# LANDLORD SERVICES REPAIRS POLICY

# Health Impact Assessment



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#### **INTRODUCTION:**

A Health Impact Assessment (HIA) is required for all new policies and the following assessment has been completed for the introduction of a new Landlord Services Repairs Policy. The author recommends that a broader evidence base would be needed to support the HIA if significant health impacts were found. Based on the systematic review a table of synthesised findings indicating the expected health effects of housing improvements / repairs is included. The author also reviewed observational data of housing associated health risks to highlight the key impacts to consider when completing this assessment. Consultation with local stakeholders has taken place and incorporated in the final assessment

In addition this HIA presents the findings of the systematic review highlighting the type of outcomes observed after specific housing improvements/repairs (Table 1). A systematic review of a broader evidence base of observational research is included to produce evidence informed guidance on what health effects to expect.

#### Scope of the review

The literature reviewed relates to housing conditions and does not specifically include furniture interventions or interventions to reduce home accidents, falls, or fires or impacts of area regeneration. Four systematic reviews covering these topics and a comprehensive review on homelessness were identified but are outside the scope of this paper. Literature on radon, lead, and carbon monoxide were also excluded as there are already measures in place to protect residents from those hazards.

#### Existing evidence of health and social effects of housing improvements

Table 1 shows the main effects of different types of housing improvements on six main broad health and social outcomes. The findings are a synthesis of the data from the intervention studies reviewed and indicate the strength of evidence for each finding.

Table 1						
	rom controlle	ed and uncontrolled i	intervention stu	udies of specific	health impact	s of housing
Impacts on	General health or	Symptoms/illness and health	Respiratory	Mental health	Mortality	Social
outcomes	wellbeing	service use		nearth		
measured	_					
Re-housing	g/refurbishme	ent plus relocation fro	om slum area o	or community re	generation	<u>^</u>
	$(\Rightarrow$		$\Leftrightarrow$	Û	$\sim$	
	Unclear impact on measures of general health	Unclear impact on symptoms or illness episodes ++ ↔ Unclear effects on heath service use +	Conflicting findings from four studies	Consistent improvement in mental health++	Increased+	Numbers of smokers reduced+ Increased community involvement, social support, sense of belonging and feeling of safety. Reduced fear of crime and sense of isolation+ Increased rents led to reduced income to buy adequate diet+
Medical pr	iority re-hou	sing (MPR)	1	I	1	1
	Û			Û		
	Improved objective measure and self reported health+	Unclear impact on health service use+		Improved objective measure and self-reported health++		
Energy eff	iciency meas	ures				·
	Û	$\Leftrightarrow$	Û	⇔		Û
	Improved objective measure of health+	Unclear impact on general symptoms+	Reduction in respiratory symptoms+	No significant difference in emotion and mental health+		Less school time lost due to asthma but not other symptoms+
or illness in association association	ndicators; <b>[</b> ] :: evidence fr	Improvements to he reduction in health om prospective contri om at least one prosp es.	n or increase in rolled studies v	illness. Strengt with good levels	of evidence of follow up;	++ moderate

#### General physical health and illness episodes

Thirteen studies were identified that assessed changes in general health after housing improvement and repair works. Measures used included self reported wellbeing, activity, symptoms or illness episodes, and health service use. Two of the studies used a validated general health measurement. Ten studies found some health improvements and five studies found no difference in some measures. Some studies found mixed effects.

Three studies of re-housing and community regeneration reported adverse effects on general health. One study found increases in reported illness episodes (+56%), though this was in part attributed to a flu epidemic. In a further study, age standardised mortality rates increased for all ages, except infants, five years after re-housing from a slum area.

#### Mental health

Half the studies identified used a measure of mental wellbeing (including the Hospital Anxiety and Depression Scale (HADs), self reported mental health and hypnotic prescribing levels). These studies assessed the health impacts of Medical Priority rehousing, energy efficiency improvements, refurbishment/repair, re-housing, and area regeneration. All of these studies, except one study of central heating installation, found improvements one month to five years after the housing improvements were completed. In one large, prospective controlled study the degree of improvement in mental health was directly related to the extent of housing improvement, demonstrating a dose-response relation. This consistent pattern of improvements in mental health would suggest that improving housing would generate mental health gains.

#### **Respiratory health**

Four studies looked at changes in respiratory symptoms. Measures used included self reported symptoms and respiratory prescribing. Three of these studies were of rehousing and area regeneration; two of the studies reported increases in respiratory symptoms. One study found an increase in chronic respiratory conditions (+12%) among adults five years after the move while the other study found reductions (-11%) in bronchial and asthmatic symptoms one to four years after the move. The study of routine respiratory prescribing data found no significant changes, though the use of routine data that are not linked to individuals is not easy to interpret. In the fourth study, children's respiratory symptoms improved and fewer days were lost from school because of asthma three months after installation of central heating.

# Other effects of housing improvements

#### Social context

Four studies measured changes in a range of social outcomes and each found improvements after the housing improvement. Residents reported a reduced sense of isolation, reduced fear of crime, increased sense of belonging and feelings of safety, increased involvement in community affairs, greater recognition of neighbours, and improved view of the area as a place to live. These are important changes and may effect resident's satisfaction with their house, however, it is not known if improvements in such measures translate into health improvements.

#### **Increased rents**

Two studies of re-housing and area regeneration provide good examples of the potential for unintended adverse effects because of increased rents. One study reported increases in standardised mortality rates in the re-housed residents. This was attributed to a doubling in rents, which in turn affected the households' ability to buy an adequate diet. More recent research also reported that rents in the new houses increased by an average of 14.8%, and some residents reported this as a barrier to employment opportunities. Some residents reported economising on food to accommodate the increase in rent.

#### Using other sources of evidence on housing and health

The strongest research evidence of health gains generated by housing investment is most likely to come from completed intervention studies. However in the absence of this, it is necessary to consider other data sources. The following sections provide a selective review of observational and qualitative literature that has linked poor housing conditions to health.

#### **Observational evidence in housing**

There are many housing characteristics that have been strongly associated with poor health using observational data. A comprehensive, expert review of the associated risks and health hazards in domestic buildings identified hygrothermal (moisture absorption and temperature change) conditions, radon, falls, house dust mites, environmental tobacco smoke, and fires as the highest health risks. The main housing factors associated with health variation and that are commonly part of or aspects associated with housing improvements are listed below and these should be considered in an HIA of housing improvements / repairs.

# Main housing factors that have been associated with health variation and targeted as part of common housing improvements

- Indoor air quality;
- House dust mite and allergens;
- Dampness and hygrothermal conditions;
- Temperature and warmth;
- Home ownership;
- House type and design, for example, flat or house.

#### Other issues associated with housing improvement

- Moving and relocation;
- Displacement;
- Area effects;
- Housing costs.

#### Indoor air quality

In a recent expert review of the health effects of exposure to airborne particles in the home, the findings of observational, human, epidemiological, and toxicological animal studies were reviewed. The most common airborne particles arise from environmental tobacco smoke, cooking, certain heating appliances, and human activity. The level of indoor particles is strongly correlated with outdoor levels and

raises personal exposure substantially. Short-term increases in ambient particles are strongly associated with increased mortality and morbidity; acute cardiopulmonary impairment being the predominant impact and vulnerable groups such as the elderly people and people with asthma being most at risk.

#### Dampness and hygrothermal conditions

No recent systematic reviews of associations between dampness, mould, and health have been identified. In a review of studies of the associations between damp and mould and respiratory health the author concluded that if the home was damp or moldy the increased risk of respiratory symptoms was small, and recommended that new build housing, improvements works, repairs and upgrading is designed to prevent the proliferation of indoor allergens.

#### Allergens

The most important allergen in house dust comes from the house dust mite. A systematic review of the effectiveness of house dust mite control measures in the management of asthma has been carried out. Measures used included vacuuming and acaricidal (for killing mites or ticks) chemical measures. There is evidence to suggest that current chemical and physical measures to reduce exposure to house dust mite allergens seem to be ineffective in the management of asthma. This is partly because asthma sufferers are often sensitive to other allergens as well as house dust mite.

#### Temperature and warmth

There is considerable seasonal variation in mortality in the UK that is strongly related to reductions in outdoor temperatures. Recent analyses suggest that the seasonal variations are related to indoor rather than outdoor temperature, and that this annual variation could be reduced by helping residents protect themselves from cold weather conditions.

#### Housing tenure

Home ownership has been independently associated with improved health. It is thought that home ownership may generate a degree of security and control, though the direction of the relation needs further investigation. However, home ownership is not always health promoting. Nettleton and Burrows' study of the health impacts of mortgage arrears suggested that those living on the margins of home ownership suffer increased insecurity and detrimental mental health impacts. In addition, cultural variations in rates and meaning of home ownership may give rise to international variation.

#### Housing design

Flat dwelling has been linked to factors associated with stressful living conditions such as increased social isolation, crime, reduced privacy, and opportunities for safe play for children. However, there are many factors related to flat dwelling that may confound findings of surveys and there are no conclusive data that height of home from ground level is associated with reduced health or satisfaction with housing. A recent review of epidemiological surveys showed a consistent pattern of decreased levels of mental health associated with housing height and multiunit dwelling. It is unclear how these studies were selected for review and the author points out it is not possible to draw conclusions of a causal link because of the poor quality of research in this area.

# Other considerations in housing improvement/repair programmes Moving and relocation

Moving house is considered to be a stressful, health damaging life event. In the field of social housing this has been attributed to lack of opportunity to negotiate with the housing authority regarding control around the move. Housing relocation has also been associated with loss of community, uprooting of social networks, and unsatisfied social aspiration that may counteract satisfaction with improved housing. The meaning and context of housing varies between people and it may not be possible to detect tangible or consistent health effects of moving and relocation. Residents' satisfaction with their neighbourhood and dwellings has also been used as an indicator of quality of life and as an ad hoc measure of the success of housing investment. However, prioritising improvements in factors associated with high dissatisfaction may not maximise the incremental well being of residents; residents who are dissatisfied with the local neighbourhood may prioritise housing improvements before neighbourhood improvements. Consultation with residents included in proposed housing improvements/repairs is important.

#### Displacement

Some area and housing regeneration projects can lead to displacement of original residents. This may result in misleading shifts in routine social and health statistics that will not be identified unless a more detailed analysis of individual data is performed. It is therefore necessary to identify reasons and potential for displacement in advance.

#### Area effects

The socioeconomic characteristics of a neighbourhood may have an effect on a person's health status. Ongoing research looking at the health effects of relocation from areas of deprivation to improved housing indicated opportunities, education, and social integration were improved. The suburban movers attributed increased employment to increased job vacancies, increased neighbourhood security, and less local gang activity. The most recent report from a similar project demonstrated that households in the intervention groups experienced improved health among household heads, and children in the experimental group were less likely than the control group children to experience an asthma attack.

#### Housing costs

Research supports the potential for rents to impact on residents' lives. In housing, rent subsidies have been used as a way of offering public housing tenants more control and choice in where they live and of promoting more integrated public housing tenancy. In one survey of child growth and nutrition, children whose family were on the waiting list for housing subsidy were over eight times more likely to have low growth indicators than similar children whose families already received a housing subsidy.

# Evidence for health impacts after housing improvement/repairs derived from a systematic review of intervention studies

- Mental health likely to show some improvements.
- Possible small improvements in general physical health and wellbeing though three studies of re-housing and regeneration showed adverse effects.

Points to consider for housing services repairs policy HIA, informed by evidence from intervention studies, observational, and qualitative data reviewed

- What are the specific housing changes/improvements/repairs that are proposed?
- Are there other housing changes not detailed in the proposals that may occur?
- What is the evidence that these changes will affect health and any specific symptoms?
- Are there vulnerable groups (for example, elderly, asthmatic people) who may benefit particularly from the proposed changes?
- When can health gains be realistically expected?
- Will the improvement be too marginal to detect?
- Are there going to be any changes in housing costs?
- Is there any other change that may affect living costs—transport, food, access to amenities?
- Was there sufficient consultation about the housing improvements?
- What is residents' baseline satisfaction level with their housing?
- What levels of displacement can be predicted over the period of improvement?
- What explanations might there be for displacement?

The purpose of health impact assessment of proposed housing interventions may be to recommend changes to maximise the health benefits arising, or to prioritise areas of housing investment. By acting on the findings of this HIA and considering both the potential positive and negative impacts of housing improvements/repairs, the health benefits of housing can be maximised.

Data from qualitative studies has been used however; it cannot be assumed that by reducing the exposure to a known housing risk the adverse effects of poor housing can be reversed.

The difficulties in developing and using evidence base for HIA has been recognised and a framework for different levels of HIA has been advocated. These levels range from a desktop exercise reliant on readily available information, to detailed assessment that included synthesis of existing research. Currently there is insufficient evidence to fully support a detailed HIA to predict the health impacts of housing improvement/repair. However, it is important that absence of evidence is not confused with evidence of absence.

#### LANDLORDS SERVICES (Repairs and Improvements) Background

Tamworth Borough Council's repair and improvements service objectives are:

- To fulfil statutory and regulatory responsibilities for repairs and maintenance
- To aim to achieve customer satisfaction within the repairs service
- To work towards improving the housing stock directly provided by Tamworth Borough Council
- To involve tenants in the management of the repairs service

- To use the resources within the repairs service to best effect
- To deliver value for money

Tamworth Borough Councils repair and maintenance responsibility extends to all tenants of council owned properties and to leaseholders of flats and maisonettes, where Tamworth Borough Council owns the freehold.

Where a flat or maisonette has been sold, Tamworth Borough Council remains responsible for the repair and maintenance of the structure and common areas of the building. Maintenance of the interior and fixtures are the responsibility of the leaseholder.

Tamworth Borough Council has a responsibility in accordance with the Public Health Act 1963 and the Housing Act 1985 to keep in repair its properties to ensure that they are fit for occupation.

The definition in Section 604 (1) of the Housing Act 1985 is:

'In determining for any of the purposes of the Housing Act whether premises are unfit or fit for human habitation, regard shall be had to their condition in relation to the following matters:

- Repair Condition
- Structural Stability
- Freedom from dampness
- Internal arrangements
- Natural lighting
- Ventilation
- Water supply
- Drainage and sanitary conveniences
- Facilities for the preparation and cooking of food and for the disposal of waste water

Premises shall be deemed to be unfit if, they are defective in one or more of these matters so that they are not reasonably suitable for occupation.'

Tamworth Borough Council is committed to providing a repair and maintenance service to ensure that these requirements are fulfilled. Failure to do so may result in tenants taking action under Section 82 of the Environmental Protection Act 1990, contending that the condition of their dwelling is prejudicial to health or is a nuisance. They may also institute proceedings in the county court under Section 11 of the Landlord and Tenant Act 1985 contending that Tamworth Borough Council has breached its statutorily implied covenant relating to the condition of the structure, the exterior, the installations for the supply of water, gas, electricity and for sanitation and for space, heating and heating water.

### Landlord Services Repairs Policy Health impact Assessment

Health Impact Assessment (HIA) is part of the mandatory 'Impact Assessment' required by Government for all relevant policies for developing better, evidenced-based policies by careful consideration of the impact on the health of the population. Key stages undertaken in this process are indicated in the table below:

#### Key stages of the health impact assessment undertaken

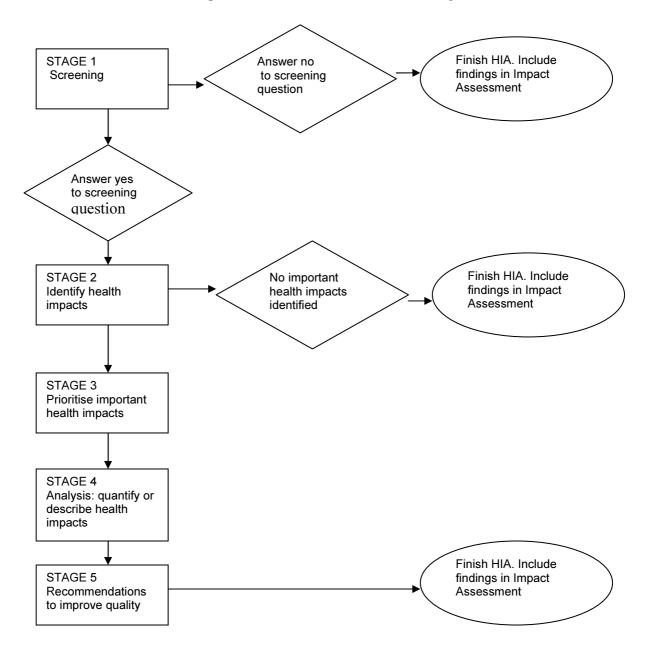
• Screening	The first stage is selection proposals within the repairs policy that should be subjected to HIA.
<ul> <li>Getting the HIA team together</li> <li>Scoping</li> </ul>	HIA needs input from a team of people to provide different perspectives and areas of expertise. This means setting the boundaries of the HIA: the geographical scope, the population groups whose health is considered, and the timescale over which to predict impacts.
• Identifying impacts	This means identifying possible health consequences of the proposal.
• Assessing impacts	This means assessing the identified impacts, in order to inform recommendations to improve the health consequences.
• Making recommendations	The HIA should include recommendations to adjust the proposal to maximise positive and minimise negative health impacts.
• Monitoring impacts	Once the proposal is implemented, the health impacts that arise in practice should be monitored.

Note:

In may be necessary to return to an earlier stage when when/if more information becomes available. For example, impacts may affect a larger population than first thought, so it will be necessary to re-define the population scope of the HIA.

#### Screening

In order to complete the HIA a review of the possible health impacts has been undertaken which considers the size and importance of the proposed Landlords Services Repairs Policy impact.



The diagram below gives an overview of the Health Impact Assessment process used, and the rest of this section explains the content of each of the 5 stages of HIA.

# FRAMEWORK FOR HIA

Table 1.	Stage 1	Screening
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Table 1. Stage 1 Screening		
Screening Questions	No If there will be no health impact provide a brief explanation for your response	Yes If there will be health impact(s) provide a brief explanation
Will the proposal have a direct impact on health, mental health and wellbeing? For example would it cause ill health, affecting social inclusion, independence and participation? You should consider whether any socioeconomic or equalities groups* will be particularly affected.	Yes	Repairing responsibility may have impact on living conditions if tenants do not carry out repairs they are responsible for. Linked to Golden Ticket and property MOT
Will the policy have an impact on social, economic and environmental living conditions that would indirectly affect health? For example would it affect housing, transport, child development, education, good employment opportunities, green space or climate change? You should consider whether any socioeconomic or equalities groups* will be particularly affected.	Yes	Improved living conditions with increased insulation and affordable heating. Reduction in carbon emissions. Healthier living conditions
Will the proposal affect an individual's ability to improve their own health and wellbeing? For example will it affect their ability to be physically active, choose healthy food, reduce drinking and smoking? You should consider whether any socioeconomic or equalities groups* will be particularly affected.	Yes	Improved living conditions and lower running costs for heating and hot water. May help with additional disposable income to engage in activities and healthier life style
Will there be a change in demand for or access to health and social care services? For example: Primary Care, Hospital Care, Community Services, Mental Health and Social Services? You should consider whether any socioeconomic	No	Properties maintained to high standard should lead to healthier living conditions which

or equalities groups* will be particularly affected.		is linked to better health
Will the proposal have an impact on global health?	No	Unlikely to impact globally.
*Equalities groups such as race, gender, health, di religion or belief.	sability, sexu	al orientation, age,

#### Scoping

The HIA is specifically targeted to the introduction of a Landlords Services Repairs Policy for repairs and improvements to landlord owned housing stock in the geographical area of Tamworth, within which are 4545 properties split into 13 districts/wards as listed below:

- Amington;
- Belgrave;
- Bolehill;
- Coton Green;
- Dosthill;
- Fazeley;
- Gillway;
- Glascote;
- Kettlebrook;
- Leyfield;
- Spittle;
- Town Centre &
- Wilnecote

These properties are split into the following groups:

Dwelling Type	Number
Bungalow	232
Ground floor bedsit	4
Ground floor maisonette	68
Ground floor flat	386
High rise flat	313
House	2545
Sheltered	373
Upper floor flat	503
Upper floor maisonette	117
Upper floor bedsit	4
Total	4545

The population groups of the above properties whose health has been considered is indicated below:

Age Group	Number
18-25	223
26-55	2494
56-65	856
Over 65	2227
Total	5909

Of these:

Disability	Number
No recorded disability	5194
Some form of disability	715
Total	5909

Ethnicity	Number
White British	4350
Unknown	1435
Other ethnic groups	124
Total	5909

The timescale over which to predict impacts is considered to be over the life of the tenancy, as clearly some tenants will make more use of the repairs/improvements service than others.

Stage 2 Identify Health Impacts	Answering yes to these questions indicates that this is an important health impact					Stage 3 Prioritise health impacts	
Describe the Health Impacts	Will the health impacts affect the whole population or will there be differential impacts within the population? You should consider whether any socioeconomic or equalities groups* will be particularly affected.	Will the health impacts be difficult to remedy or have an irreversible impact?	Will the health impacts be medium to long term?	Are the health impacts likely to generate public concern?	Are the health impacts likely to generate cumulative and/or synergistic impacts?	Combining the answers, on balance will the health impacts have an important positive or negative impact on health. Provide a brief overview of the reason for your decision on prioritisation	
People with physical or mobility impairments	Limited number and would affect Access, Repairs/Maintenance, Decent homes service standards. Aids and adaptations.	Support can be provided to vulnerable tenants	Can be long term dependant on disability	Unlikely	Possible dependant on how symptoms progress and ongoing support required	Likely to have positive impact on quality of life with improved access to enhanced service delivery	
People with sensory impairments (hearing / speech)	Limited number and would affect Access, Customer care, Tenant involvement— Tenants can't hear/can't hear clearly, hear what you are saying-telephone contact needs to be supplemented, update Tenant profile reference preferred methods contact, repairs staff good examples of local knowledge of the	Support can be provided to vulnerable tenants by arranging tenant liaison officer to liaise with carers, support services and staff. Tenant base being utilised to arrange and carry out repairs and servicing.	Can be long term	Unlikely	Possible dependant on how symptoms progress	Dependant on information being available a positive impact with service tailored to meet individual needs	

TABLE 2. Stages 2 and 3 Identify and Prioritise health impacts

People who use mental health services	Limited number and persistent complainants, generally cross, without considering whether there is a need for mental health support or whether this is already being given. We do not know /share enough detail about this user group.	Support can be provided to vulnerable tenants by arranging tenant liaison officer to liaise with carers, support services and staff. Check supporting people plans	Link age to dementia possibilities	Unlikely	Possible dependant on how symptoms progress and ongoing support required	Likely to be limited information available but where tenant profile indicates service can be tailored, it is likely to be positive impact
People with learning difficulties	Limited number and use of local knowledge from area office staff, repairs staff, tenants surveys identifies where tenants have literacy problems-use of face to face contact is maintained.	Support can be provided to vulnerable tenants by arranging tenant liaison officer to liaise with carers, support services and staff	Likely to be long term	Unlikely	Possible	Reliant on local knowledge but where known impact is likely to be positive
People who have non visible difficulties such as diabetes or epilepsy.	As above					

\*Equalities groups such as race, gender, health, disability, sexual orientation, age, religion or belief.

Table 3. Stage 4 Analysis: quantify or describe important health impacts

This section brings together (triangulates) the evidence from all the data collected from the different sources and by using different (multiple) methods. It identifies and characterises the potential impacts of the new Repairs Policy describing where possible:

**Health impacts** – the health determinants affected and the subsequent effect on health outcomes;

**Direction of change** – health gain (+) or health loss (-);

**Scale** – the severity (mortality, morbidity and wellbeing) and magnitude, where possible (size/proportion of the population affected);

**Likelihood of impact** – definite, probable, possible or speculative based on the strength of the evidence and the number of sources.

Latency – when the impact may occur.

For the purpose of impact analysis, a hierarchy of evidence from level I to 5 has been defined describing the relative strength of evidence for a causal relationship between health determinants and health outcomes; this includes evidence from the literature, key informants and stakeholders. Stakeholders provide a different type of evidence based on, e.g., their knowledge, experience and perceptions; this evidence provides a more detailed picture of the potential range of health determinants affected by the policy as well as an insight into how this may affect health outcomes and who may be affected most or least. Finally it helps in the prioritisation of impacts.

Where evidence collected from multiple research methods converges, this adds extra strength to the evidence and the likelihood of impact. Definition of the likelihood of the impacts is described in the following qualitative terms. The likelihood of the impact is based on the assessed strength of evidence. It should be noted that lower levels of evidence (speculative) are still relevant and may be valid; this evidence should not be ignored.

**Definite** Will happen. Overwhelming strong evidence from a range of data sources collected using different methods (level I)

**Probable** Very likely to happen. Direct strong evidence from a range of data sources collected using different methods (levels 2/3)

**Possible** More likely to happen than not. Direct evidence but from limited sources (level 4)

**Speculative** May or may not happen. No direct epidemiological evidence to support (level 5)

Primary categories of health outcome

The potential health outcomes associated with housing can be summarised as follows: Injuries and acute poisoning -- associated with falls, fires, burns, electric shocks, scalds, collisions, cuts and strains, carbon monoxide and other gases.

Chronic medical conditions associated with cold, damp, allergens and mould, chronic poisoning with asbestos, lead, tobacco smoke or solvents and fixatives.

Acute medical conditions associated with excess cold or excess heat.

Mental illness and psychosocial disorder associated with crowding, noise, poor living conditions, disruption, loss of control, and fear of crime.

Infectious diseases associated with crowding, food safety, personal hygiene and water supply. The effects of crowding include exposure to infectious agents such as TB,

### scabies and lice.

Wellbeing associated with good housing in good neighbourhoods, stable family life, empowerment and recognition and reduction in anti-social behaviour.

The analysis considered the effect of the housing repairs/improvement programme on each of these outcomes.

#### Transition

The housing repair/improvement programme represents a transition for the tenant that has 4 main stages.

**Before the works** -- when the tenant is living in a poor physical environment that may be cold, damp and unsafe. This may be accentuated by anxieties such as poverty and fear of crime. The tenant may be disabled and awaiting housing adaptation. This is a time of anticipation and delay. The tenant may be offered choices with regard to colour and design of fixtures and fittings and consulted about other potential home improvements; tenant involvement in decision making may have a positive impact on their health.

**During the works** -- when the tenant is disrupted and there are new, temporary, environmental hazards including dust and solvents. The disruption to tenants will be repeated during the different phases of the works. This will prolong the negative impacts of disruption while reducing the severity of impacts when compared to a single larger scale intervention.

**Early post-works** -- when the tenant first experiences the improved home environment and the associated sense of improved wellbeing and euphoria. If the works themselves have had a major disruptive effect, then the stress may continue into this phase. There will also be raised concentrations of volatile organic compounds and some snagging and defects await correction.

Late post-works -- when the tenant has ceased to feel a sense of improved wellbeing and euphoria because the repairs/improvements have become part of everyday life. The determinants of some chronic medical conditions have been permanently improved and the home environment is safer and warmer; however other confounding factors may not have been addressed, e.g., outdoor air quality. At this stage, breakages and maintenance may go unattended because there is no, or limited funding stream for maintenance. Tenants own repairing responsibilities may not be carried out. The effect of climate change during the summer months may produce conditions of excess heat. The physical and social environment outside the home and the social situation of the tenant may remain just as before. Rises in rent and energy costs may have eroded any financial improvements.

Many of the housing repairs/improvements are permanent and should lead to permanent reductions in the risk of injury and poisoning. For example, increased thermal efficiency is expected to reduce the incidence of hypothermia associated with excess winter cold. Adequate safe storage for cleaning products will help to reduce incidents of poisoning Certain conditions will not be addressed by any housing repairs/improvement programme -- such as crowding. Other improvements may be transitory. Evidence suggests that improvements in physical comfort alone produce transitory improvements in wellbeing and happiness. Sustained improvements depend on being a valued member of a supportive community as well as having a minimum standard of housing. This would require interventions that are outside the scope of home improvement and require "joined-up thinking" and partnership working.

For a tenant with good physical health and mental wellbeing, full employment and a stable family life, the transition should be relatively easy compared to vulnerable tenants. There will be a relatively minor disruption during the works and a small risk of injury from intrusion on work areas. The housing repair/improvement programme will provide increased wellbeing that complements the tenants existing relative good fortune. For a tenant with chronic medical conditions, disability, mental ill-health or psychosocial disorder, the outcome may be different and the health impacts more severe.

The following models the effect of this transition on various health outcomes and suggests that positive changes could be transitory in some cases. The strength of evidence is variable but similar issues have been reported elsewhere. For example, one study noted that "levels of stress associated with the redevelopment process are significantly associated with poorer health and in the short term appear to counterbalance the benefits of improved living conditions". The disruption experienced during major works can spill over into the early post-works period. Other studies have suggested that there is a "halo effect" and "optimism about the future" that reduces over time.

The conclusion from this analysis of the transition is that identification of vulnerable residents, additional interventions and improvement of the external environment, partnership working and joined-up thinking will be needed to maintain many of the health gains associated with housing improvement.

There are two possible approaches to carrying out the works: the phased approach, and a single phase approach, where all works are carried out together. The first approach produces many small disruptions and repeated uncertainty. The second approach produces a single major disruption and may require decanting. Decanting is particularly stressful for the elderly infirm. Each approach is likely to have different health impacts. In both cases, accurate knowledge of tenant vulnerabilities provides the first step towards managing impact.

#### Injury and acute poisoning

Rates of accidental poisoning and falls are notably low in Tamworth and an unknown proportion of these are associated with unsafe homes. The housing repairs/improvements are specifically designed to reduce certain injuries and provided safer storage of household goods.

#### **Chronic medical conditions**

There are tenants who have chronic conditions, such as asthma, whose medical adviser may have prescribed home improvement as a necessary part of treatment. Others may have disabilities and await housing adaptations. The delay in implementation of the appropriate home improvement represents a negative impact on health, while prompt action following the prescription represents a positive impact on

#### health.

Tenants experience to date has been of high quality home improvements and attention to the needs of disabled residents.

### Acute medical conditions

There is strong scientific evidence that excess cold during winter leads to excess winter deaths. The provision of affordable warmth during the winter months will reduce this risk. There is strong scientific evidence that high summer temperatures increase respiratory admissions and early deaths. As the effects of climate change become more apparent and the population ages, the impact is expected to increase. There is strong evidence that the solvents and fixatives used in building works can increase respiratory illness in vulnerable groups. The effect may last for up to one year. Some tenants had already experienced this.

### Mental illness and psychosocial disorder

There is evidence from stakeholders and studies of other improvement programmes that extensive works can cause stress, confusion, loss of control, fear, anxiety, disrespect, noise, dirt, theft and associated concerns. Some residents may be vulnerable because of their disabilities or life circumstances. Some may have general difficulties with change, planning, and organization skills.

Residents believe that home improvements may lead to subsequent improvements in mental health.

## Infectious disease

Infectious diseases associated with food safety are likely to occur at higher than average rates in poorly maintained, unhygienic and crowded living conditions. The programme improvements are likely to make the maintenance of hygiene easier. Over the longer term, climate change will lead to high summer temperatures which are conducive to the survival and rapid multiplication of infectious agents, although the increase in relative risk may be insignificant in the short term.

# Wellbeing

Evidence from the literature, including other HIAs, shows that tenants" wellbeing is affected by factors in the external physical environment such as graffiti, litter, antisocial behaviour, fear, intimidation, dangerous dogs and crime. Workshop participants prioritised these issues and expected the home improvements to have a positive impact on some of them. They identified an extra risk of criminals entering their homes during the works. Residents appreciate involvement in planning and "having a

say " and believed this had a positive impact on wellbeing. They identified disruption during Works as a negative impact that would vary between different communities. There is a need to recognise vulnerable people. Uncertainties about timing and process of works can cause anxiety with trust and communication being important determinants. Residents reported feeling safer once doors and windows had been replaced and being more likely to invite friends to their homes. The improvements and consultations increased their self-esteem and aspirations. There is evidence that housing interventions improve self perceived health.

#### Table 4. Stage 5 Recommendations to improve quality

### Identification

TBC should know who its tenants are and whether they have any special needs. It should transmit this information systematically to its contractors. It should maintain a risk register.

The register should flag which tenants require special care from the contractors. The special care may arise either because the tenants represent a hazard to the workforce or because the works, and the workforce, represent a hazard to the tenants.

Preparation of such a register will require collaboration with in-house staff, contractors and possible social services/NHS. The register will require updating frequently. Communication of the register to officers and contractors and especially front-line staff, will require appropriate confidentiality clauses in contracts and conformity to the data protection act.

Categories of at-risk tenants may need further discussion to quantify but may include the following:

- Certain chronic illnesses, including asthmatics and those with severe allergenic reactions.
- Registered disabled (physical or learning).
- People with mental health problems, including people with significant planning, organising, or coping skills deficits.
- Older people.
- Families with infants and young children (under 5s).
- People with certified medical needs.
- Registered drug users and people undergoing alcohol treatment.
- People in receipt of services (adult or children's)
- Violent offenders.

The register should indicate the following:

- Tenants requiring respite care during works.
- Tenants requiring priority home improvements because of medical needs.
- Tenants requiring multiple services.
- Tenants who are potentially dangerous to the workforce.

TBC should ensure all frontline staff has access to, and training in use of, the flagging system in Orchard that is, for example, used to identify potentially dangerous residents.

TBC contractors should consider how staff are trained to identify vulnerable tenants and pay attention to the identification of vulnerable residents who are currently missed, for example, those with coping, organisational and mental wellbeing issues.

An associated management system may be required that runs in parallel with the normal home improvement programme management system.

This system would need to:

- Deliver one-off home improvements to individuals with severe medical conditions whose homes need adaptation and repair as a medical priority.
- Deliver respite care to vulnerable tenants during refurbishment work.
- Deliver hypo-allergenic products to sensitive individuals, such as paints and kitchen work surfaces with low VOC emissions.

The management system needs to be supported by an improved information management system.

### Information management system

The analysis and other recommendations above have identified the need for TBC and its contractors to have more detailed information about the residents who are tenants of its properties. This information will enable improved management decisions to be made in order to identify residents with special needs or who are vulnerable.

Improvements to the existing Orchard computer-based information management system are indicated. This will require joined-up thinking and a partnership approach between TBC, Contractors, and other elements where required.

There are, no doubt, issues of confidentiality and data protection that require resolution. Residents should have an opportunity to express free prior informed consent to being included in a register of medical priority and vulnerability.

TBC should consider the inclusion of new information from the current tenant/profiling survey exercise. Geographical data mapping systems currently in use by TBC may become part of the information management system

## Communication

There are number of frequently asked questions (FAQs) concerning health and housing repair/improvement. For example, some residents wish to know how the asbestos in their homes is being managed; others wish to know if the recession will affect the programme of upgrades and repair works. Lack of knowledge creates stress and uncertainty as well as a perception of risk or unrealistic expectations. The questions, and the answers, could be collected and distributed via website, newsletter and other leaflets. The existing newsletter could be utilised for this.

Tenants and sheltered housing managers need 2-4 weeks warning of major works commencing. Communication needs to be in different formats for different groups, including videos and leaflets. Face-to-face communication remains very important. The experience of tenants whose homes have been refurbished would be very reassuring to those awaiting refurbishment. They could be asked to volunteer to talk to other tenants and participate in open days.

This HIA report should be made available to interested individuals such as contractor's customer care officers and tenant representatives. A plain English summary should also be available on the website with reference to the detailed report.

New staff need opportunities to get to know each other. Retrospective induction

programmes may be needed and additional training on operating processes may be required.

The whole of communication requires a champion who understands the issues, obtains the feedback, and implements solutions.

## Continue tenant control and involvement

The existing system of tenant involvement should continue with focus on the new repairs policy along with general health and wellbeing issues.

# Support

Consider a more systematic approach to providing support to vulnerable tenants, including personal support for tenants with literacy or emotional support needs. Female liaison officers may be more reassuring to some tenants. TBC should form links with other agencies, e.g. PCT/social services for advice on the support needs of vulnerable tenants. The needs of tenants may vary according to their particular vulnerability.

# Links

TBC should maintain links with the Primary Care Trust in order to maximise the health benefits of this and future home repair/improvement programmes. There are numerous agencies that tenants may need to access for their health and social care. A joined-up model is required to ensure that tenants can access the services they need from one point. This will require coordination between TBC and the other agencies.

# **Construction safety**

Safety campaigns are conducted prior to major construction work but are focused on the tenants and not the neighbours. The safety campaigns should be open to the entire neighbourhood regardless of their kind of tenure.

# **Building materials**

It is good practice that TBC contractors should use low emission paints. However, the use of other building materials, such as solvents and sealants, may be harmful to health. The use of all materials should be considered with a view to reducing potentially harmful emissions where practical.

# Improvements to occupational health, wellbeing and safety

Extend awareness of the safety issues relating to construction / repair works to the general neighbourhood. Children and teenagers are one of the main concerns, they can also play an important role in disseminating information to the wider community; construction safety awareness campaigns are commonly delivered in schools in areas within and surrounding the programme areas. This can be complemented by leaflets to houses in the general neighbourhood (not just TBC tenants).

Occupational wellbeing and health and safety improvements are required to ensure an even better service delivery. These include:

- Improvements to information management system (see above) for identifying hazardous tenants and dogs;
- Adequate front-line staff to improve staff-tenant communication;
- Opportunities for staff to get to know each other;

- Retrospective induction programmes;
- Better use of communication systems i.e. email;
- Clarification of procedures, including communication between departments;
- Ensure use of clear identity badges for TBC staff and a publicity campaign to help tenant's spot imposters.

#### HHSRS

The HHSRS data that is collected and compiled by TBC should form part of future reports on the success of housing repair/improvement works and should be linked to the health impact.

### Climate change

In view of the increasing importance of climate change, all new projects should be considered from the perspective of carbon reduction. The hazards associated with excess summer heat are likely to increase.

Some of the components of the housing improvement programme will make significant contributions to the reduction of greenhouse gas emissions. However, reducing emissions should be an explicit goal of the programme and this should be manifest in an explicit strategy to reduce greenhouse gas emissions. An environmental management system/s (EMS) could also be used to reduce the ecological footprint of TBC as an organisation while potentially providing long-term savings to TBC and subsequently to tenants.

Some of the components of the housing repair / improvement programme will make a contribution to the prevention/avoidance of excess summer heat. However, the appropriateness, both in the short and long term of these and any other measures should be considered with the explicit goal of avoiding/reducing excess summer heat.

#### Additional home improvements

Some tenants may wish to make additional home improvements which may bring added value to the positive health impacts. TBC should consider ways of helping tenants to make additional home improvements, through information and advice.

#### Lifetime homes

Design home improvements to take account of future needs of an ageing population. This should not be limited to adaptations for the disabled or for people when they become elderly, but included within the design of improvements to all homes wherever practical.

## General physical environment

The external environment of people's homes also has impacts on their health. This includes the periphery, the broader built environment and views of and access to green spaces. Maintenance and improvement of the external environment should be planned in order to consolidate the gains to health and wellbeing obtained from improvement of the internal home environment.

Develop and implement a coherent plan to improve the general physical environment in conjunction with partners (public, private and voluntary) and tenants, for example the regeneration of garage sites. Improvements to the general physical environment together with home improvements may have a more profound impact on community wellbeing when delivered in combination.

Greenspace improvement works, for example community gardens, that include hands on involvement of tenants may have additional benefits to community activity/cohesion and levels of physical activity.

### **Phasing of works**

Ensure that the phasing of works is designed, as far as practical, to minimise frequency and severity of disturbance for tenants for the lifetime of the programme. This may require different schedules for different tenants.

## **Temporary hostel accommodation**

People living in temporary accommodation experience significantly more health problems than the general population. People who have been sleeping rough have far poorer health than other members of the community. TBC should, therefore, be aware of the high level of health problems (physical and mental) experienced by people living in temporary (hostel) accommodation. These tenants may require additional support when works are carried out in hostels.

### Implementation of recommendations from the HIA

Develop an implementation/management plan for the recommendations of the HIA. The implementation of recommendations should, in part, be based on a detailed consideration of available resources (financial and personnel capacity).

Each of the recommendations above should be either accepted or rejected with the reasons for acceptance or rejection being recorded

# **Equality Impact Assessment Template**

Name of policy/ procedure/ practice to be assessed	Landlord Se	rvices Repairs Polic	су	Date of	Assessment	10/11/11
Is this a new or existing policy/ procedure/ practice?	Update of existing policy	Officer responsible for the Assessment	John Murden Departmer		Department	Housing Services
1. Briefly describe the aims, objectives and purpose of the policy/ procedure/ practice?		To deliver an effective repairs and improvement service to ensure properties are in a fit state of repair in line with the Housing Health & Safety Ratings System (HHSRS).				
2. Are there any associated policy/ procedure/ practice which should be considered whilst carrying out this equality impact assessment?		Housing Renewa Possible review of Affordable Warm Renewable energy Private Sector st Corporate Object	Financial Regulations Housing Renewal Grants Regulations 2008 (CLG) Possible review of how contractors are appointed and by whom. Affordable Warmth programme. Renewable energy. Private Sector strategy. Corporate Objective – Improving Housing Standards in Tamworth; Improving Health & Education Standards; Create & Maintain a Clean & Green Environment.			
3. Who is intended to benefice policy/ procedure/ practice a way?	satisfy as a minir	num the sta	ndard de	escribed within	are properly maintained and n the HHSRS document, e from major defects.	

4. What are the desired outcomes from this policy/ procedure/ practice?		Homes properly maintained and provide safe, healthy environment for tenants and their visitors. Homes are brought up to the minimum standard described within the HHSRS document, namely properties are wind and water tight and free from major defects.				
5. What factors/ forces could contribute/ detract from the outcomes?		Housing Finance Reform Available budgets. Tenants repairing responsibilities Increase in demand – outstrips available resources. Better publicity around service. VFM and alignment with our objectives.				
6. Who are the main stakeholders in relation to the policy/ procedure/ practice?	Tenants Low income households Local suppliers Contractors TBC – other policy contributors					

7. Which individuals/ groups have been/ will be consulted with on this policy/ procedure/ practice?	Tenan Stake	Tenants. Tenants groups Stakeholders. Members		
8. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact on racial groups?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Knowledge of potential service users. Communication methods need to be accessible to all. Could certain areas of the community lose out due to not being able to access the service		
9. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to gender?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users.		
10. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to them being transgender or transsexual?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users.		
11. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to disability?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Policy allows for aids and adaptations Knowledge of potential service users.		

12. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to sexual orientation?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users.
13. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to age?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users.
14. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to religious belief?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users.
15. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact on Gypsies/ Travellers?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users.
16. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to dependant/caring responsibilities?	N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Policy allows for aids and adaptations Knowledge of potential service users.

17. Are there concerns that the policy/ procedure/ practice <u>could</u> have a differential impact due to them having an offending past?		N	Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users This question isn't asked and doesn't form any part of the assessment.
18. Are there concerns that the policy/ procedure/ practice could have an impact on children or vulnerable adults?	Y		Please explain, your reasoning, giving details of existing evidence (either presumed or otherwise). Communication methods need to be accessible to all. Knowledge of potential service users. Increased level of service available for vulnerable i.e. golden ticket
19. Does any of the differential impact identified cut across the equality strands (e.g. elder BME groups)?		N	Please explain Communication methods need to be accessible to all. Knowledge of potential service users.
20. Could the differential impact identified in 8 – 19 amount to there being the potential for adverse impact in this policy/ procedure/ practice?		N	Please explain Communication methods need to be accessible to all. Knowledge of potential service users.

<ul> <li>21. Can this adverse impact be justified: <ul> <li>on the grounds of promoting equality of opportunity for one group?</li> <li>For any other reason?</li> </ul> </li> </ul>		N	Please explain for each equality heading on a separate piece of paper (questions 9 – 20). Communication methods need to be accessible to all. Knowledge of potential service users.
22. As a result of carrying out the equality impact assessment is there a requirement for further consultation?		N	Please explain No further consultation required
23.As a result of this EIA should this policy/ procedure/ practice be recommended for implementation in it's current state?	Y		Please explain Policy fit for purpose

# **Equality Impact Assessment Action Plan**

Complete the action plan demonstrating the changes required in order to meet TBC's commitment to equality and diversity. The action plan must contain monitoring arrangements, the publishing of results and the review period required for this policy.

ACTION/ ACTIVITY	RESPONSIBILITY	TARGET	PROGRESS
Monitoring arrangements:		Data collected quarterly	
Publication:			
Review Period:		Reviewed 12 monthly unless otherwise stated	

Expand as appropriate

Signed

(Completing Officer)	Date
Signed (Head of Department)	Date
Signed Corporate Diversity/ Equality	Date

### Bibliography

1. Liverpool Mutual Homes, *Focus on the future: corporate plan 2008-2013, operational plan 2008-2009.* 2008, Liverpool Mutual Homes: Liverpool.

2. Savills, Liverpool city council stock condition survey report. 2004

3. Abrahams, D., et al., *European Policy Health Impact Assessment: A guide*. 2004, IMPACT University of Liverpool: Liverpool.

4. Dahlgren, G. and M. Whitehead, *Polices and Strategies to promote social equity in health.* 1991.

5. Liverpool Mutual Homes, *Affordable warmth and energy efficiency strategy, 2008-2011.* 2008, Liverpool Mutual Homes: Liverpool. p. 20.

6. Department of Communities and Local Government. *A decent home: the definition and guidance for implementation*. 2006 [cited 2009 March]; Available from: http://www.communities.gov.uk/publications/housing/decenthome.

7. HM Government. *Housing Act.* 2004 [cited 2009 March]; Available from: http://www.opsi.gov.uk/ACTS/acts2004/ukpga\_20040034\_en\_1.

8. Department of Communities and Local Government. *Homes for the future: more affordable, more sustainable - Housing Green Paper.* 2007 [cited 2009 March]; Available from: http://www.communities.gov.uk/publications/housing/homesforfuture.

9. Taske, N., et al., *Housing and public health: a review of reviews of interventions for improving health Evidence briefing*. 2005: National Institute for Health and Clinical Excellence.

10. Department of Communities and Local Government. *Sustainable Communities: Building for the Future (Summary, main document and regional action plans)*. 2003 [cited 2009 March]; Available from:

http://www.communities.gov.uk/publications/communities/sustainablecommunitiesbuil ding.

11. Jan Gilbertson, J., G. Green, and D. Ormandy, *Sheffield Decent Homes Health Impact Assessment*. 2006, Sheffield Hallam University: Sheffield. p. 27.

12. Office of Deputy Prime Minister, *Housing health and safety rating system, operating guidance*. 2006: Crown copyright.

13. HM Government, *Statutory Instrument 2005 No. 3208, The Housing Health and Safety Rating System (England) Regulations 2005*, O.o.t.D.P. Minister, Editor. 2005 London.

14. Department of Health. *Tackling health inequalities: A Programme for Action*. 2003 [cited 2009 March]; Available from:

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAnd Guidance/DH\_4008268.

15. Department of Communities and Local Government. A New Commitment to Neighbourhood Renewal: A National Strategy Action Plan. 2001 [cited 2009 March]; Available from: http://www.neighbourhood.gov.uk/publications.asp?did=85.

16. Department of Communities and Local Government, *Lifetime Homes, Lifetime Neighbourhoods: A National Strategy for Housing in an Ageing Society.* 2008, Government: London.

17. LCC, *Liverpool City Council - proposed LSVT - Gap funding requirements*. 2006: Liverpool.

18. Nevin, B. and P. Leather, *Discussion paper: Developing a strategy for tackling worklessness amongst social housing tenants in Liverpool.* 2008, Liverpool First: Liverpool.

19. Liverpool Partnership Group. *The Liverpool Partnership Group*. 2001 [cited 2009 February]; Available from:

http://209.85.129.132/search?q=cache:9H0\_nRV3OW0J:www.lga.gov.uk/lga/aio/394 47+Liverpool+strategic+housing+partnership&hl=en&ct=clnk&cd=5&gl=uk.

20. Liverpool First. *Liverpool's Local Area Agreement (LAA) 2008-2011: Delivering Sustainable Communities* 2008 [cited 2009 February]; Available from: http://www.liverpoolfirst.org.uk/sites/liverpoolfirst/files/liverpool-first-laa-2008-2011.pdf.

21. Liverpool City Council. *Liverpool healthy homes programme*. 2009 [cited 2009 February]; Available from:

www.liverpool.gov.uk/Environment/Environmental\_health/healthyhomes/index.asp

22. Department of Communities and Local Government. *Thematic mapping of index of multiple deprivation*. 2007 [cited 2009 February]; Available from: http://www.imd.communities.gov.uk/.

23. Department of Communities and Local Government. *Thematic mapping of index of multiple deprivation -- explanatory notes*. 2007 [cited 2009 February]; Available from:

www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivatio n07/.

24. Department of Communities and Local Government. *The English Indices of Deprivation 2007 -- full report*. 2007 [cited 2009 February]; Available from: www.communities.gov.uk/documents/communities/pdf/733520.pdf <a href="http://www.communities.gov.uk/documents/communities/pdf/733520.pdf">http://www.communities.gov.uk/documents/communities/pdf/733520.pdf</a>

25. Department of Communities and Local Government. *The English Indices of Deprivation 2007 -- basic data*. 2007 [cited 2009 February]; Available from: www.communities.gov.uk/documents/communities/zip/825411.zip.

26. Liverpool City Council, *Health impact assessment of Liverpool City Council's housing strategy statement final report* 2003, Liverpool City Council and PCT: Liverpool.

27. Boyle, T. and S. Grinnell, *Rapid health impact assessment of the Liverpool Healthy Homes Programme: executive summary.* 2009.

28. ONS. 2006-based sub-national population projections 2007 [cited 2009 March]; Available from: http://www.statistics.gov.uk/downloads/theme\_population/SNPP-2006/InteractivePDF\_2006-basedSNPP.pdf.

29. ONS. 2001 Census data - Table KS06 Ethnic group Census 2001 Key Statistics 2003 [cited 2009 February]; Available from: http://www.statistics.gov.uk/StatBase/ssdataset.asp?vlnk=8283&Pos=2&ColRank=1& Rank=240.

30. ONS. *General (Self Reported) Health Status Census 2001*. 2001 [cited 2009 March]; Available from:

http://www.neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=3&b =276787&c=liverpool&d=13&e=6&g=359393&i=1001x1003x1004&m=0&r=1&s=1239 198001984&enc=1&dsFamilyId=97.

31. Thomson, H., M. Petticrew, and D. Morrison, *Health effects of housing improvement: systematic review of intervention studies.* BMJ, 2001. **323**(7306): p. 187-190.

32. Douglas, M., H. Thomson, and M. Gaughan, *Health Impact Assessment of Housing Improvements: A Guide*. 2003, Public Health Institute of Scotland: Glasgow.

33. Office of the Deputy Prime Minister, *Statistical Evidence to Support the Housing Health and Safety Rating System, Volume II - Summary of Results* 2003: London.

34. Thomson, H. and M. Petticrew, *Is housing improvement a potential health improvement strategy*?, in *Health Evidence Network (HEN)*. 2005, World Health Organisation regional office for Europe: Copenhagen.

35. Wright, G.R., *The effect of domestic mechanical heat recovery ventilation on asthma control of patients allergic to the house dust mite*, in *Division of Immunology, Infection & Inflammation*. 2008, University of Glasgow: Glasgow.

36. Wieslander, G., et al., *Asthma and the indoor environment: the significance of emission of formaldehyde and volatile organic compounds from newly painted indoor surfaces.* International Archives of Occupational and Environmental Health, 1996.

37. Arif, A. and S. Shah, *Association between personal exposure to volatile organic compounds and asthma among US adult population.* International Archives of Occupational and Environmental Health, 2007.

38. Lavin, T., Higgins, C., Metcalfe, O., Jordan, A., *Health Impacts of the Built Environment: A Review*. 2006, Institute of Public Health in Ireland.

39. Croucher, K., L. Myers, and J. Bretherton, *Health Impact Assessment of Greenspace - A Guide*. 2008, Greenspace Scotland: Stirling.