, Sian Thomas (2015) Developing empirically supported theories of change for housing investment and health. *Social Science and Medicine*, Vol.24, pp. 205-214.

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(b) SCOPE OF APPRAISAL

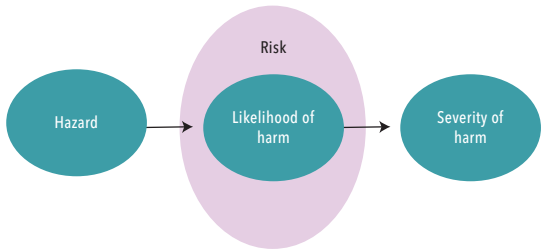
Our method for the appraisal is summarised in figure 5.2 extracted from our tender document for the contract. Qualitative interviews with 20 Lambeth Residents and 10 key stakeholders have helped refine the parameters – providing a reality check on the logistics and process of renewal (section 6). Lambeth reports on *'People Place and Property,'* provide the policy context (section 3) and outline the LHS programme (section 4) feeding into the baseline HIA/IIA calculations of warmth and comfort (section 7), safety and independence (section 8), security (section 9) and the monetised cost benefit analysis (section 10). Sources of scientific evidence on various causes and coefficients of harms to health and health benefits of the investment programme are referenced in each of the sections. These quantitative estimates are brought to life by resident interviews.

Figure 5.2// Method of Assessment



Our appraisal centres on the relation between people and property – between households and the Lambeth council homes they occupy. Our focus is improvements in residents' health arising from the realisation of the LHS – inherently valuable, but also as intermediary to wider or **indirect** benefits such as savings on health and social care services and higher productivity and participation in the labour market. However, lack of Lambeth data has prevented an appraisal of the **direct** impact of the local labour requirement written into investment programme contracts. Should data on residents actually employed become available in future, then local job gains will emerge: (i) to the extent of this direct employment; and (ii) the extent that such workers spend a portion of their income on locally produced goods and services. These gains can be formally enumerated by a Keynesian income and jobs multiplier.

Figure 5.3// Harms to health



The greater proportion of environmental improvements associated with the enhanced LHS have not yet been implemented because of budgetary constraints. When these are eventually specified it should be possible to model and assess the pathways from environmental improvements to safety and security to 'active living' – more physical activity such as walking and cycling and greater social connectedness, with a positive impact on health and well-being. Modifications to the local environmental may reduce pollution hotspots and also change the modal split from cars towards cycling and walking, also reducing air pollution and respiratory disease.

(c) METHOD OF APPRAISING HEALTH GAINS

At the core of our appraisal is a quantitative assessment of risk to health posed by approximately 70,000 occupants of 32,000 Lambeth Council dwellings before and after the investment programme to meet the LHS. The difference between the two estimates (pre- and post-intervention) is our assessment of the health impact. The reduced risk will deliver better health for occupiers, which as section 10 shows, has economic value, both to these individuals and wider society. Figure 5.3 summarises how certain hazards in the dwelling pose a risk to health – ranging from minor to major severity.

The conceptual model encapsulated in figure 5.3 is derived from the Housing Health and Safety Rating System (HHSRS) signalled by the 2004 Housing Act and utilised in our previous Health Impact Assessments in Sheffield, Ealing and Leeds. For these appraisals we focused on 10 of the 29 hazards identified in the Operating Guidance[25] for environmental health officers. Seven of these which may be significantly reduced by the investment programme are included in the sections of this report covering warmth and comfort (section 7) safety and independence (section 8) and security (section 9).

However, the coefficients of risk revealed in the Guidance relate to the English housing stock in 2004[26] – very relevant for our earlier studies but less so when undertaking the Lambeth appraisal 12 years later. Consequently, we have updated coefficients of risk and the likelihood

[25] ODPM (2006) *Housing Health and Safety Rating System; Operating Guidance.* ODPM Publications

[26] This is explained in Statistical Evidence to Support the Housing Health and Safety Rating System Vol. I, ODPM 2004. Using data from the EHCS, the census and some commercially available datasets, a Housing and Population Database was produced. This contained information on housing and household characteristics. This was matched with data on injuries, the HASS, and mortality; and with data on Hospital Episode Statistics. Analysing these matched databases gave the national average likelihood of an occurrence, that is an event or period of exposure, which could cause harm; and the national average spread of harm outcomes from such an occurrence.

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of harm by incorporating more recent government or Lambeth data. We have also expanded the scope of our appraisal to include (a) the mental health impact of fuel poverty (as distinct from the impact of cold and damp on physical health) (b) the impact of reducing the risk of falls in older people, signalling greater independence, and (c) the impact of reducing not just burglary crime but the fear of such crime on mental health.

(d) HEALTH OUTCOMES

We have retained the range of health outcomes classified by the HHSRS according to the degree of incapacity suffered. This allows physical injuries, serious health conditions and other health conditions to be compared.

Class I

This covers the most extreme harm outcomes. It includes: -

Death from any cause; Lung cancer; Mesothelioma and other malignant lung tumours; Permanent paralysis below the neck; Regular severe pneumonia; Permanent loss of consciousness; 80% burn injuries.

Class II

This Class includes severe conditions, including –

Cardio-respiratory disease; Asthma; Non-malignant respiratory diseases; Lead poisoning; Anaphylactic shock; Crytosporidiosis; Legionnaires disease; Myocardial infarction; Mild stroke; Chronic confusion; Regular severe fever; Loss of a hand or foot; Serious fractures; Serious burns; Loss of consciousness for days.

Class III

This Class includes serious conditions such as –

Eye disorders; Rhinitis; Hypertension; Sleep disturbance; Neuro-psychological impairment; Sick building syndrome; Regular and persistent dermatitis, including contact dermatitis; Allergy; Gastro-enteritis; Diarrhoea; Vomiting; Chronic severe stress; Mild heart attack; Malignant but treatable skin cancer; Loss of a finger; Fractured skull and severe concussion; Serious puncture wounds to head or body; Severe burns to hands; Serious strain or sprain injuries; Regular and severe migraine.

Class IV

This Class includes moderate harm outcomes which are still significant enough to warrant medical attention. Examples are –

Pleural plaques; Occasional severe discomfort; Benign tumours; Occasional mild pneumonia; Broken finger; Slight concussion; Moderate cuts to face or body; Severe bruising to body; Regular serious coughs or colds.

In addition there is evidence of the psychosocial[27] effects of housing improvements both from our Warm Front and Liverpool studies[28 29]. These relate both to improvements in mental health associated with better living conditions and to the negative impacts associated with the redevelopment process.

(e) COST BENEFIT

Within the resources available it has not been possible to undertake a detailed and full-scale analysis of the value of induced social benefits based entirely on local data. Instead we use local data where possible and elsewhere have imported data from non-local - usually national – published sources. We have imported data from 16 such sources, and where possible have made adjustments to reflect differences between the relevant national and local profiles. As a result, the estimates of social benefit are derived by a complex triangulation exercise. This exercise and the sources used are set out in the technical appendix to section 10.

Although there are numerous empirical studies of the adverse impact on health of sub-standard housing conditions, there are relatively few which investigate the health gains from housing improvements and a near total absence of evaluations of housing improvements which incorporate wider social gains[30]. Thus, in the absence of a tested template a bespoke social cost benefit model has been constructed and applied to the LHS. A fundamental distinction is observed between two broad components of social benefit.

- The monetary value of the direct gain of well-being enjoyed by those whose health is improved, measured by the value of the gain in Disability Adjusted Life Years (DALYs).

- The gain accruing to others as a concomitant of the gain of well-being – which consists of i) the saving in NHS and social care expenditures, and ii) the gain in economic output (GDP) where those enjoying better health are of working age, and finally iii) the expenditure saving in the Criminal Justice System which arises from the reduction in domestic burglaries due to the investment in household security. The gain accruing to others can be thought of as arising from the increases made possible in spending on other beneficial public projects or on private consumption.

[27] Hiscock, R., Kearns, A., Macintyre, S. and Ellaway, E. (2001) Ontological Security and Psycho-Social Benefits from Home: Qualitative Evidence on Issues of Tenure. *Housing Theory and Society*, 18 (1), pp. 50-56.

[28] Critchley, R., Gilbertson, JM., Green, G. and Grimsley, MJ. (2004) *Housing Investment and Health in Liverpool.* CRESR, Sheffield Hallam University.

[29] Gilbertson, J., Grimsley, M., and Green, G. for the Warm Front Group (2012) Psychosocial routes from housing investment to health: Evidence from England's Home Energy Efficiency Scheme. *Energy Policy*, 49, pp.122-133.

[30] See Fenwick, J., Macdonald, C. and Thompson, H. (2013) Economic analysis of health impacts of housing improvement: a systematic review. *J Epidemiol. Community Health*, Vol. 10, pp.835–45

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All components of social benefit are evaluated in monetary terms, which enables a direct comparison to be made between the induced social benefit and the cost of the programme from which the benefit derives. In order to distinguish between the reductions in different types of morbidity we present three separate cost benefit analyses of:

- the programme's investment in the warmth of dwellings– which reduces cardiovascular and respiratory illnesses, falls associated with cold homes and mental illness associated with fuel poverty
- the programme's investment in the safety of dwellings – which reduces accidental falls in the home caused by unsafe dwellings
- the programme's investment in the security of dwellings – which reduces mental illness associated with domestic burglaries

Given the nature of the exercise – in particular the extensive use of imported items of data – we must emphasise that the estimates of social benefit are to be read as only as plausible broad orders of magnitude.

6//THE PROCESS OF MODERNISATION

Key message 1: **The process of bringing a large number of properties up to the Lambeth Housing Standard in a densely populated environment has led to disruption and stress for many residents, particularly those who spend a large proportion of their time at home.**

Key message 2: **Previous studies of housing modernisation schemes give a clear indication that disruption and stress are unfortunately common consequences of major renewal programmes and that over time, residents tend to recover from the upheaval and begin to enjoy the benefits of their modernised home.**

This section has three main parts. First we outline the process of modernisation undertaken in Lambeth. Second we summarise key findings from our primary qualitative research into tenants' perceptions of the modernisation process. Third, we draw on previous studies of similar housing renewal schemes to provide insights into the longer term trajectory that Lambeth tenants might be expected to follow in terms of satisfaction with the modernised home.



(a) THE MODERNISATION PROCESS

Consultation

The investment programme was preceded by a process of intensive consultation with residents over a period of two years. The various consultation exercises undertaken between 2011 and 2012 through a combination of surveys and workshops, culminated in the co-production - between Lambeth Council and a representative sample of 5,600 residents - of the Lambeth Housing Standard (LHS). This included improvements of great importance to residents, over and above the Decent Homes Standard (DHS) set by central government.

Pilot schemes

The LHS is based on a five-year programme and detailed work plans are agreed at the start of each financial year. The programme began in 2012 and efforts during this first year focused on the most urgent works and ensured that homes across Lambeth were warm, dry and safe and therefore met current health and safety standards[30]. Year one also involved delivery of the programme across three 'pilot' or 'show' estates, where residents of those estates were asked for feedback about what worked well and what worked less well in terms of the improvement process. The feedback from these pilot schemes was used to improve delivery of the remainder of the programme, concluding in 2017.

Communication prior to and during the works

Communication with residents throughout the modernisation process was led by three area housing teams (Lambeth North, Central and South). In addition to making information and updates available through the relevant pages of the council's website, tenants were contacted directly by the council with an information pack which would, inter alia, tell them when the work to their property would take place; introduce the contractors who would be completing the work and the contractor's Resident Liaison Officer who they should contact with any queries or complaints in the first instance. Residents were also invited to local meetings where further information would be available. Regular newsletters were also issued to keep tenants updated on progress.

Prior to the beginning of the works in each property, residents were also consulted on some of the colours, styles and finishes of the kitchens, bathrooms and entrance doors where these were replaced. Lambeth Council also pledged to notify residents of the level of disruption they could expect at least one week ahead of the beginning of the works, to enable them to prepare. Residents are required to move their own furniture and possessions to enable work to go ahead but could request help from the contractor if required.

[31] Lambeth Living (2013) *Lambeth Housing Standard: Frequently Asked Questions.*

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Once the contractors were on site, residents were told to expect the work to be completed within 15 days but that the exact length of time required would depend on the level of work necessary to bring the property up to the LHS. Residents were advised that it was unlikely that they would need to move out of their homes while the work was carried out.

(a) TENANTS' PERCEPTIONS OF THE MODERNISATION PROCESS

Given the comprehensive nature of the works carried out under the LHS, the high density environments that most Lambeth tenants live in and because tenants were not decanted from their homes while the works were carried out, it was to be expected that relatively high levels of disruption would be reported in connection with the process of renewal. Disruption in the home environment is widely accepted as a major source of stress and can pose a threat to emotional wellbeing, particularly in the short term[32].

It proved difficult to obtain a representative sample of tenants and we were unable to access data from previous representative tenant satisfaction surveys undertaken by Lambeth Borough Council as this information was being loaded onto the Asset Management database at the time. The majority of the twenty residents we were able to interview reported feeling frustrated with the process of renewal and felt that it had impacted - and in some cases where works remained outstanding - continued to impact on the ease with which they could go about their daily activities and the extent to which they could relax at home. The views of this small sample of residents are supported by the findings set out in the review of *Lambeth Living* at the point at which the housing stock was handed back to Lambeth Council. The report[33] - presented at the Tenants Council meeting in June 2015 - stated that:

> *"The overall impression from stakeholders is that the delivery left a lot to be desired particularly in terms of communications and managing customer expectations. There are plans in place to improve and it is expected residents will start to feel the improvements with this year's programme. However, this is one of the crucial areas to get right in the future."*

Consistent with this analysis, the frustrations with the process that tenants expressed during the interviews generally revolved around the following issues: disruption to daily life; differences between expectations and what was delivered; inadequate communication and the piecemeal way in which the improvements to some properties were carried out. Many tenants' reported disruption to their daily routines as a result of the improvement process. Sometimes this disruption would last for longer than the tenant anticipated and in several instances was reported to have displaced tenants from their homes.

> *"I was sitting in here with 6-8 blokes crashing and banging about for eight to ten hours a day for maybe a week to week and a half…I was stuck in here in a corner, I used to go out and walk around for a few hours or I'd go to the library." (Tenant, Central Area)*

The fact that properties in Lambeth are often small further undermined tenants' ability to distance themselves from the works and these sorts of issues present the greatest difficulties for the elderly, disabled and other groups, such as families with young children whose daily lives are very much based at home. As the quotes above and below illustrate, it was even necessary for some tenants' to use facilities at public venues to get away from the noise and mess at home and access facilities when bathrooms were being improved:

> *"Being a bedsit there was nowhere to go while the work was being done and I had no facilities. I had to use the toilet in Tesco." (Tenant, North Area)*

Others reported having to pack up the contents of their homes to enable the work to go ahead but then delays in delivering the works meant that they were faced with a daily juggling act of keeping the space clear whilst still accessing their belongings:

> *"I'm currently living in one room, waiting for work to start, all my large furniture is rammed into a small double bedroom, and my front room is piled up with boxes and furniture put to one side. I'm living in my bedroom surrounded by large furniture. I've been told I won't be able to use the front room for 6 weeks." (Tenant, North Area)*

Even where the works had gone to plan, tenants' remarked on the struggle to keep on top of the dust and dirt unavoidably created:

> *"It was so stressful and dusty and dirty, we had to wash everything. But they did try to clean up after themselves, they couldn't really help it." (Tenant, Central Area)*

This disruption evidently had an emotional impact on many tenants, with a number remarking that they had felt 'stressed out', 'distressed' or 'upset' by the upheaval. As one tenant pointed out:

> *"It's good that they are making the flats look better… but it damages your emotions when you have to live like we are on the inside." (Tenant, Central Area)*

> *"It's all about frustration; it's all about feeling annoyed, feeling a bit let down, it's feeling like people are wasting your time." (Tenant North Area)*

From previous studies it is clear that the consequences of negative emotions such as these are potentially considerable and can exert a negative impact on mental wellbeing as a result of related increases in worry, stress, anxiety and depression [34].

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[32] Allen, T. (2000) 'Housing Renewal- Doesn't it make you sick?', *Housing Studies*, 15 (3), pp. 443-461.

[33] Lambeth Council (2015) documents tabled at the meeting of the Tenants' Council Thursday 11 June 2015.

Another key cause of tenants' dissatisfaction with the modernisation process was that their expectations of what would be delivered under LHS were not matched in practice. High expectations that are not met in practice is a phenomenon that has previously been identified in relation to other housing modernisation schemes and is reflected on later in this section. However, in Lambeth there was a more tangible dimension to this complaint in so far as some tenants reported that they did not receive the full package of improvements that they felt they had been promised. For example, one tenant relayed how he had been expecting to have his kitchen replaced but a decision was made on the day the works were due to take place that his kitchen did not need improving. This scaling back of what he felt had been promised was disappointing for the tenant.

The quality of the work carried out by the contractors was also widely remarked upon; with many respondents feeling that the improvements done to their homes were satisfactory at best and of a poor quality at worst:

> *"The workmanship was very poor. I know people in the trade and they've looked at it and said that it's been done very badly." (Tenant North Area)*
> *"When the workers are here they do a pretty standard, average job. They bring it to a level that's liveable but no more than that." (Tenant Central Area)*

The fact that a number of tenants had been left with unfinished jobs, snagging issues and a mess to clear up after the workman had left had undermined satisfaction with the process.

> *"They left a lot of mess. They scratched the Lino before they left because I asked them to clean up after themselves." (Tenant Central Area)*

This situation had prompted a number of tenants to comment on how unfinished work had made them feel frustrated and dissatisfied with the condition of their home, when they had expected to feel much better.

> *"For the amount of time it's taken and the inconvenience to me.....the damage to property, the attitude as well. We thought it would be so positive." (Tenant Central Area)*

Many remarks were also made about the extent to which Lambeth Council and the contractors delivering the works communicated with tenants. The issues experienced in this regard were most commonly associated with the re-scoping of works at the last minute when contractors visited the property (i.e. decisions not to replace kitchens or windows) and also delays in resolving unfinished jobs and snagging. In relation to the latter point, a number of the tenants interviewed had reportedly been waiting some time to find out when the work would be finished off or snagging would be resolved and remained poised for further disruption and therefore unable to relax and settle into the modernised home.

(c) EVIDENCE FROM PREVIOUS STUDIES

When considering the comments of Lambeth tenants in relation to their experiences of the process of modernisation, it is important to remember that they represent a 'snap shot' of feelings and attitudes at one point in time. We are unable to look into the future and canvass the opinions and experiences of the tenants who may occupy the improved properties in future years and will be able to enjoy the benefits of a modernised home without any of the upheaval of the process of improvement. Moreover, this study is not longitudinal in nature and it is therefore not possible to establish how current tenants' feelings about the work done to their homes may evolve over time and to what extent negative perceptions are sustained in the longer term.

There are, however, a number of previous larger-scale and longitudinal studies of the impact of similar housing modernisation schemes that have not only demonstrated that these negative feelings about the process of modernisation are commonplace but also suggest that they can be short lived. Here we draw on these previous studies to provide some insights into the longer term trajectory that tenants in Lambeth might be expected to follow in terms of satisfaction with the modernised home.

A previous large scale, longitudinal study of the impact of housing modernisation in Wakefield under the Decent Homes programme[35] provides such insights. The study took place over four years; one year prior to and two years following the modernisation works and engaged over 400 residents through interviews, focus groups and a longitudinal survey. Similar to tenants in Lambeth, when interviewed shortly after the completion of the modernisation works, many respondents reported finding the process of modernisation to be very stressful and it was apparent that these feeling were affecting tenants' ability to fully 'enjoy' the improved home. Previous studies by the authors[36,37] and Allen[38] have likewise found that the process of housing improvement can evoke feelings of impotence and stress.

Disruption as work is carried out

In terms of what drives these feelings of stress, frustration and impotence, the Wakefield study identified how such feelings could be traced back to feelings of losing 'control' of their home environment as it was 'invaded' by a procession of contractors. Moreover, our study of

[34] Gilbertson, J., Stevens, M., Stiell, B and Thorogood, N. (2006b) Home is where the hearth is: Grant Recipients' views of England's Home Energy Efficiency Scheme (Warm Front). Social Science and Medicine, No. 63, pp. 946-956.

[35] Hickman, P., Walshaw, A., Ferrari, E., Gore, T. and Wilson, I. (2011) "The houses all look posh now": Evaluating the Impact of a Housing Improvement Programme: The case of Portobello and Belle Vue. Final Report. Sheffield: CRESR, Sheffield Hallam University.

[36] Gilbertson, J., Stevens, M., Stiell, B. and Thorogood, N. (2006b) Home is where the hearth is: Grant Recipients' views of England's Home Energy Efficiency Scheme (Warm Front). Social Science and Medicine, No. 63, pp. 946-956.

[37] Gilbertson, J., Green, G. and Ormandy, D. (2006a) Decent Homes, Better Health- Sheffield Decent Homes Health Impact Assessment. Sheffield: CRESR, Sheffield Hallam University.

[38] Allen, T. (2000) Housing Renewal- Doesn't it make you sick? Housing Studies, 15 (3), pp. 443-461

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the impact of Decent Homes investment on the health and wellbeing of tenants in Sheffield identified that such feelings were, in some cases, the result of high expectations. More specifically, it was found that the anticipation of long awaited improvements to the home served to eclipse considerations of the process that would need to be worked through to bring about the improvements. As such, the upheaval of such a comprehensive set of improvements came as a shock. In other cases, tenants' anxiety about the process began to build long before works began and was maintained or exacerbated as the work was carried out.

Recovery and settling back in

However, although the impact of these negative emotional responses was found by several studies to be significant[39], evidence from the Wakefield study suggests that they were relatively short lived. Indeed, the study revealed that one to two years following the completion of modernisation works, most tenants had effectively 'recovered' from the disruption and felt in 'control' of their home environment once again. At this point tenants were at their most effusive about the benefits of the modernised home and references to feeling 'good', 'better' or 'happier' about their home and themselves were common. Some also alluded to the formation of a different relationship with the home, one that was more enjoyable and less functional; shifting from being merely somewhere to sleep to somewhere they enjoy spending time.

Another important impact noted in Wakefield was that most residents (73 per cent) felt safer and more secure in their homes- a factor our previous studies show is strongly linked to health benefits. In this context residents identified not only the improved robustness of windows and doors but also subtler factors that engendered a sense of greater confidence and relaxation regarding the security of the home, for example: being less sensitised to noises from outside as a result of double glazing.

Minimising the impact of the process

Although previous studies suggest that negative feelings associated with the modernisation process are likely to subside over time, evidence also exists to suggest that there is scope to minimise or avoid these feelings. The Go Well project led by University of Glasgow seeks to clarify the relationship between housing and well-being and publications have emphasised that a carefully implemented modernisation programme will in itself offer opportunities to enhance sense of well-being or at least avoid undermining it.

The earlier work of Allen in relation to residents' experiences of housing modernisation under the Estate Action scheme lends support to the views from Glasgow but at the same time acknowledges that a sense of individual control over the process is difficult to achieve in the context of a large scale modernisation scheme. He does however suggest that keeping residents' well informed about the process of renewal will also help to minimise the potential for adverse health effects. Re-enforcing this view, our earlier study of the Decent Homes Programme in Sheffield also identified that tenants who felt listened to and meaningfully consulted on the modernisation of their home had experienced more positive emotional reactions to the process.

[39] Clark, J. and Kearns, A. (2012) 'Housing improvements, perceived housing quality and psychosocial benefits from the home'. *Housing Studies*, 27(7), pp. 915-39.

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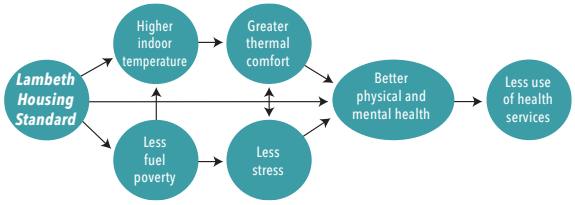
Key message 1. **Investment in the energy efficiency of Lambeth's council housing stock will increase indoor temperatures, marginally reduce excess winter deaths, improve physical health and reduce falls and fractures in older occupiers.**

Key message 2. **The greater impact of the investment in energy efficiency is a reduction in fuel poverty, less stress and an improvement in mental health.**

WARMTH AND HEALTH

In Lambeth as in England, more residents die in the winter than in the summer months. Half of these excess winter deaths are probably caused by living in cold conditions [40]. It is a story which captures the newspaper headlines because these avoidable deaths are a highly visible stain on our society. The experience of Scandinavia is almost all of them can be eliminated.

Figure 7.1// Possible pathways to health



Deaths are only the tip of an iceberg. Figure 7.1 illustrates how energy efficiency measures can also alleviate poor health linked to low temperatures and fuel poverty. Robust evidence deployed by the UK Government's Housing Health and Safety Rating System shows that warmer living conditions alleviate heart problems in older people. Reducing damp and mould alleviates respiratory problems in children[41]. This section of our report estimates the size of these impacts. In addition, following the Marmot Review Team[42], we assess how warmer temperatures also reduce the risk of falls and fractures to older residents.

Finally, the Marmot review team and our own earlier work evaluating the impact of Warm Front for the UK Government[43] distinguishes fuel poverty from cold conditions. The two are linked but as figure 7.1 shows, alleviating fuel poverty has an independent effect by reducing stress and improving mental health. As we have shown[44] and shall show again in this report, mental health impacts are much more significant than the improvements in physical health arising from alleviating cold conditions.

INVESTMENT

Decent Homes and Lambeth Housing Standard are the main investment programmes for achieving the twin targets of a high standard of thermal comfort and eradication of fuel poverty by 2018. Planned expenditure is £136.6m on heating and energy efficiency measures.

(a) FUEL POVERTY MODEL

Here we assess the impact of Lambeth's housing investment on the warmth and comfort of residents. Our target group is residents living in fuel poverty at the beginning of the LHS investment programme in the baseline year of 2012. These are defined by the government commissioned Hills report[45] as households on low incomes and relatively high fuel costs. Using the Hills' framework (figure 7.2) our target group is the highlighted quadrant, bottom left. The investment programme should improve thermal efficiency, reduce fuel costs (for heating), depress the horizontal dotted line and reduce the size of the highlighted

[40] Paul Wilkinson et al (2001) *Cold Comfort: The Social and Environmental Determinants of Excess Winter Deaths in England 1986-1996.* Joseph Rowntree Foundation.

[41] Office of the Deputy Prime Minister (2006) *Housing Health and Safety Rating System: Operating Guidance.* ODPM. London.

[42] Marmot Review Team (2011) *The health impacts of cold homes and fuel poverty*. Marmot Review Team and Friends of the Earth. London.

[43] Jan Gilbertson, Michael Grimsley, Geoff Green (2012) Psychosocial routes from housing investment to health: Evidence from England's home energy efficiency scheme. *Energy Policy* 49:122-133.

[44] Bernard Stafford (2014) The social cost of cold homes in an English city: developing a transferable policy tool. *Journal of Public Health*.

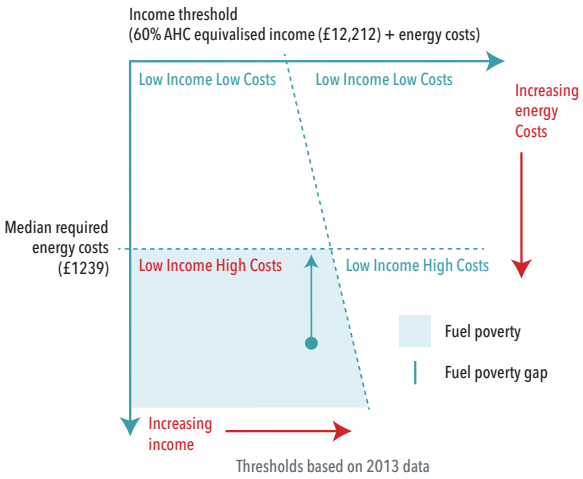
[45] Hills, J. (2012) *Getting the measure of fuel poverty: final report of the Fuel Poverty Review*. CASE report 72. London: Centre for Analysis of Social Exclusion. London School of Economics and Political Science.

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quadrant. This reduction is the **impact** of the programme (distinguished from any change in income or fuel prices).

Calculating the rate of fuel poverty of households occupying Lambeth Borough's 32,000 tenanted and leasehold property is a complex business[46]. In the absence of a systematic survey (though informed by resident interviews) we can only estimate a broad order of magnitude by modelling the likely prevalence of fuel poverty. Our approach is to utilize limited evidence from Lambeth on income and thermal efficiency and estimates of fuel poverty by plugging in ratios derived from national statistics and academic studies.

Figure 7.2// Fuel poverty under the low income high costs indicator



First **income**: approximately 60% of the 23,000 tenanted households were in receipt of housing benefit. Compared with the averages for England as a whole, these are in the bottom 20% of national household incomes for 2013 (after rents or mortgage payments are deducted)[47]. According to the annual fuel poverty statistics for 2013 (chart 3.7), 40% of these low income households are fuel poor and 13% of those with slightly higher incomes are also fuel poor. Average leaseholder's incomes were higher. Probably only 30% were in fuel poverty in the baseline year; very affluent owner-occupiers matched by poorer tenants of private leaseholder landlords.

Second, **thermal efficiency**. Government sources measure domestic energy efficiency using either a Standard Assessment Procedure (SAP) or an Energy Efficiency Rating (EER). The baseline SAP for Lambeth Council's housing stock averaged 66 – better than the 58.7 average for the English stock in 2013. However, our primary focus is on the lower rated 15,000 tenanted properties earmarked for the full LHS investment programme.

Combining the evidence on income across tenures, we estimate approximately 17,500 households had low incomes as defined by the Hills fuel poverty model – 14,800 tenanted and 2,700 households in leasehold property. Approximately 3,200 households of all tenures were in fuel poverty prior to the LHS investment programme, with 57% concentrated in the 15,000 tenanted properties scheduled to receive the lions share of improvements to thermal efficiency. The target of 3,200 households, constitute the low income-high fuel cost quadrant in the Hills' fuel poverty model. Our following calculations assume that the compression of this quadrant arises because less heating fuel is used as a result of investments in thermal efficiency and not because of changes in income (which for lower income households did not increase significantly over the period of the investment programme).

(b) THE IMPACT OF EXCESS COLD

Our own study for the UK government of the impact of Warm Front indicated clear pathways from investment in thermal efficiency to improvements in physical and mental health. These are summarised in figure 7.1. Most households in fuel poverty keep warm by giving priority to paying fuel bills over life's other essentials[48]. However, a significant minority will live in cold conditions. The Hills Report refers to recommended temperatures derived from the World Health Organization of 21°C in the living room and 18°C in bedrooms to give thermal comfort. These recommendations are debated by Hills and by Ormandy & Ezratty[49] but we assume that a living room temperature below 18°C is likely have a harmful impact on the health of at least one occupant[50].

The relationship between fuel poverty and temperature is therefore critical to our assessment (see table 7.3). The best evidence is from a national sample survey of Ireland households (where conditions are similar to those in England) by Healy and Clinch[51]. They show 30% of households in fuel poverty have temperatures below 18°C matched by another 11% of households not in fuel poverty. We apply these coefficients to Lambeth. Our focus is the 930 fuel poor households who were likely to live in excessively cold conditions. Most of these (550) occupied some of the 15,000 tenanted dwellings which are the main focus of the investment programme, and a smaller number (160) households in leasehold properties also suffered excessively cold conditions.

[46] National Statistics (2015) *Annual Fuel Poverty Statistics Report 201*5. London: Department of Energy and Climate Change.[46]

[47] Department of Work and Pensions (2015) Households with below average income. London: DWP.

[48] Preston, I. et al (2014) Fuel and Poverty: A rapid assessment for the Joseph Rowntree Foundation. Bristol: Centre for Sustainable Energy.

[49] Ormandy, D. and Ezratty, V. (2011) Health and Thermal Comfort: from WHO Guidance to housing strategies. Energy Policy.

[50] The Housing Health and Safety System: Operating Guidance (2006) Office of the Deputy Prime Minister suggests a 'small risk below 19°C.'

[51] Healy, J. and Clinch, P. (2002) Fuel poverty, thermal comfort and occupancy: results of a national household survey in Ireland. Applied Energy, 73, pp. 329-343.

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Table 7.3// Lambeth Properties - calculation of reduced likelihood of harm to health from excess cold

2012 Baseline status	No.	HB Or income equiv.	Fuel Poverty	Temp < 18 C Pre-interv.	Temp <18C Post-interv	Reduction in harm to health
Tenants Non-DH compliant	15,095	9200 (61%)	1840 (20.0 % of 9200)	550 (30% of 1840)	470 (85% 0f 550)	80 (15% of 550)
DH compliant tenants	8,000	4880 (61%)	730 (15.0% of 4880)	220 (30% of 730)	210 (95% of 220)	10 (5% of 220)
Leaseholders	9,000	2700 (30%)	540 (20.0% of 2700)	160 (30%) of 540)	150 (92% of 160)	10 (8% of 160)
Annual Total	**32,000**			**930**	**830**	**100**
Figures rounded to nearest 10						

Evidence supporting the Government's Housing Health and Safety Rating System (HHSRS) indicates that excess cold has a significant impact on health, primarily heart disease. This is confirmed by a big Scottish survey[52] indicating that people living in these cold conditions (<18°C) are twice as likely as the general population to suffer high blood pressure – a risk factor for heart disease. According to the government's HHSRS Operating Guidance at least one person in each of these 930 Lambeth households is likely to suffer harm to health.

According to the Operating Guidance, severity of this harm falls into four classes, from death and regular severe pneumonia in class 1 to minor conditions like 'occasional mild pneumonia' or 'regular coughs and colds...serious enough to warrant medical attention.' On the advice of David Ormandy, the author of the HHSRS, we have reduced the percentage of class I harms and increased the percentage of class II harms to account for the reducing trend of deaths from heart disease and stroke since the statistics supporting the Operating Guidance were compiled[53]. We have also increased the percentage of class IV harms following a review by Michael Marmot to account for indirect impacts of cold homes on health[54]. According to the Department of Health[55] *'Cold houses affect mobility and increase falls and non-intentional injuries. Symptoms of arthritis become worse in cold and damp houses; strength and dexterity decrease as temperature drop, increasing the risk of non-intentional injuries.'* The epidemiology backing this claim is robust[56], but as yet, there is no clear evidence which allows us to definitively quantify those elderly occupants at risk. Our estimates are summarised in table 7.4.

Table 7.4// Likelihood of harm to health from excess cold in households occupying Lambeth Borough's tenanted and leasehold dwellings

		Spread of harms*			
32,000 Tenanted and leasehold dwellings	**Temperature less than 18°C People at risk of harm**	Class I 30.0%	Class II 10%	Class III 20%	Class IV 40%
Before Investment programme	930	280	90	190	370
After investment programme	830	250	80	170	330
Reduction 1 year	**100**	30[57]	10	20	40
15 years	**1500**				
*Figures rounded to nearest 10					

The main beneficiaries of the LHS investment programme are the 15000 tenanted properties which did not meet either the Decent Homes or LHS standard in 2012. These will benefit from new double glazed windows, top-up insulation where required and new high energy efficient condensing boilers. Leaseholders will benefit to a lesser extent, some from the upgrading of communal boilers and insulation, and an estimated 5000 from the installation of new double-glazed windows. The 8000 tenanted properties which already met the DHS in 2012 will benefit modestly. An earlier investment programme installed double-glazed windows and upgraded boilers. However, they will benefit from the current investment programme with communal insulation and boilers.

Lambeth's target is to increase the SAP rating from 66 to 70. Our national health impact evaluation of Warm Front[58] indicates that new boilers and insulation will increase living room temperatures by 1.6°C, taking an additional 10% of all households from below to above the 18°C threshold. Additionally, a feature of such investment programmes is to shorten the 'tail' of the coldest properties where the rise in living room temperatures is 2.5°C.

The main impact of the LHS programme on excessively cold living conditions (see table 7.3) is on the 15000 tenanted dwelling which were 'non-compliant' in 2012 and scheduled to benefit from the full works - new boilers, double glazing and insulation. These improvements in thermal efficiency will benefit 550 of these households harmed by excess cold. Some will choose to cut their fuel bills. About 50% will choose 'temperature take-back'[59] resulting in a rise of 2°C in living room temperatures. About 80 of these dwellings will no longer endure living room temperatures below 18°C and (using the convention from the HHSRS) 80 occupiers will benefit from a reduction in harm to health.

[52] Shiue, I. and Shiue, M. (2014) Indoor temperature below 18°C accounts for 9% population attributable risk for high blood pressure in Scotland. *International Journal of Cardiology*, 171 (1) e1-e2.

[53] Public Health England (2015) *Health Profile: Lambeth Unitary Health Authority*. PHE (The profile shows a nearly halving of premature mortality from heart disease and stroke).

[54] Marmot Review Team. The Health Impacts of Cold Homes and Fuel Poverty. London, UK: Friends of the Earth, 2011.

[55] Regional Public Health Group in the South East (2007) *Health and Winter Warm: Reducing Health Inequalities*. London: Department of Health.

[56] Collins, K.J. (1986) Low indoor temperatures and morbidity in the elderly. *Age & Ageing*, 15 (4) pp. S22-S26

[57] This estimate of Class I harms will include deaths and severe illness. According to the Health Profile there was a three-year annual average of 71 Excess Winter Deaths for the whole of Lambeth.

[58] Green, G. and Gilbertson, J. (2008) *Warm Front, Better Health: Health Impact Evaluation of the Warm Front Scheme*. Sheffield: CRESR, Sheffield Hallam University.

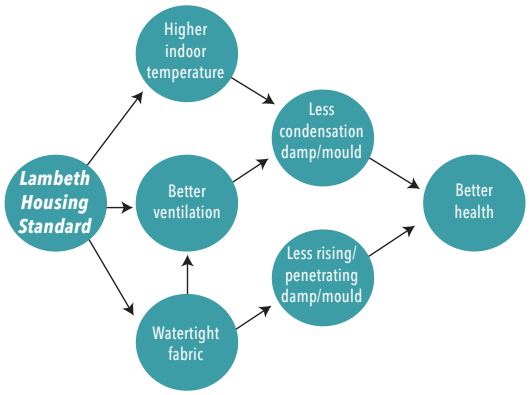
[59] Milne, G. and Boardman, B. (2000) Making cold homes warmer: the effect of energy efficiency improvements on low income homes. *Energy Policy*, 28 (6-7), pp. 411-424.

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In addition, we estimate a smaller number of beneficiaries in leasehold properties (mainly because they were not in receipt of new boilers) and the tenanted properties which were already compliant in 2012 and in receipt of fewer improvements from the current investment programme. Adding together the three groups of dwellings, our estimate is a total of 100 beneficiaries with their health no longer harmed by living in excessively cold conditions.

Eric*, Dray Gardens.
The windows - "unbelievable, you wouldn't believe the difference. I used to wake up in the mornings and you could see your breath" "the flat looks nicer and I haven't got the problem with the draughts and cold. The flat was freezing and there was mould…Its 100 per cent warmer. Its made such a difference, it's unbelievable."
**name changed*

Figure 7.5// Reducing damp and mould



(c) DAMP AND HEALTH

Dampness is the second of seven hazards covered by our report. As revealed by our earlier study of residential tower blocks in Sheffield[60], the principal cause of damp and mould growth is condensation rather than water penetration. Figure 7.5 illustrates how damp might be cured, with a positive impact on health.

Condensation is caused partly by lifestyle, partly by lack of ventilation and predominantly by low temperatures. A number of epidemiological studies have demonstrated how damp is strongly associated with a range of symptoms, particularly respiratory problems, including asthma. The pathway of cause and effect is via airborne mould spores which grow in damp conditions and the prevalence of dust mites which thrive in humid conditions[61]. But whereas cold conditions have most impact on older people, damp conditions (as confirmed by the Operating Guidance) are strongly linked to childhood illness.

Over 80% of the Lambeth Council housing stock comprised unmodernised council flats, much of it constructed by 'non-traditional' techniques and materials – notorious for cold-bridging and their low insulation qualities. Low indoor temperatures in such properties will lead to higher levels of condensation, damp and mould growth. Our conservative estimate is that all 930 households with living room temperatures below 18°C were potentially vulnerable to harm from health from damp and mould.
The full package of LHS programme measures to improve thermal efficiency (windows, individual boilers, insulation) will have a significant impact on reducing damp and mould. The lesser package for already compliant tenants and leaseholders will have a smaller but significant impact. We estimate the magnitude of the impact by reference to our previous empirical studies. The Warm Front package of new boilers and insulation applied to a range of housing archetypes resulted in only a 4% reduction in severe mould. The additional measure of double glazing in Lambeth properties should reduce condensation significantly, though probably not achieving the near 100% reduction in mould resulting from the renovation of tower block flats in Sheffield. Our conservative estimate is a reduction of 30% in the number of vulnerable occupants of the non-compliant tenanted dwellings at risk of harm to health in 2012, accounting for both increased temperatures and the preponderance of flats in the housing stock. There is a smaller reduction in leasehold dwellings and those which were already compliant in 2012. Our assumptions and calculations are shown in table 7.6.

Table 7.6// Lambeth Council Properties - reduced likelihood of harm to health from damp and mould

2012 Baseline status	No.	HB Or income equiv.	Fuel Poverty	Damp Pre-interv.	Damp Post-interv	Reduction in harm to health
Tenants Non-DH compliant	15,095	9200 (61%)	1840 (20.0 % of 9200)	550 (30% of 1840)	385 (21% of 1840)	165 (9% of 1840)
DH compliant tenants	8,000	4880 (61%)	730 (15.0% of 4880)	220 (30% of 730)	205 (28% of 730)	15 (2% of 730)
Leaseholders	9,000	2700 (30%)	540 (20.0% of 2700)	160 (30%) of 540)	130 (25% of 540)	30 (5% of 540)
Annual Total	**32,000**			**930**	**720**	**210**
Numbers rounded						

In total, 210 occupants have benefited from a reduction in risk to health from cold and damp. Then we have utilized coefficients from the HHSRS to assess the spread of harms. Beneficiaries are primarily those 190 occupants who every year would previously have suffered less severe harms such as wheezing and regular serious coughs and colds. Over the 15-year life of the investment over 3000 occupants, primarily children, will suffer less respiratory disease and other ailments associated with damp and mould (see table 7.7).

[60] Green G., Ormandy D., Brazier J. and Gilbertson, JM. (2000) Tolerant building: the impact of energy efficiency measures on living conditions and health status, in Rudge, J., & Nicol, F. (eds) *Cutting the Cost of Cold*. London: E&FN Spon.

[61] Oreszczyn, T., Ridley, I., Hong, S. and Wilkinson, P. (2006) Mould and winter indoor relative humidity in low income households in England. *Indoor Built Environment*, pp. 125-135.

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Table 7.7// Lambeth tenanted and leasehold dwellings - reduced likelihood of harm to health from damp and mould

		Spread of harms			
		Class I 0.0%	Class II 1.0%	Class III 10%	Class IV 89%
Before Investment programme	930	0	10	90	830
After investment programme	720	0	7*	70	640
Reduction 1 year	**210**	**0**	**3***	**20**	**190**
15 years	**3150**				
*Exception to figures rounded to nearest 10					

Fatima*. Lambeth North Resident

"I used to buy at least two bottles of bleach a week and that was just to clean the mould of the windows constantly....so when we had these new windows the whole building looked very pretty from outside. I think everybody was quite pleased".

"When you feel so sick, it's nice to sit down in comfort.....I spent a lot of time in hospital last year...I can come to my home and it's not cold, I don't have to be cleaning the windows, I don't have to be wiping this or doing that".

**name changed*

(d) FUEL POVERTY

We estimated that 3200 (10%) of households occupying Lambeth Borough's tenanted and leasehold dwellings were in fuel poverty before the investment programme started in 2012. Many experienced high levels of stress, juggling their household budgets to pay fuel bills and keep warm, often failing to do so. The research evidence from our Warm Front study shows a very clear pathway from fuel poverty (expressed as difficulty paying fuel bills) via raised levels of stress to common mental disorder (CMD). According to the National Centre for Social Research (NatCen),[62] *'CMD comprises different types of depression and anxiety which impair emotional and physical well being and behaviour. These disorders not only result in considerable distress to the individual with the condition, but can also affect family, friends and working life.'*

Fuel poverty has an impact on mental well-being independent of the impact of cold and damp living conditions on physical health. We estimate this mental health impact by 'triangulating' evidence from a number of published sources. As a marker of fuel poverty a survey by NatCen asked if households 'used less fuel due to worry about costs.' Of these households, 32% reported symptoms of anxiety or depression (common mental disorder). Applying this ratio to the 3200 fuel poor households occupying Lambeth Council dwellings in the baseline year of 2012 gives an estimated 1020 people with common mental disorder warranting medical attention according to the HHSRS. Most of these are modest harms to health[63].

Our estimates for the reduction in anxiety and depression (see tables 7.8 and 7.9) are derived from our Warm Front study which identified households with 'difficulty paying fuel bills' as a marker of fuel poverty. A package of energy efficiency improvements implemented by Warm Front reduced the number of fuel poor by 43%. The substantial LHS investment programme in the 15,000 non-compliant tenanted dwellings includes double-glazed replacement windows which increase thermal efficiency and reduce energy costs further. Overall we estimate this enhanced Lambeth Housing Standard will reduce fuel poverty by 50% in these dwellings from to 1840 to 920 households. The proportionate reduction in fuel poverty is smaller for households in leasehold dwellings and for those in 8000 tenanted properties largely compliant in 2012. We estimate the LHS investment programme will lead to an overall reduction in fuel poverty of 40%. In total 1225 households will be taken out of fuel poverty (see table 7.8).

However, the reduction in anxiety and depression is not proportionate because (according to NatCen) some fuel-poor occupiers are depressed by other factors. These may endure after the lifting of fuel poverty. So although fuel poverty falls by 40%. we estimate the investment programme will reduce by a smaller percentage (330) households where (according to the HHSRS convention) an occupier has symptoms of anxiety or depression. According to the HHSRS, these are primarily a class IV harm.

Table 7.8// Lambeth Council Households - likelihood of harm to health from fuel poverty

2012 Baseline status	No.	HB Or income equiv.	Fuel Poverty Pre-interv.	Fuel Poverty Post-interv.	Reduction in fuel poverty	Reduction in CMD harm to health
Tenants Non-DH compliant	15,095	9200 (61%)	1840 (20.0 % of 9200)	920 (50% of 1840)	920 (50% 0f 1840)	250 (27% of 920)
DH compliant tenants	8,000	4880 (61%)	730 (15.0% of 4880)	585 (80% of 730)	145 (20% of 730)	40 (27% of 145)
Leaseholders	9,000	2700 (30%)	540 (20.0% of 2700)	380 (70%) of 540)	160 (30% of 540)	40 (27% of 160)
Annual Total	**32,000**		**3110**	**1885**	**1225**	**330**
Numbers rounded						

[62] Harris, J., et al (2010) *Health, mental health and housing conditions in England. National Centre for Social Research/Eaga*. London.

[63] The spread of harms is assumed the same as for the hazard of entry by intruders which is relates wholly to mental health impacts. University of Warwick/London School of Hygiene & Tropical Medicine (2003) Statistical evidence to support the Housing Health and Safety Rating System. London: Office of the Deputy Prime Minister.

Table 7.9// Lambeth tenanted and leasehold dwellings- reduced likelihood of harm to health from fuel poverty

	Households in Fuel Poverty	Harm of anxiety or depression	Spread of harms			
			Class I 0.0%	Class II 1.0%	Class III 10%	Class IV 89%
Before Investment programme	3100	930	0	10	100	830
After investment programme	1880	630	0	6	60	530
Reduction 1 year	1220	**330**	**0**	**3***	**30**	**300**
15 years		**4950**				

*Figures rounded except this one

(e) SUMMARY

Large numbers of Lambeth households live in fuel poverty and experience cold living conditions, damp, mould, and stress associated with high fuel bills. Table 7.10 summarises our estimated health benefits of improving the energy efficiency of Lambeth Council's tenanted and leasehold dwellings as a key component of the LHS investment programme. Though the health of only about a 100 residents is improved by reducing excessively cold living conditions, the outcome is fewer winter deaths and severe illness. There are twice as many beneficiaries from the removal of damp and mould and three times the number whose mental health benefits from the alleviation of fuel poverty.

Table 7.10// Summary impact of the LHS programme on improving energy efficiency

	Number of occupants whose health is harmed and improved			
	Harmed by excess cold	Harmed by damp & mould	Harmed by fuel poverty	**Harmed by all these**
Before the LHS investment Programme	930	930	930	**2790**
After the LHS investment Programme	830	720	600	**2150**
Health improvement	**100**	**210**	**330**	**640**

8//SAFETY AND INDEPENDENCE

Key message 1. **Remodelling kitchens and bathrooms as major components of the Lambeth Housing Standard will reduce falls, especially for older people.**

Key message 2. **An integrated programme of investment in home safety measures and home adaptations and Lambeth's 'Integrated Care Strategy' will maintain the independence of older people.**

(a) CHALLENGE

'More older people living independently at home' is an ambition of *"Healthier Together,"* Lambeth's five year strategy for integrating health and social care provision[64]. This NHS led strategy does not highlight integration with housing provision. Yet safety goes hand in hand with independence. A safe and secure home protects older people from harm and encourages independence. The Government's Housing Health and Safety Rating System (HHSRS) points to safety measures which prevent the trauma of electric shocks, fires, burns, scolds and especially falls as potential hazards which impact on health. In addition, aids and adaptations can enhance independent lives.

In figure 8.1, an innovative WHO report [65] summarises the critical role of supportive environments in maintaining or enhancing 'functional ability,' whatever an individual's levels of health, or as WHO defines it, intrinsic capacity.

***'Functional ability** comprises the health- related attributes that enable people to be and to do what they have reason to value. It is made up of the intrinsic capacity of the individual, relevant environmental characteristics and the interactions between the individual and these characteristics.'* (WHO, page 28). In summary, we can equate functional ability with independent living, as this is understood by *'Healthier Together'* and by residents themselves.

(b) INVESTMENT PROGRAMME

Five elements of the LHS help improve safety in the home. An investment of £70.3 million in new kitchens, reconfigures the layout to give greater functionality and even non-slip floors (figure 8.2). An investment of £61.0 million in new windows includes restrictors to maximise safety in addition to improving warmth and comfort and security. Internal rewiring costs £41.2 million and measures to improve fire safety £12.6 million. £6.3 million is invested in bathrooms and a further £4.9 million on aids and adaptions with a focus on the 580 units of sheltered housing where wet rooms are a priority.

Figure 8.1// Functional ability

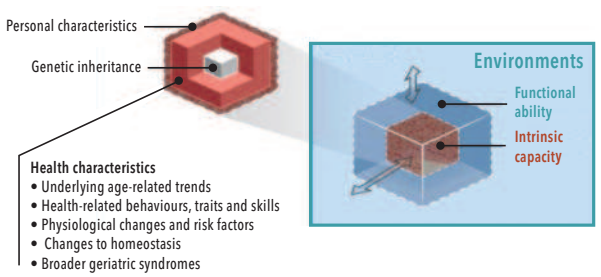
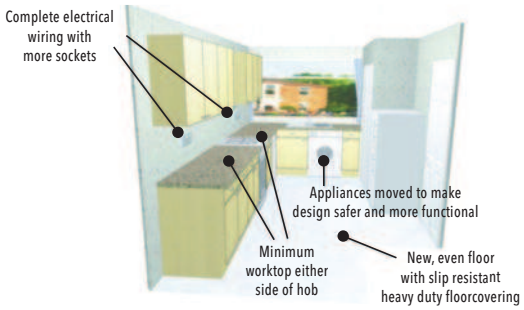


Figure 8.2// New Kitchens



(c) ACCIDENT PREVENTION

Eleven of all the 29 hazards identified in the HHSRS[66] lead to accidents. Figure 8.3 summarises the likely reduction following investments which improve safety in Lambeth Council homes. There will be fewer burns and scolds, fewer trips and falls and fewer collisions, cuts and strains.

[64] Lambeth Clinical Commissioning Group (2014) *Healthier Together: Five- year strategy 2014/4 to 2018/9*. NHS.

[65] World Health Organization (2014) *World Health Report on Ageing and Health*. Geneva: WHO.

[66] Office of the Deputy Prime Minister (2006) *Housing Health and safety Rating System: Operating Guidance*. ODPM Publications.

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For our study we focus on the four hazards leading to falls in the home[67]. Most of these are on the same level. The ODPM *Operating Guidance* distinguishes falls in bathrooms (hazard 19) from other falls on the level (hazard 20) with the main cause as *'slipping when getting into and out of the bath. Thus the slip resistance of the internal surfaces of the baths and showers when wet will affect the likelihood of an incidence occurring.'* The most common injuries are cuts or lacerations (27 per cent), swelling or bruising (26 per cent) or fractures (11 per cent).

Figure 8.3// Reducing accidents

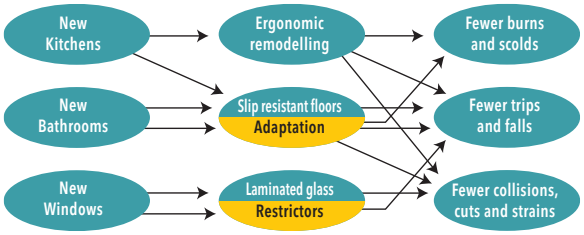


Figure 8.4// Children more likely to fall on the level



Fatima, Lambeth North area.*
Old kitchen was replaced in 2014 with a new one, 'I had a lot of problems with that kitchen because the way it was set out. The cupboards were very old. The cooker was right by the sink. Many times I knocked the pot when washing....or my hijab got burned. It was very very bad set out the kitchen'. 'They gave me a better boiler which wasn't breaking'.

The entire kitchen was gutted and replaced with a new floor, new cupboards, new plastering in part, nice new sockets. 'Everything was easy access, so you need to be plugging all over'. 'Where it is positioned is safe, it's away from the cooker....It made me feel a lot more secure'
**name changed*

The Guidance identifies *'the construction, evenness, inherent slip resistance, drainage (for outdoor path surfaces) and maintenance of the floor or path surface as affecting the likelihood of an occurrence' and the severity of an outcome.'* As with bathrooms, functional space and ergonomics also affect likelihood. These falls usually result in relatively minor injuries, though about 15 per cent can result in Class I or Class II injury such as fractures to head, brain and spine.

The second most common occurrence - accounting for around 25 per cent of home falls, is falling on steps and stairs, both inside and outside the home (hazard 21). The likelihood is greater on narrow and winding stairs, with irregular treads, without handrails or carpets. Though stair falls are not as common as falls on the level, the likelihood of a fatal accident is higher and fractures may lead to deterioration in health over the ensuing weeks and months. Falls between levels (hazard 22), generally out of windows, are a rare event, but can prove fatal especially from the first floor and above.

Reviewing the whole range of hazards, sometimes children are most at risk; sometimes older people[68]. Older people are more likely to be injured in bathrooms (figure 8.5) and to fall down stairs. Though children under five are more likely to trip, stumble or fall on the level, the impact on older people is generally more severe, with immediate physical injury and longer term loss of confidence. Children are more likely to fall out of windows, to receive an electric shock or suffer scalds and burns from other sources. And though a household with children is twice as likely to experience a fire as one without, it is older people with impaired mobility who are least likely to escape.

(d) BENEFITS OF SAFETY AND INDEPENDENCE

Figure 8.5// A new wet room in Lambeth's sheltered housing



Lambeth's investment programme in council housing will principally benefit the safety of children and independence of older residents. Here we focus on independence of older people utilising the research from the London School of Economics [69] to estimate the health gains of older residents who will suffer fewer falls, a concomitant of which will be greater independence. This is a departure from the method deployed in our previous studies in Sheffield, Ealing and Leeds where we used coefficients

[67] Despite the experience of Fatima, the estimated prevalence and reduction of burns, scolds, collisions and cuts are very small and does not figure in our cost-benefit analysis.

[68] Walter, LK (2010) *Re-valuation of home accidents - PPR 483*. Transport Research Laboratory. Wokingham. Commissioned by the Royal Society for the Prevention of Accidents.

[69] Snell, T., Fernandez, JL. and Forder, J. (2012) *Building a business case for investing in adaptive technologies in England*. PSSRU Discussion Paper 2831. London: London School of Economics and Political Science

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Figure 8.6// Benefits of wet room shower

Mr Patrick McGeever is 93 years only and lives in Joe Hunte Court, a Lambeth sheltered housing scheme of 30 properties. When Mr McGeever, who retired from the building trade in 1988, moved into the property from a nearby council estate there was a bath tub which he was unable to use despite having carers visit him four times daily. His bathing regime was a strip wash in the bathroom.

The wet room shower was fitted as part of the Lambeth Housing Standard works specified for our sheltered housing stock. Mr McGeever is very pleased with the shower as it enables him to bathe properly albeit with the help of his carers. He said that he appreciates the fixed shower seat which enables him to relax and also the handrails which give him confidence.

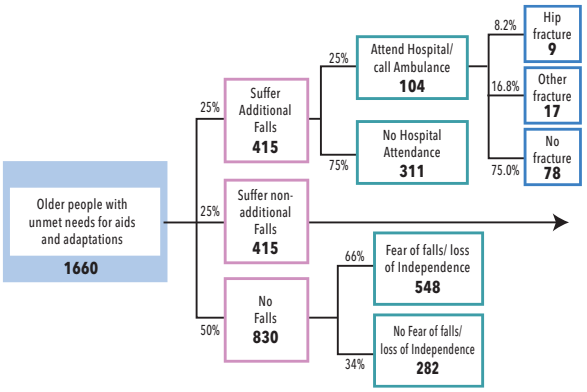
(Source: Lambeth Borough Council, with permission from Patrick McGeever)

from the HHSRS based on the risks posed by safety hazards. However, according the HHSRS, the prevalence of electrical, fire and flame/hot surface hazards is very modest and there will therefore be relatively few beneficiaries following their removal. Accordingly, these do not feature in our latest estimate of beneficiaries.

Our focus is on removing the cluster of hazards which increase the risk to older people of falls and fear of falling – in bathrooms, on the level, on stairs or steps, or between levels. Though the HHSRS system gives falls greater prominence than other safety hazards, its assessment of risk still gives implausibly low estimates of the number residents suffering harm to health[70]. The LSE model suggests many more falls, consistent with an estimated 16,000 annual falls by older people in Southwark and Lambeth[71]. This equates to 2,400 falls by an estimated 7900 over 65s living in Lambeth Council dwellings. These are the beneficiaries of the investment programme, especially in bathrooms/wet rooms, kitchens and aids and adaptations.

Our estimate of the number of beneficiaries is derived from the LSE study. Figure 8.7 is an illustrative pathway based on 1660 older people with unmet needs for aids and adaptations. In the absence of reliable numbers from local sources, our central estimate of unmet needs is derived from the English House Conditions[72] survey scaled down to the Lambeth Council Housing stock. Our assumption is that the LHS programme will meet this unmet need.

Figure 8.7// Illustrative 12-month pathway based on 1660 people - with unmet needs for aids and adaptations



Our focus in this safety section of the report is exclusively on households in the 15, 000 tenanted dwellings which were non-compliant with the Decent Homes and Lambeth Housing Standards in 2012. They are the only recipients of the full package of upgraded kitchens, bathrooms and aids and adaptations as part of the current LHS programme. Our estimate of the impact of the LHS investment programme in meeting the subset of 1660 households where there are unmet needs is based on a review of evidence by the LSE team. They cite a systematic review by Gillespie and colleagues[73] who found that after investment in aids and adaptations, the likelihood of falling was reduced by about a half. The LSE definition of adaptions extends to safety improvements in both kitchens and bathrooms.

Of course, not all of the 1660 residents with unmet needs for

[70] The implausibly low estimates based on the HHSRS are based on a survey of building fabric not of the enabling health status and attributes of residents.

[71] Emma Hanley et al (2015) *Mainstreaming an early identification and primary prevention service: business case proposal*. Southwark and Lambeth Integrated Care

[72] Department of Communities and Local Government (2011) *Disabled Facilities Grant allocation methodology and means test: Final Report Appendix 1*. London: DCLG.

[73] Gillespie et al (2012) Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, Issue 9. Art No: CD007146.

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adaptations will suffer falls. However, of the 50% who would have suffered a fall in 2012, half might be prevented from falling when the the LHS investment programme is completed. In 2012, there were approximately 415 annual falls attributable to the absence of adaptations. The investment programme will prevent these 'additional falls' defined by the LSE as *'those that would not have occurred with the equipment in place.'* The LSE report then provides an estimate of *'the proportion of fall injuries that will be seen by an ambulance or attend a hospital (24.8%) and the subsequent distributions according to diagnosis (8.2% of hospitalised cases are assumed to be diagnosed as hip fractures, 16.8% as other fractures and 75% as non-fracture injuries'*.

The LSE model points to the wider benefits of greater independence. *'Even in cases where falls are not sustained, those with a fear of falling are at increased risk of suffering depression, mobility restrictions and social isolation'* [74]. To these psychological routes to independence, we should add the direct benefits of aids and adaptations which increase functional ability and independence, especially of older residents. Family and friends are also likely to benefit to some degree, particularly if they provide informal care. Formal carers too *'are likely to benefit from reductions in rates of injury and quality of life improvements, either as the aids and adaptations reduce the number of physical tasks with which they assist, or because the investment directly assists the caregiver as an additional user'* [75].

(e) SUMMARY & CONCLUSION

Our focus is on greater safety and independence generated by the LHS. We utilize a new methodology from the London School of Economics to highlight the significant number of falls prevented by creating a safe and supportive living environment. This contextual approach to enhancing functional ability should complement Southwark and Lambeth's *Integrated Care* focus on enhancing (in WHO terminology) the intrinsic capacity of vulnerable residents. Because both approaches have much to contribute there is a compelling case for 'integrated' plans which reach beyond health and social care services to embrace housing as the third dimension that (according to WHO) *'enables people to be and to do what they have reason to value.'*

[74] Boyd, R. and Stevens, JA. (2009) Falls and fear of falling: burden, beliefs and behaviours. *Age and Ageing*, 38 (4), pp.423-428.

[75] Henwood, M. (1998) *Ignored and Invisible? Carers' Experience of the NHS.* Carers' National Association.

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9//SECURITY

Key message: **Investment in the redesign of Lambeth Council Estates together with new windows and doors planned for nearly every dwelling in the Decent Homes Programme, will improve security, promote feelings of safety and have a positive impact on mental health and well-being.**

(a) HOME AS A 'HAVEN'

An objective of Lambeth's *Housing Strategy* is to help *'residents feel safe and secure within their own homes as well as in the neighbourhoods in which they live'* [76]. Three dimensions of 'security' contribute to home as a haven from external pressures on the lives of Lambeth's residents. Security of tenure (possession) is the first and an important feature. Second is financial security – specifically the affordability of housing costs. An earlier section highlights ability to pay fuel bills. Third, are the physical features of dwelling which enhance personal safety, by reducing burglary and the fear of burglary.

(b) MENTAL HEALTH

The impact of these three factors on health is summarised in figure 9.1. Here we highlight personal security and mental health and how the investment programme will make homes more secure from burglary, reduce the fear of burglary, contribute to lower levels of stress and improve mental health.

The ***emotional impact*** of burglary is well documented by the British Crime Survey. Table 9.2 reproduced from the British Crime Survey of 2002/03 shows 83% of all respondents who were victims of burglary were emotionally affected in some way, with attempted burglary also having a significant affect. Victims' neighbours may also experience a heightened sense of insecurity.

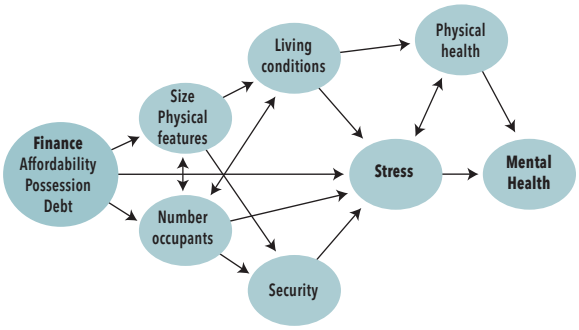
Reaction to burglary ranges from stomach churning fear to mild annoyance, and no doubt feeds raised levels of stress[78]. Our own study[79] of residents transferring from Liverpool tower blocks identifies a significant relationship between fear of crime, stress and mental and emotional health. Stressed residents scored 10 percentage points lower than non-stressed residents on a Mental Health Index scale (MHI5) of 1-100; those who feared crime were 11 percentage points lower than those not fearful of crime.

Table 9.2// Emotional impact of burglary, England 2002/03

	All burglary	Burglary with entry	Attempted burglary
% Respondent was emotionally affected	83	85	81
% Not affected	17	15	19
Type of emotional response from those affected*			
Anger	49	57	39
Shock	32	40	21
Fear	24	25	24
Difficulty sleeping	25	29	20
Crying/tears	14	19	6
Depression	11	15	5
Anxiety or panic attacks	12	15	10
Loss of confidence or feeling vulnerable	25	29	21
Annoyance	39	38	41

Source: British Crime Survey 2002/3; table 4e, Crime in England & Wales, 2002/03[77]

Figure 9.1// Pathways from security to mental health



(c) DESIGN

Housing services providers are key

[77] Nicholas, S. and Wood, M. (2003) *Chapter 4 - Property Crime in England and Wales. Crime in England & Wales, 2002/03*. London: Home Office.

[78] East, L. (1998) The quality of social relationships as a public health issue: exploring the relationship between health and community in a disadvantaged neighbourhood. *Health Soc Care Community*, 6 (3), pp.189-95.

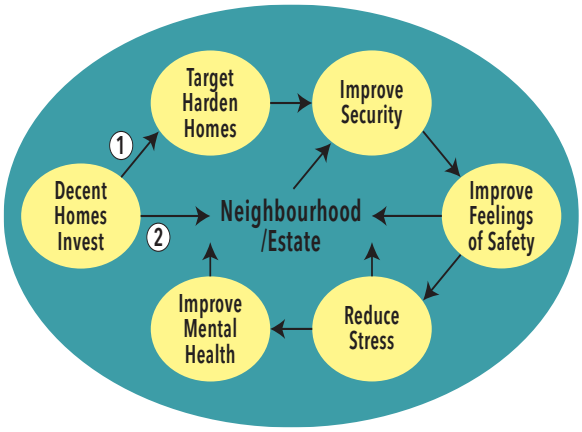
[79] Green, G., Gilbertson, JM. and Grimsley, MFJ. (2002) Fear of Crime and Health in residential tower blocks: A case study of Liverpool, UK. *European Journal of Public Health*, 12, pp.10-15.

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players in *Safer Lambeth*, the borough's Crime and Disorder Reduction Partnership[80], and Lambeth and Southwark's Director of Public Health, affirms that *'poor housing is strongly associated with poor health and psychological distress.'* The report continues *'secure and good quality homes will lead to improved health'* [81].

The LHS programme gives a realistic prospect of delivering such health gains. For if physical building features compromise security and facilitate crime, then reinvesting in good design can contribute to crime reduction and help to alleviate fear of crime. Lambeth is committed to the Secured by Design (SbD) initiative of the Association of Chief Police Constables[82] which addresses both individual dwellings and the estate environment. Figure 9.3 illustrates probable pathways from (1) secure homes and (2) secure estates to better mental health.

Figure 9.3// Secure by design



There is considerable research evidence (of variable quality) to show that installing home security measures (within a variety of neighbourhood contexts) reduces the likelihood of burglary. The Home Office reports: -

"Households where there are no home security measures were far more likely to have been victims of burglary (14.7%) than those where there were simple security measures such as deadlocks on doors and window locks (2.8%)" [83].

In a wide ranging review[84] for the Suzy Lamplugh Trust Research Institute at the University of Glamorgan, Paul Cozens and others take a critical review of the evidence on the impact of SbD, distinguishing target hardening of properties from the design of housing estates. Target hardening has a more evident impact. An evaluation by Glasgow Caledonian University for Glasgow Housing Association concluded that installing doors and windows to SbD standards reduced attempted housebreaking by 59% and theft by housebreaking by 18%[85]. Research by Nottingham Trent University for Nottingham City Homes showed a reduction in burglaries of 41% in 1520 homes where SbD windows had been installed on two estates compared with a reduction of 21% citywide in the period 2007/8 to 2009/10. By 2010/11 the reduction in burglary on the two SbD estates was 58% compared with a citywide reduction of 32%[86].

The benefits from remodelling estates (as distinct from dwellings) are more difficult to evaluate, for at least three reasons. *First*, Richard Schneider and Ted Kitchen highlight the difficulty of disentangling the various elements of estate design and then distinguishing their impact from that of complementary initiatives, for example to improve social cohesion[87]. Rachel Armitage, who detected a reduction of 50% in burglary rates in West Yorkshire in 2000[88], attempted[89] to address the controversial issue of permeability – in short concluding that a layout which encourages non-residents to pass through an estate compromises security, despite claims that such activity provides natural surveillance.

(d) BENEFITS OF LAMBETH INVESTMENT

Here we follow Lambeth *Housing Strategy* by distinguishing **'place'** from **'property.'** There is evidence that high levels of serious street violence in Lambeth can be reduced by investment in redesigning and refurbishing estate environments – making place more secure[90]. However, extensive environmental improvements to meet to LHS have been deferred because of budgetary constraints. We have therefore confined this Health Impact Assessment to property, to the harm associated with burglaries and intruders intending to burgle. Domestic burglaries are confined to properties (rather than extending to the public realm) and we can be reasonably confident of determining the impact of home security measures. Our previous estimate of the baseline likelihood of harm to health in

[80] Lambeth Environment and Community Safety Scrutiny Sub-Committee (2013) *Safer Lambeth Partnership Performance Update 2012/*

[81] Director of Public Health for Lambeth & Southwark (2014) *Annual Public Health Report for Lambeth.*

[82] Now re-badged by Police Crime Prevention Initiatives Ltd. www.securedbydesign.com (Accessed: 22 May 2016)

[83] Nicholas, S., Povey, D., Walker, A. and Kershaw, C. (2005) (Table 4.01) *Crime in England and Wales 2004/5* Home Office Statistical Bulletin, London: National Statistics.

[84] Cozens, P.M., Pascoe, T. and Hillier, D. (2004) Critically Reviewing the Theory and Practice of Secured-By-Design for Residential New Build in Britain. *Crime Prevention and Community Safety: An International Journal*, 6 (1), pp. 13-29.

[85] Teedon, P. et al (2010) Evaluating Secured by Design door and window installations: effects on residential crime. *Crime Prevention and Community Safety*, 12 (4), pp. 246-262.

[86] Jones, A. (2013) *The social, economic and environmental impacts of creating homes and places where people want to live*. Impact Research update 2012-2013. Nottingham City Homes.

[87] Schneider, RH. and Kitchen, T. (2007) *Crime Prevention and the Built Environment.* Abingdon: Routledge.

[88] Armitage, R. (2000) *An Evaluation of Secured by Design Housing within West Yorkshire*. Briefing Note 7/00. London: Policing and Reducing Crime Unit, Home Office

[89] Armitage, R. (2006) Predicting and preventing: developing a risk assessment mechanism for residential housing. *Crime Prevention and Community Safety*.

[90] Lambeth Community Safety (2015) Serious Violence in Lambeth: Needs Assessment. Lambeth Council

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Ealing borough's dwellings was based on the Operating Guidance for the Housing Health and Safety Rating System (HHSRS). For this Lambeth study we deploy local data to establish a baseline at the beginning of the LHS investment programme. According to the Mayor of London's Crime Dashboard[91] there were 3761 recorded domestic burglaries in Lambeth in 2011/12. Because of acknowledged systemic under-reporting, the Home Office uses a multiplier of 2.8 to estimate the truer extent of burglaries and attempted burglaries, in line with the British Crime Survey. This conversion indicates 10, 531 of the 132,200 dwellings in the borough were burgled in the baseline year - about 1 in 12.

However, this is an average. Evidence from the British Crime Survey[92] indicates that burglary rates (and attempted burglary) are on average much higher in flats compared with houses, for social housing tenants compared with owner occupiers, for low income households, and especially for dwellings without security measures. The average council dwelling in Lambeth combines all these higher risk characteristics. Accordingly, we estimate that in 2012, 1 in 8 of the 15,095 tenanted dwellings earmarked for the full package of LHS works were likely to be burgled or the object of attempted burglary. The 9000 leasehold properties, with their high proportion of private tenants would have similar burglary rates, whereas the burglary rate would have been halved for the 8000 tenanted dwellings already improved to Decent Homes and LHS in 2012 (see table 9.4).

Table 9.4// Lambeth Properties - reduced likelihood of harm to health from reductions in burglary

2012 Baseline status	No.	Burglary or attempt pre-	Burglary or attempt post-	Harm to health pre-	Harm to health post-	Reduction in harm to health
Tenants Non-DH compliant	15,095	1890 (1 in 8)	840 (1 in 18)	1570 (83% of 1890)	700 (83% of 840)	870
DH compliant tenants	8,000	500 (1 in 16)	440 (1 in 18)	415 (83% of 500)	365 (83% of 440)	50
Leaseholders	9,000	1125 (1 in 8)	640 (1 in 14)	935 (83% of 1125)	530 (83% of 640)	405
Annual Total	**32,000**	**3510**	**1920**	**2920**	**1590**	**1330**

*Numbers rounded up

The 15095 tenanted properties were the main beneficiaries of the LHS investment programme, which included new doors and windows upgraded to Secured by Design (SbD) standards, plus communal door entry systems and CCTV. Contractors are required to source strong composite doors which meet enhanced security requirements (SbD Pass 124-1 and British Standard 7950). Windows are sourced to a high specification which meets the enhanced security standard BS 7950 including double laminate glazing, automatic locking and push button release. About 5000 of the 9000 leaseholders or their tenants benefit from new windows and communal security measures, installed as part of the LHS investment programme, with the cost recovered by Lambeth Borough from the property owners. The additional security benefits for occupiers of 8000 tenanted dwellings already compliant with Decent Homes Standard, are limited to the communal door entry and CCTV systems.

These high specification doors and windows will considerably reduce the risk of burglary. Our estimate is based on evaluations of similar programmes in Glasgow[93] and Nottingham[94]. There was a reduction of 58% in Nottingham 4 years after the installation of SbD windows only, set against a more modest reduction of 32% citywide. On the Glasgow estates benefiting from both SbD windows and doors, there was a 26% reduction in housebreaking and a reduction of 59% in attempted housebreaking. Physical security measures alone will not reduce burglary to zero. Assessors of the SbD windows only initiative in Nottingham attribute residual burglary to 'forced entry by doors' and 'non-forced entry, the majority of which are due to properties being left unsecured (e.g. with windows and doors unlocked/open).'

Table 9.4 shows an estimated pre-intervention total of about 3500 burglaries or attempted burglaries in Lambeth's 32,000 dwellings, on average about 1 in 9.

We estimate a reduction in burglary and attempted burglary of 55% for the 15095 tenanted dwellings – from 1 in 8 to 1 in 18. These properties benefited from a comprehensive package of SbD windows, doors and also (unlike the Glasgow tenants) communal security measures. We estimate a reduction of 43% for the 9000 leasehold properties – from 1 in 8 to 1 in 14, with those in receipt of new windows benefiting most. The 8000 tenanted properties with SbD windows and doors installed before 2012, benefit only modestly from the current LHS investment programme, with a reduction is burglary or attempted burglary of 12% - from 1 in 16 to 1 in 18.

Table 9.5 shows 1330 fewer occupiers suffering harm, most in the least severe class IV of depression and anxiety. This is our best estimate based on the evidence of emotional response to burglary summarised in figure 9.2, as it applies both to multi-person households and to a lesser extent, neighbours. (We have adopted the HHSRS convention which relates dwellings to individual harms). A Bristol study reported *'the stress of burglary or vandalism can precipitate a major health crisis in old age (Class II) necessitating urgent admission to hospital. Despite reassurance and appropriate treatment, many patients never regain enough confidence to return home'* [95]. Class III and IV harms include depression and anxiety, of varying severity.

[91] https://www.london.gov.uk/what-we-do/mayors-office-policing-and-crime-mopac/data-and-research/crime/crime-dashboard

[92] Sian Nicholas et al (table 4.01; 2005) *Crime in England and Wales 2004/2005*. Home Office Statistical Bulletin. Home Office. London

[93] Paul Teedon et al (2010) *Crime Prevention and Community Safety* (2010) 12, 246–262. doi:10.1057/cpcs.2010.15

[94] http://www.securedbydesign.com/wp-content/uploads/2014/02/nottingham-city-homes-safe-secure-warm-case-study.pdf (accessed 12 October 2016)

[95] Coakley, D. and Woodford-Williams, E. (1979) Effects of burglary and vandalism on the health of old people. Lancet Nov 17;(2) (8).

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Table 9.5// Impact of Lambeth Housing Standard investment programme on the security and mental health of residents

			Scale of harm to mental health			
	No, of dwellings burgled or attempt	Occupiers harmed*	Class I 0.0%	Class II 1.0%	Class III 10%	Class IV 89%
Before Investment programme	3510 (c1 in 9 (of 32,000)	2920	0	3	265	2650
After investment programme	1920 (c1 in 17 of 32000)	1590	0	2	145	1440
Reduction	1590	**1330**	**0**	**1**	**120**	**1210**
*Numbers rounded up						

Susan.* Park View House.
The communal areas within the flats are being painted under LHS. "This makes you feel positive, like they care. It looks more modern and up to date with new windows and painting which makes you feel better. People used to say 'it's a horrible building'. Emotionally that puts you down. I like it more now, it feels safer."
**name changed*

SUMMARY

Overall, we estimate approximately 1600 fewer burglaries and attempts as a result of the current LHS investment programme, leading to 1330 fewer harms to the mental health of occupiers every year. Though anxiety and depression may be less severe than other forms of illness, the impact of the investment programme on improved security extends to a bigger number of occupiers than the health benefits either of greater warmth or better safety.

10//SOCIAL COST AND BENEFITS OF THE LAMBETH HOUSING STANDARD PROGRAMME

Previous sections of the report have analysed the composition of the Lambeth Housing Standard investment programme, the distribution of this investment across tenants and leaseholders and the reductions in harms to health induced by the sub-programmes (warmth and comfort, safety and security) within the overall LHS programme. Table 10.1 reviews the distribution of the investment across the three sub-programmes and tenures.

This section presents a social cost-benefit analysis of the LHS programme. Section 10.2 gives an overview of the estimation methods employed. Section 10.3 sets out detailed cost-benefit estimates distinguishing between each of the three sub-programmes of warmth and comfort, safety and security. Section 10.4 presents a summary of the estimates distinguishing between these sub-programmes and tenants and leaseholders. Section 10.5 summarises the conclusions.

The cost-benefit analysis provides:

- an estimate of the monetary value of the social benefits arising from the gains in physical and psychological health induced by the LHS programme
- a comparison of this value with the monetary cost of the programme itself summarised in a benefit-cost ratio

Table 10.1// Lambeth Housing Standard Investment by Sub-Programme and Tenures

		Investment						
			(1) 15,000 tenants Non-compliant in 2012		(2) 8000 tenants Compliant in 2012		(3) 9000 Leaseholders	
Sub-Programme	Component Investment	Cost £m	No. 000	Share of cost £m	No. 000	Share of cost £m	No. 000	Share of cost £m
Warmth & Comfort	Individual heating	62.7	15	62.7	0	0.0	0.0	0.0
	Insulation	1.0	15	0.6	8	0.2	9	0.2
	Common boilers	6.9	15	3.1	8	1.6	9	2.2
	Windows	61.0	15	45.0	0	0.0	5	16.0
Safety	Aids and adaptations	4.9	15	4.9	0	0.0	0	0.0
	Kitchens	70.0	15	70.0	0	0.0	0	0.0
	Bathrooms	6.3	15	6.3	0	0.0	0	0.0
Security	Windows	61.0	15	45.0	0	0.0	5	16.0
	Doors	21.0	15	21.0	0	0.0	0	0.0
	Door entry systems	16.8	15	8.3	8	3.9	9	4.6

"Social benefit" denotes the gains which accrue both to the immediate beneficiaries of the programme and to members of the wider society. Thus the social benefits the value of which we estimate comprise:

- the greater well-being enjoyed by healthier local residents
- public expenditure savings in the National Health and Social Care services arising from reduced morbidity, and public expenditure savings in the Criminal Justice System arising from the reduction in domestic burglaries which results from making dwellings more secure
- gains in local economic output arising from fewer working days lost through illnesses suffered by local residents[96]

Table 10.2 gives an overview of the three LHS sub-programmes, and of the nature of the health and social gains induced by each.

Although the cost-benefit analysis focuses on a wide range of social benefits, our remit does not extend to all benefits that will be of interest to the Lambeth Borough Council and its partners. Refurbished dwellings can boost the pride of residents and change the perceptions of others. Such intangible benefits contribute to the social cohesion of the area as a whole but are very difficult – perhaps impossible – to enumerate and evaluate, and we have not attempted to do so here. For the same reason we do not include the benefit which arises in the form of the reduced cost of the informal care provided by the family and friends

[96] Gains in local economic output will also arise via the employment of local residents on the LHS works programme. We are aware that a scheme has been operating whereby LHS contractors offer apprenticeship places to local residents. In response to our enquiries about this scheme we have been informed that no figures for placements on the scheme are available.

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of those whose mental health is undermined by living in cold and insecure dwellings. On the cost side of the analysis we do not include any estimate of the cost of the disruption caused to residents by the LHS programme. Qualitative evidence on the disruption caused by the programme is presented in section 6 of the report along with evidence from previous studies of a pattern in which negative initial responses to the process of modernization become transformed into positive feelings about the benefits of modernization as time passes.

It is important to stress that the data requirements of social cost-benefit analysis are strict. Benefits must be capable of being enumerated rather than just described, and must also be capable of being evaluated in monetary terms rather than just enumerated. It is emphatically not the case that benefits which cannot be enumerated and evaluated do not matter. In fact the position is that the technique of social cost-benefit analysis has not yet been developed to the stage at which all social benefits of the LHS programme can be evaluated. Greater community pride and cohesion is one such, and there is another important example of this difficulty in the section of this chapter dealing with safety in the home.

Benefits in the form of fewer working days lost accrue only in the case of reductions in Common Mental Disorders. This is because reductions in all other morbidities are more or less exclusively confined to the non-working age population – cold related cardio vascular disease is concentrated in the population aged over 65, whereas respiratory illness is largely confined to those aged under 15 and over 65. In contrast Common Mental Disorders fall across all age bands of the adult population – principally on those of working age.

It should be noted that the security sub-programme generates a social benefit in the Criminal Justice System arising from the reduction in domestic burglaries due to the installation of more secure doors, windows and door entry systems. The estimates of the social benefit of the this sub-programme are based on the assumption of zero crime displacement – that reducing the opportunity for burglary by the installation of more secure doors and windows does not result in crime displacement of a spatial, target or offence kind: a switch by offenders to less secure dwellings elsewhere, or to non-domestic properties or to different types of crime. Whether or not crime displacement actually exists has been analysed and vigorously debated since the early 1990s, and there is now a reasonably firm consensus that no significant crime displacement effect can be identified in either UK or international data[97].

The final element of the cost-benefit analysis is a comparison of the money value of the social benefit gained with the cost of the investment programme from which it derives – which indicates the extent to which the investment delivers a net social benefit, or in other words is cost effective – conventionally expressed in terms of a benefit-cost ratio.

10.2 A Brief Overview of the Estimation Methods

Table 10.2// Lambeth Housing Standard Sub-Programmes: Gains to Health and Social Benefits

LHS Sub-Programme	Gains to Health	Social Benefits Induced by Gains to Health
Warmth and Comfort Improved heating systems including common boilers, improved insulation and new windows	Less cardio-vascular and respiratory disease caused by cold and damp homes Fewer episodes of Common Mental Disorders caused by fuel poverty	Greater well-being *plus* Reduced National Health Service and Social Care expenditure *plus* Fewer working days lost
Safety Upgraded bathrooms and kitchens Domestic aids and adaptations	Fewer fall injuries caused by unsafe living conditions	Greater well-being *plus* Reduced National Health Service and Social Care expenditure
Security New more secure windows and doors and improved door entry systems	Fewer episodes of Common Mental Disorders triggered by domestic burglaries	Greater well-being *plus* Reduced National Health Service and Social Care expenditure *plus* Fewer working days lost *plus* Reduced expenditure in the Criminal Justice System

Within the resources available it has not been possible to undertake a detailed and full-scale analysis of the value of all induced social benefits based on primary local data. Instead we use local data where possible and elsewhere have imported data from non-local -- usually national – sources. And where possible we have made adjustments to such imported data to reflect differences between the relevant national and local profiles. We must emphasise that the complex triangulation exercise by which the estimates of social benefit are derived means that they are to be read as only as plausible estimates of broad orders of magnitude.

The cost-benefit estimates are derived through a complex computational exercise the details of which are set out in a technical appendix.
All investments are assumed to be equally spread over the six years of the LHS programme, and are presented in terms of prices prevailing in 2011 – as are the estimates of social benefits. There is no special significance attaching to this choice of a price base – the only requirement of principle is that all costs and benefits must be measured on the same price base.

[97] See S Johnson et al *What we know what we don't know and what it means for crime reduction* Journal of Experimental Criminology 2014 Vol. 10 Issue 4 pp 549-571

Investment induced reductions in annual cases of morbidity are estimated as follows:

- for cardio-vascular and respiratory illnesses – from the official Housing Health and Safety Rating System, (see section 5)
- for fuel poverty related Common Mental Disorders – via estimates of the incidence of fuel poverty combined with data from the 2010 NatCen[98] survey, which is the standout source for evidence on the link between proxies for fuel poverty and Common Mental Disorders in England (see section 7)
- for Common Mental Disorders related to domestic burglary – via data from the Housing Health and Safety Rating System and the British Crime Survey (see section 9)

The evaluation of the benefits of investment under the Safety sub-programme is particularly difficult. In contrast to investments in the Warmth and Comfort and Security sub-programmes the existing published evidence base is limited. The most robust analysis of investment induced reductions in falls in the home, by Snell et al (2012)[99], is limited to investments in dwellings which satisfy the English Housing Conditions Survey definition of *'an unmet need for aids and adaptations'*. As our estimates of the social benefits of this sub-programme are derived the data provided by the Snell study we separately identify the benefits flowing from the element of the LHS investment targeted at dwellings which satisfy this criterion.

Estimates of the monetised social benefits flowing from induced reductions in each of the four types of morbidity identified in table 10.2 are derived as follows:

- the value of well-being gains due to reductions in cardio vascular and respiratory illnesses and Common Mental Disorders is derived from the well established WHO Disability Adjusted Life Year (DALY) metric combined with an adjusted conventional estimate of the value of one year of healthy life. The DALY metric is essentially the same as the more familiar Quality Adjusted Life Year (QALY) metric with the 0-1 calibration reversed
- for reductions in cardio vascular and respiratory illnesses and Common Mental Disorders expenditure savings to the National Health and Social Care systems are derived by multiplying the average treatment cost per case by the estimated annual reduction in cases. Treatment costs per case are derived from official NHS data for the Lambeth PCT. We assume that all cases of morbidity are treated within the National Health and Social Care services except for Common Mental disorders – for which the evidence is that only 25% of those afflicted receive NHS treatment[100] , which is reflected in the extensive provision of informal care by the friends and families of those suffering Common Mental Disorders
- for reductions in falls due to unsafe homes well-being gains and savings to the National Health Service and Social Care systems are derived from Snell et al (2012) via adjustments designed to reflect the Lambeth profile of dwellings

The value of the number of working days saved as a result of fewer Common Mental Disorders due to less fuel poverty and fewer burglaries is derived by updating the results of Layard et al. (2007)[101].

Expenditure savings to the Criminal Justice System under the Security sub-programme are derived from Home Office estimates[102].

The apportionment of the social benefit of each sub-programme to the three different tenures is based on the number of estimated beneficiaries in each group as shown in table 10.1.

The social benefits stemming from the investments in Warmth and Comfort and Security sub-programmes are assumed to extend over a 15 year life span. We follow the authors of the key Snell study in assuming that safety investments have an average length of life of six years. As is conventional investment costs and social benefits falling at different points in time are discounted onto a present value basis. The numbers in the tables below may not sum to the totals shown because of rounding.

10.3 Cost-Benefit Estimates: by Sub-Programme

Warmth and Comfort Sub-programme

Table 10.3 shows the estimates of the social benefits flowing from the investment induced reductions in cardio vascular and respiratory illnesses, and mental illness associated with fuel poverty.

[98] Harris J, Hall J, Meltzer H, Jenkins R, Oreszczyn T and McManus S Health, *Mental health and housing conditions in England* National Centre for Social Research 2010

[99] Snell J, Fernandez J-L, and Forder J *Building a business case for investing in adaptive technologies in England* Personal Social Services Unit London School of Economics 2012

[100] See London School of Economics Centre for Economic Performance Mental Health Policy Group. *The Depression Report: a New Deal for Depression and Anxiety Disorders*. London: London School of Economics, 2006, page 5

[101] Layard R, Clark D, Knapp M and Mayraz G *Cost benefit analysis of psychological therapy* National Institute Economic Review 202: 90-98 2007

[102] Home Office *The Economic and Social Costs of Crime Against Individuals and Households Online Report 30/05 and Revisions made to the multipliers and unit costs of crime used in the Integrated Offender Management Value for Money Tool Kit* 2011 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/118042/IOM-phase2-costs-multipliers.pdf

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Table 10.3// Warmth and Comfort Sub-Programme : Social Costs and Benefits

Discounted Preset Value of Costs £ million 2011 prices 15 095 non compliant tenancies 8 000 compliant tenancies 9 000 leasehold properties		Discounted Present Value of Lifetime Social Benefits £ million 2011 prices	
Improved heating systems including common boilers, improved insulation and new windows		**Reduced cold**	
		Well-Being Gain	£14.01
		Reduction in NHS and Social Care Costs	£5.99
		Total	**£20.00**
		Reduced damp and mould	
		Well-Being Gain	£21.83
		Reduction in NHS and Social Care Costs	£7.40
		Total	**£29.23**
		Reduced fuel poverty	
		Well-Being Gain	£25.43
		Reduction in NHS and Social Care Costs	£1.24
		Reduction in Working Days Lost	£2.46
		Total	**£29.13**
Total	**£120.99**	**Total**	**£78.36**
		Benefit/Cost Ratio	**0.64**

The key findings are that:

- the Warmth and Comfort sub-programme generates a significant social gain but returns a benefit-cost ratio of 0.64 which is less than the break-even value of one. An underlying reason is that the Lambeth Warmth and Comfort programme is very heavily weighted in relatively expensive measures such as upgrades to boilers and central heating systems which have been found not to be cost effective in terms of health related well-being. The programme delivers a £62.7 million investment in boiler and heating system upgrades but only a £1 million investment in insulation – which in contrast can be justified in terms of health related well-being[103].
- the social benefits are slightly unevenly spread across the three main sub categories, which correspond to three different types of harm to health – cardio vascular and respiratory illness and Common Mental Disorders
- the social benefit of the whole sub-programme is heavily dominated by the gains in well-being arising from reduced morbidity, with the largest well-being gain arising from the reduction in mental illness linked to fuel poverty. But reduced fuel poverty generates the smallest saving in NHS and Social Care expenditure, because only about one quarter of those suffering from Common Mental Disorders receive NHS treatment

Safety Sub-Programme: Social Costs and Benefits

It is important to stress that as in the Snell et al (2012) study our estimates of the social benefit of the safety component are confined to the gains which are a concomitant of improved health – specifically from fewer injuries arising from falls in unsafe homes. But in addition to such gains investments in aids and adaptations and especially upgraded bathrooms will enable householders to lead a more independent life, but not necessarily a healthier life. In many cases such investments will make life at home easier without improving health status. The social gains from greater independence per se are likely to be substantial. Well-being will be promoted, the need for social or very expensive institutional care reduced, and shorter stays in hospital will result. But in contrast to the case of gains accruing from reduced morbidity there is no technique currently available to enumerate and evaluate the gains of enhanced independence which is unaccompanied by a gain in health. Thus we do not evaluate the social benefits arising from greater independence per se – from greater independence with no reduction in morbidity.

Because of the limited evidence base referred to above we evaluate the social benefit for a sub group of the safety investment only: that comprising bathroom and kitchen improvements and investments on other aids and adaptations in dwellings for which there is an "unmet need" for such measures. The number of dwellings thus defined is estimated to be 1 661[104] which is 11% of the 15 095 tenanted dwellings covered by the LHS programme.

The safety investment thus defined yields the social benefits shown in Table 10.4.

Table 10.4// Safety Sub-programme: Social Costs and Benefits

Discounted Preset Value of Costs £ million 2011 prices 15 095 compliant tenancies		Discounted Present Value of Lifetime Social Benefits £ million 2011 prices from kitchen and bathroom improvements and aids and adaptations in 1 661 dwellings with an "unmet need for aids and adaptations"	
Kitchen and bathroom improvements and aids and adaptations,		Well-Being Gain	**£10.42**
		Reduction in NHS and Social Care Costs	**£1.97**
Total All safety investments in 15 095 dwellings	**£74.98**		
of which kitchen and bathroom improvements and aids and adaptations in 1661 dwellings with an "unmet need for aids and adaptations"	**£8.25**	**Total**	**£12.39**
		Benefit/Cost Ratio	**1.50**

[103] See Ewins M *Monetising the health benefits of energy efficiency measures* Department of Energy and Climate Change 2013

[104] Derived from Department of Communities and Local Government (2011) *Disabled Facilities Grant allocation methodology and means test :Final Report* Appendix 1

The key features of the estimates are that:

- the sub group of the Safety sub programme composed of dwellings with an "unmet need" delivers a substantially greater than break-even benefit-cost ratio of £12.39/£8.25 = 1.50
- as with the investments in warmth and comfort estimated total social benefit for this sub group is dominated by the gain in well-being, in this case attributable to the reduction in fall related injuries caused by unsafe dwellings
- the £67 million investment in safety measures in dwellings without an "unmet need for aids and adaptations" will yield a significant social benefit in terms of a combination of fewer fall related injuries and greater independence per se, but there is no tested technique available for the evaluation of these benefits. This means that the measured social benefit shown in Table 10.4 is a significant underestimate of the true social gain provided by the LHS safety programme

Security sub-Programmes: Social Costs and Benefits

Table 10.5 shows the estimates of the social benefits which will flow from the investment induced reduction in domestic burglaries

Specific to this table is:
- an assumption of zero crime displacement
- the inclusion of savings in the cost of the Criminal Justice System as a social benefit

Table 10.5// Security Sub-Programme: Social Costs and Benefits

Discounted Preset Value of Costs £ million 2011 prices		Discounted Present Value of Lifetime Social Benefits £ million 2011 prices	
Improved doors, windows and door entry systems		Well-Being Gains	£102.52
		Reduction in NHS and Social Care Costs	£4.14
		Reduction in Working Days Lost	£9.93
		Reduction in Criminal Justice System Costs	£20.32
Total	**£90.77**	**Total**	**£136.91**
		Benefit /Cost ratio	**1.51**

The notable features are that:

- the Security sub programme also generates a substantially greater than break-even benefit-cost ratio of £136.91/£90.77 = 1.51
- as with the investments in the Warmth and Comfort and Safety sub-programmes the total measured social benefit for this sub-programme is dominated by the gain in well-being – in this case attributable to fewer victims of domestic burglary
- the scale of the gain in well-being derives from a large reduction in anxiety and mild depression – of over 1300 cases annually – stemming from the estimated reduction in domestic burglaries. A substantial additional gain arises from savings in public expenditure in the Criminal Justice System arising from the same source

10.4 Cost-Benefit Estimates by Sub-Programme and Tenures

As shown in Table 10.1 all tenure types benefit from the investments in the Warmth and Comfort and Security sub-programmes whereas the Safety sub-programme is confined to the 15 095 tenancies non-compliant with the DHS in 2012. Table 10.6 shows the distribution of investment

Table 10.6// LHS Investment Cost and Social Benefit by Sub-Programme and Tenure Type

Sub-Programme	Non Compliant Tenants 15 095	Compliant Tenants with DHS in 2012 8 000	Leaseholders 9 000
Warmth and Comfort			
Discounted Present Value of Social Benefits* £m 2011 prices	£56.83	£6.34	£15.18
Discounted Present Value of Investment Cost £m 2011 Prices	£92.18	£13.58	£15.23
Benefit/Cost ratio	**0.62**	**0.47**	**0.99**
Safety (1661 dwellings)			
Discounted Present Value of Social Benefits** £m 2011 prices	£12.39	-	-
Discounted Present Value of Investment Cost £m 2011 Prices	£8.25	-	-
Benefit/Cost ratio	**1.50**		
Security			
Discounted Present Value of Social Benefits*** £m 2011 prices	£89.90	£5.17	£41.84
Discounted Present Value of Investment Cost £m 2011 Prices	£57.77	£5.01	£27.99
Benefit/Cost ratio	**1.56**	**1.03**	**1.49**

costs and social benefits across sub-programmes and tenure types.
*Well-being gain + NHS and Social Care savings + Working days saved
**Well-being gain + NHS and Social Care savings
*** Well-being gain + NHS and Social Care savings + Working days saved + Criminal Justice System savings

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These results indicate that

- The Warmth and Comfort and Security sub-programmes deliver a wide range of social benefits of a significant scale to residents in each of the tenure types.
- These beneficial outcomes deliver benefit-cost ratios at or above 1 for the 9 000 leaseholders under the Warmth, and Comfort sub-programme, and for each of the tenure types under the Security sub-programme. Under this programme the ratios substantially exceed 1 for the 15 000 non-compliant tenants and for the 9 000 leaseholders

SUMMARY OF CONCLUSIONS

The social cost benefit estimates for LHS programme indicate that:

- burglary crime and ill health caused by cold, damp, unsafe and insecure dwellings impose very substantial social costs on local residents, local and national public services and the local economy

- Though not fully cost effective the investment in the Warmth and Comfort sub-programme yields a significant social benefit which would be enhanced by a redistribution of resources in favour of cheaper energy efficiency measures such as improved insulation

- within the Warmth sub-programme the largest pay-off in terms of enhanced well-being arises from the induced reduction in mental ill health caused by fuel poverty

- the element of the Safety sub-programme benefitting dwellings with unmet safety needs is strongly cost effective. There is likely to be a significant pay-off to the remainder of the sub programme in terms of reduced morbidity and enhanced independence, but at present there is no method available for the evaluation of this gain. As with the Warmth and Comfort sub-programme the induced social benefit is dominated by the gain in well-being, in this case resulting from the reduction in fall injuries

- the Security sub-programme is also strongly cost effective with the induced social benefit also dominated by the gain in well-being, in this case resulting from improved mental health. A significant benefit also arises in the form of reduced expenditure in the Criminal Justice System

- the Warmth and Comfort and Security sub-programmes deliver significant social benefits to residents in each of the tenure types. The Warmth and Comfort programme is cost effective in respect of the benefits provided to leaseholders, whereas the Security sub-programme delivers cost effective gains across all tenure types

- the social benefit arising from all three sub-programmes of the LHS programme taken together is dominated by gains in well-being which are the direct result of the investment induced improvements in health. Improvements in mental health dominate those arising from reductions in cardio vascular and respiratory illnesses and falls in the home

- there are additional social gains from the overall LHS programme in the form of reduced NHS and Social Care expenditure and more economic output, but these gains are relatively small

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Estimating the annual reduction in cases of cardio-vascular disease, and respiratory Illness

As described in earlier chapters of the report estimated annual reductions in cases of these morbidities are derived from the Housing Health and Safety Ratings System (2006)[105]. See Annex D paragraphs 1.04, 2.20, 20.02 and 21.04 for the HHSRS likelihood coefficients for the hazards of excess cold, damp and mould. The difference between each pre and post investment likelihood coefficient measures the change in probability that an occupier of a dwelling will suffer a harm to health caused by a specified hazard over a period of 12 months. The coefficients relate to harms to health that fall across four categories of severity and which are deemed to need medical care. It is an implication of the construction of HHSRS that the number of persons per dwelling affected by any hazard to health is set to one. The estimated annual reductions are given by these differences multiplied by the number of dwellings covered by the LHS programme.

Estimating the annual reduction in cases of burglary related Common Mental Disorders

As described in section 9 of the report the estimated pre investment annual number of burglaries is derived from the HHSRS and British Crime Survey data. The investment induced reduction in burglaries is estimated from the published evidence cited in section 9 of the report. And the conversion of reduced burglaries (and attempted burglaries) into a reduction in cases of Common Mental Disorders is derived from British Crime Survey data on the link between burglary and emotional damage (section 9).

Estimating the annual reduction in cases of fuel poverty related Common Mental Disorders

As described in section 7 of the report on warmth and comfort the data in Harris et al (2010)[106] table 7.1 is used to identify the proportion of the adult population who report having used less fuel than necessary to heat the home due to cost worries over the past 12 months, and the proportion of this sub group who suffer from a Common Mental Disorder. This latter proportion is adjusted by subtracting the lesser rate of common mental disorders amongst those who do not use less fuel due to cost worries, in order to isolate the effect attributable to worries about fuel costs rather than to other factors. The adjusted proportion is applied to the dwellings covered by the LHS programme rather than to the number of residents in order to ensure consistency with the estimates of cases derived from the HHSRS.

The London School of Economics Centre for Economic Performance Mental Health Policy Group (2006)[107] reports that only 25% of those suffering mental illness receive treatment. This adjustment ensures that the estimated savings in NHS and Social Care expenditure due to reductions in mental illness are computed on the same basis as those of other morbidities derived via HHSRS likelihood coefficients.

Estimating unit social costs: loss of well-being

For cardio-vascular and respiratory illnesses and Common Mental disorders, a value of £40 000 for a disability free year of life is within the range of willingness-to-pay values for the UK proposed in EuroVaq (2010)[108] Appendix table 2.3, and is also within the range used within 12 UK government departments. See Wolff et al.(2009)[109]. This value is

[105] Office of the Deputy Prime Minister *Housing Health and Safety Rating System: Operating Guidance*, London, UK, February 2006

[106] Harris J, Hall, J Meltzer H, et al. *Health, Mental Health and Housing Conditions in England, National Centre for Social Research*, London, UK, 2010

[107] London School of Economics Centre for Economic Performance Mental Health Policy Group *The Depression Report: a New Deal for Depression and Anxiety Disorders*, London School of Economics, 2006

[108] EuroVaq *European Value of a Quality Adjusted Life Year*, 2010, http://research.ncl.ac.uk/eurovaq/

[109] Wolff J and Orr S *Cross Sector Weighting and Valuing of QALYs and VPFs*, Centre for Philosophy Justice and Health, University College London, 2009

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combined with World Health Organization (WHO) Disability Adjusted Life Year (DALY) weights of 0.4 for cardio-vascular disease, 0.25 for respiratory illness and 0.2 for Common Mental Disorders[110].

A counterfactual is assumed under which those suffering harm to health because of cold homes and insecure dwellings would otherwise enjoy the average level of health of the general population in the age group to which they belong, rather than an illness and disability free level of health – which is a commonly assumed counterfactual - Claxton et al (2013).[111] Figure 4.1 reports health related quality of life scores from the Health Survey for England by age and gender which show that for both males and females aged between 65 and 70 this score is about 80% of the maximum score, about 95% of the maximum for those aged 16 years and below and about 88% of the maximum for those of the mean age of all UK adults (47.5 years in 2011). Thus the adjusted money value of the one year losses of well-being are £40 000x0.4x0.8=£12 800 (for cardio-vascular disease), £40 000x0.25x0.95=£9 500 (for respiratory disease) and £40 000x0.2x0.88=£7 040 (for Common Mental Disorders).

Estimating unit social costs: NHS and Social Care expenditures

For each harm to health except for fall injuries due to unsafe homes the average NHS and Social Care costs per case specified below are re-weighted to reflect the distribution of the reduction in cases across the class I to class IV severity categories. The average per case NHS and Social Care cost for cardio-vascular disease is total expenditure in category 10 "problems of circulation" for Lambeth PCT in NHS Programme Budgeting Tool[112] divided by cases of "coronary heart disease" for Lambeth PCT recorded in NHS Quality and Outcomes Framework[113].

The average per case NHS and Social Care cost for respiratory disease is total expenditure in category 11 "respiratory illness" for Lambeth PCT recorded in NHS Programme Budgeting Tool divided by cases of "chronic pulmonary obstructive disease" for Lambeth PCT recorded in NHS Quality and Outcomes Framework.

The average per case NHS and Social Care cost for Common Mental Disorders is total expenditure in category 5x "other mental health disorders" for Lambeth PCT recorded in NHS Programme Budgeting Tool divided by cases of "depression 18 years+" for Lambeth PCT recorded in NHS Quality Outcomes Framework.

Estimating unit social costs – loss of GDP

The data in Layard et al[114]. tables 2, 3 and 4 indicates that taking into account other barriers to continuous employment a person suffering "general anxiety" rather than enjoying good health can expect to lose 0.96 months of work per year due to unemployment or 0.25 months of work per year due to being absent from work. Appropriately weighted these losses convert to an average of 0.7 months per year, which in turn converts into an annual GDP loss per of £682 per case of general anxiety assuming that the person would have been employed at the 2011/12 adult UK National Minimum Wage Rate. This figure applies only to those suffering cold-home related Common Mental Disorders who are of working age.

Evaluating the social gain from the LHS investment in safety in the home

The social benefit of the LHS investment in safety in the home is evaluated by applying elements of the Snell (2012)[115] empirical model of the returns to investments in domestic aids and adaptations, which are computed for investments in dwellings with "unmet needs for aids and adaptations" which have the effect of reducing fall injuries.

The English Housing Conditions Survey indicates that in 2005 in England as a whole about 950 000 dwellings met this unmet need criterion, of which 232 000 were Local Authority tenancies[116] – which is 11% of all Local Authority tenancies in England. We apply this proportion to the 15 095 Lambeth tenanted dwellings covered by the LHS programme – which is 1 661dwellings, and assume that 11% of the £114.7 million LHS investment spend devoted to bathroom and kitchen improvements and other aids and adaptations is devoted to the 1 661 dwellings with unmet needs – which is a £12.60 million investment spend.

The data in figure 1 of Snell et al (2012) can be used to calculate the annual value of the well-being gain and of NHS and Social Care savings both expressed per £1 of investment spend. They are 23 pence and 4.4 pence respectively. We assume each £1 of the Lambeth spend of £12.60 million yields the same return in well-being gains and savings in NHS and Social Care costs.

[110] World Health Organization *Global burden of disease 2004 update: disability weights for diseases and conditions* http://who.int/healthinfo/global_burden_of_disease/GBD2004_DsabilityWeights.pdf

[111] Claxton K, Martin S, Soares M, et al. *Methods for the Investigation of the Nice Cost Threshold*, Centre for Health Economics, Research Paper 81, University of York, 2013

[112] *NHS 2011-2012 Programme Budgeting PCT Benchmarking Tool*, http://www.networks.nhs.uk/nhs-networks/health-investment-network/news/2011-12-programme-budgeting-data-now-available

[113] *NHS Quality and Outcomes Framework 2011-2012 PCT Level*, http://www.hscic.gov.uk/catalogue/PUB08722

[114] Layard R, Clark D, Knapp M, et al. *Cost Benefit Analysis of Psychological Therapy*, National Institute Economic Review 2007, 202: 90-98

[115] Snell J, Fernandez J-L, and Forder J *Building a business case for investing in adaptive technologies in England* Personal Social Services Unit London School of Economics, 2012

[116] Department of Communities and Local Government (2011) *Disabled Facilities Grant allocation methodology and means test :Final Report* Appendix 1

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Adjusting for the Timing of Costs and Benefits

It is assumed that the cost of the LHS programme is evenly spread over 6 years and that all social benefits flow evenly over the assumed lengths of life – 6 years for safety investments and 15 years for all other investments.

In order that costs benefits accruing at different times are placed on a comparable basis they are computed as a sum of discounted present values, using a discount rate of 3.5% as recommended in HM Treasury Green Book (HM Treasury (2003)[117]. The effect of discounting is to reduce the value of more distant costs and benefits.

[117] HM Treasury *Green Book* 2003 HMSO

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