

Housing and Health Evidence Review for Health Impact Assessment (HIA)

Wales Health Impact Assessment Support Unit (WHIASU)

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Introduction

This guidance document was produced by the Wales Health Impact Assessment Support Unit (WHIASU) for Public Health Wales to ensure that decisions relating to housing and HIA are made from an evidence-informed standpoint. It is designed to be read in conjunction with *Health Impact Assessment: A Practical Guide* (Chadderton *et al.*, 2012) which provides detailed guidelines and proformas for carrying out an HIA.

Housing is an essential facet of everyday life, community, health and well-being. Following the economic downturn, many people on average wages are no longer able to afford their own home, and the demand for affordable housing has grown so rapidly that there are now long waiting lists (estimated 80,000 households in April 2010) (Welsh Government, 2012) which cannot be satisfied by current housing provision. In Wales, it has been identified that 14,000 new homes are needed every year for the next 15 years in order to rectify this housing deficit (Homans and Monk, 2010). An inquiry into the provision of affordable housing found that members of the WLGA, Community Housing Cymru, the Welsh Tenants' Federation and the Home Builders' Federation urged the Welsh Government to take action and to follow a 'whole-system' approach to housing (Welsh Government, 2012). In response, the Welsh Government has embarked on an ambitious programme of housing expansion including £400 million funding for 7,500 new affordable homes in Wales by 2016 (Welsh Government, 2013).

This period of housing expansion in Wales will not take place in a vacuum. Peoples' lives and neighbourhoods will be affected by processes of change, regeneration and relocation. The process will bring with it opportunities as well as risks, and the impact upon the health and well-being of those involved may be significant. This guidance will provide planners, developers and health professionals with the most up-to-date evidence relating to housing and health, as well as the potential positive and negative health impacts that housing interventions may have at an individual, social and environmental level.

For more information on this evidence review or any of the Welsh HIA case studies contained within this guide please contact either Dr Eva Elliott, Cardiff University (email: Elliote@cardiff.ac.uk) or Liz Green, Public Health Wales (email: Liz.green@wales.nhs.uk).



Housing Policy in Wales

Current Strategy

Housing is a policy area which is devolved from the UK government and which has been developing rapidly in recent years. The current strategy adopted by the Welsh Government is encapsulated in *Improving Lives and Communities – Homes in Wales*, published in 2010. Preceding this, the *Essex Review of Affordable Housing* (2008) had identified that the principles of collaboration, outcome-focused processes and accountability, as set out in the 2004 *Making the Connections* model for public service reform, were not being applied in relation to housing. The *Essex Review* made 43 recommendations for changes in the way that affordable housing is regulated, funded, assessed and delivered in Wales, which were incorporated into an implementation programme engendering true collaboration and engagement. These developments were evaluated as being very well received in the housing sector (Pringle and Brisley, 2010).

Driven by *One Wales* (2009) and the *Essex Review of Affordable Housing* (2008), *Improving Lives and Communities* (2010) defines its implementation as being rooted in the joint efforts between organisations from the public, private and voluntary sectors. The strategy calls upon banks, private landlords, developers and voluntary organisations to work with the government to realise its vision of housing which is affordable and suitable for people in Wales. The key priorities set out in the strategy include increasing the overall number and range of homes in Wales, improving the quality of social and private housing, making homes more energy efficient, and improving services for people from minority groups and homeless people.

Regeneration

In the Welsh policy context housing is also included in regeneration strategies and policies. The key documents relating to regeneration are the *Ambition Statement for Regeneration* (June 2010) and the *Framework for Regeneration Areas* (October 2010). In 2013, *Vibrant and Viable Places: New Regeneration Framework* was published following a public consultation, and sets out the Welsh Government's priorities and action plans for regeneration. Regeneration is defined as:

“an integrated set of activities that seek to reverse economic, social, environmental and physical decline to achieve lasting improvement, in areas where market forces will not do this alone without some support from government” (Welsh Government, 2013)

This definition recognises the Welsh Government's place-based approach to regeneration, focusing on key areas of deprivation within the 22 Local Authority areas in Wales. Poor housing is recognised as a characteristic of deprivation, and the links between housing and health are explicit within the framework. Specifically, regeneration efforts will be focused upon town centres, coastal communities and Communities First areas. As with housing strategy, partners engaged in the delivery of the framework are expected to come from the public, private and voluntary sectors. The pursuit of three broad objectives shape the framework: Prosperous Communities, Learning

Communities, and Healthier Communities. These three objectives have also been filtered through to Communities First areas and provide the structure of their work plans for the forthcoming years. The framework describes a “people and place” approach to regeneration, whereby genuine involvement of communities is part of the process. The involvement of the Third Sector is seen as the primary mechanism for community engagement in regeneration projects.

Importantly, *Vibrant and Viable Places* identifies Health Impact Assessment as a useful way of identifying positive health impacts and opportunities that regeneration projects may bring, as well as mitigating any risks or potential negative effects of proposals. Links between the regeneration framework and broader health policy are identified, and a determinants view of health is apparent throughout the document. The inclusion of Health Impact Assessment at this strategic level suggests that the Welsh Government is taking a socio-ecological approach to housing and regeneration.

The role of RSLs (registered social landlords)

The trend towards the replacement of public bureaucracies with private companies since the 1970s drastically changed the structure and management of publicly-owned housing in the UK. The idea underpinning the move away from public bureaucracy comes from Public Choice Theory, which assumes that public bureaucrats act primarily out of self-interest rather than in the interest of the public (Boyne and Walker, 1999). From this perspective, doing away with public bureaucracies and introducing a competitive market for service provision produces better performance and value for money. For housing, this has meant that councils in England and Wales have been transferring their housing stock to new landlords since the late 1980s (Card and Mudd, 2006). Early transfers typically took place with relatively good quality housing stock, in areas of low housing demand (National Audit Office, 2003). However, since 1998, “second generation” stock transfers have concentrated in disadvantaged urban areas where investment for the improvement of housing stock is more urgently needed. One of the drivers for this has been the requirement for all housing to meet the *Decent Homes Standard* by 2010 in England, and the *Welsh Housing Quality Standard* by 2012 in Wales (Pawson and Fancy, 2003; Welsh Government, 2008). New stock transfer companies, acting as RSLs, operate differently to traditional housing services in that they work with flatter staffing structures and more staff ownership of the organisation’s business plan objectives and targets, which some argue has resulted in a work environment that is perceived as more egalitarian and inclusive (Pawson and Fancy, 2003).

The impact of this process has been the elimination of council housing in many local authorities in the UK and, post-1998, the involvement of RSLs in the regeneration of deprived and excluded communities (Card and Mudd, 2006). Many RSLs have become involved in regeneration projects which involve a number of other partners, such as schools, health centres, community development workers and support services. Consequently, the purpose of RSLs has come to be perceived as being about more than just housing; Pawson *et al.* (2009) found that 90% of respondents living in urban RSL accommodation stated that their association provided some kinds of community facilities. These included community resource centres, children’s play areas, IT training and cafes (Pawson *et al.*, 2009). Alongside this it has become the norm that tenants play a more prominent role in the management of their accommodation, for example through tenant’s forums or representation on housing committees. Discourses surrounding tenant participation, involvement in decision-making and empowerment have become imbibed in the language used by stakeholders working in this area



(McKee and Cooper, 2008). On one hand, tenant participation has been seen to represent an opportunity for the empowerment of tenants (Hickman, 2006). However, 'empowerment' itself has been critiqued as a strategy of government designed towards shaping human action towards particular ends (Cruikshank, 1999). Attention has also been drawn to the moral discourse surrounding tenant participation, which problematizes tenants who do not get involved (McKee, 2009). Hence, the nature and extent of tenant participation is not clear cut.

Housing Policy Interventions

A Housing Bill is currently in development in Wales following four consultations which took place in 2011-2012. The Bill is expected to include measures to reduce homelessness, increase the supply and quality of homes in the private sector and introduce a compulsory landlord licensing scheme (Welsh Government, 2013).

A number of interventions, schemes and programmes have been introduced by the Welsh Government in order to implement Improving Lives and Communities and Vibrant and Viable Places. They are summarised in the table below:

Houses into Homes	A £10 million fund providing interest-free loans to owners of empty properties to bring them up to a standard so they can come back into use.
NewBuy Cymru	A Mortgage Guarantee scheme whereby families can buy a new-build house for up to £250,000 with a much reduced deposit.
Co-operative Housing	500 additional co-operative homes will be established in Wales.
Housing Quality	The Welsh Housing Quality Standard must be met by all social landlords by 2020. A Ministerial Task Force is assisting landlords who are at risk of not meeting the standards.
Social Housing Grant	This fund allows local authorities to bring forward affordable housing schemes and helps with the purchase of land. An additional £29 million was made available in 2013.
New Revenue Grant for Social Housing	This grant is in development, and aims to provide £4 million per year for 30 years to enable RSLs to build new homes.

Evidence synthesis in housing and health

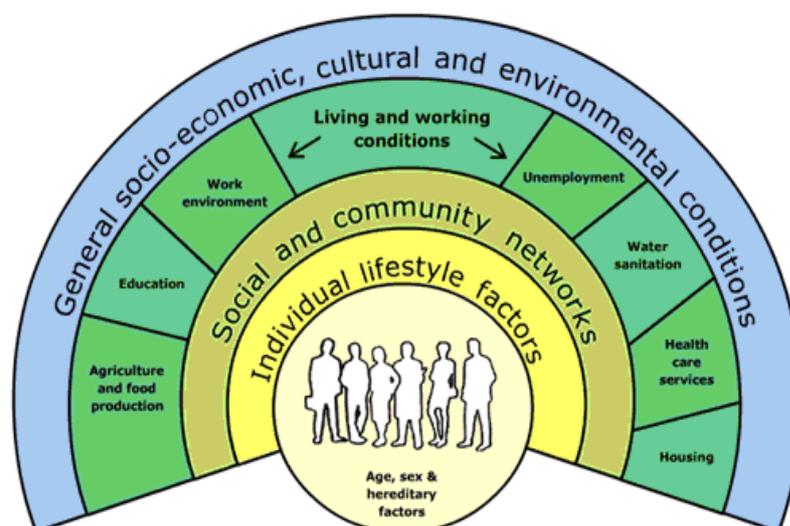
Introduction and approach

This section provides the most up-to-date evidence in the field of housing and health; health being perceived in its broadest sense. This guidance document is underpinned by the perspective that housing is a key determinant of health, and growing evidence from a range of academic fields supports this view. Whilst it is increasingly undeniable that aspects of housing are associated with aspects of physical and mental health, the space in which we live is also bound with less tangible issues such as place, identity and community; further to the notion of housing is that of 'home': a site of shared symbolic meaning, where basic patterns of social relations are reproduced (Relph, 1976; Walmsley & Lewis, 1993; Werner, Altman, & Oxley, 1985; Rubinstein, 1989). The consideration of these sociological factors has been an important part of the review, and we argue that all policies relating to housing must acknowledge these kinds of factors alongside more measurable health outcomes.

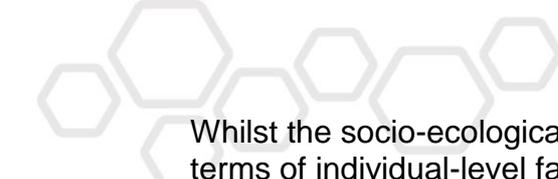
Evidence was collected from a range of sources and followed an iterative approach. Firstly, systematic reviews in the area of housing and health were identified and reviewed. Additional evidence was obtained through searching for good quality research studies. Forty-one HIA reports were also analysed. Any issues relating to health raised in the HIA reports but not explicit in the available literature were further researched.

The evidence is presented according to the key determinants identified in the literature. At the same time, we maintain a socio-ecological view of health which acknowledges the multiple influences on health. This perspective avoids too heavy a focus on individual factors and demands that attention is also paid to other, more complex, factors. An example of a socio-ecological model is pictured below:

Figure 1: Socio-ecological model of health



(Dahlgren and Whitehead, 1991)



Whilst the socio-ecological model of health compels us to consider health not only in terms of individual-level factors but also social and environmental factors, it is helpful to remember that the layers of the model do not exist in isolation from each other. What happens at one level affects what is happening at other levels, so the model should be regarded as a dynamic and somewhat slippery lens through which to conceptualise health.

Key documents consulted

There are a number of well conducted guidance documents and reviews, including systematic reviews, which have taken place in the field of housing and health. In 2011, the World Health Organisation (WHO) published a guidance document relating to the environmental burden of disease associated with inadequate housing (Braubach, Jacobs and Ormandy, 2011). The document is a comprehensive compilation of literature reviews for a range of factors which have an impact upon health. The guide describes how to estimate the burden of disease caused by inadequate housing, and in doing this quantifies the health impacts of selected housing risk factors. It is an excellent resource for evidence relating to material factors such as the condition of buildings and toxins in the home. However, there is less discussion of evidence relating to impacts at the social or environmental level.

One of the chapters in the WHO guidance, written by Hilary Thomson, looks at housing improvement interventions and their impacts upon health. The chapter summarises evidence from a number of systematic reviews the author conducted with colleagues at the Medical Research Council, Glasgow. Thomson and colleagues have published a number of reviews, studies and reports in this area and provide the most robust and up to date evidence relating to the impact of housing improvements on quantitative health outcomes (Thomson *et al.*, 2013; Thomson *et al.*, 2009; Thomson *et al.*, 2007; Thomson and Pettigrew, 2005; Thomson *et al.*, 2003; Douglas *et al.*, 2003; Thomson *et al.*, 2002; Thomson *et al.*, 2001). Thomson notes a need for more high quality studies in this area but argues that, although there may not be an abundance of high quality evidence relating specifically to housing improvement *interventions*, the links between poor housing and poor health are so established that the case can still be made for housing improvements on health grounds (Thomson, 2011).

Overview of the evidence

There is abundant evidence that poor housing is associated with poor physical and mental health. The key areas which have been researched are dampness and mould; warmth and energy efficiency; toxins such as lead, carbon monoxide, formaldehyde, asbestos and radon; infestations such as vermin and dust mites; second-hand indoor smoke; overcrowding; noise and green space. These types of variables are linked to a range of individual-level impacts including neurological, cognitive, developmental, cardiovascular and behavioural conditions; respiratory symptoms; cancer; mental ill health; poisoning and death. Identifying and evaluating the impact of housing upon mental health is considerably more complex than doing the same for other, more visible, areas of individual health. Mental health is not something that can be easily measured and it is in constant flux, tightly bound with a range of factors that may themselves be incoherent and intangible. Nevertheless, identification and evaluation of the impact of housing upon mental health has been attempted in a number of studies. The inclusion of sociological, psychological and criminological theories relating to housing, the built environment and health highlights the different perspectives available to urban designers and planners. Some evidence suggesting links between housing

and social factors such as social support, networks, community involvement and social capital is also included.

It should be noted that, whilst cross-sectional studies have identified *associations* between housing and health outcomes, those living in poor housing are also those most likely to be living in poverty and suffering from long-term illnesses, and it is therefore difficult to know the nature of the association (Thomson, 2011). To establish a *causal* relationship between housing and health requires evaluations of intervention studies, and these studies are less commonly conducted. The evidence presented below consists of evidence from systematic reviews which have identified and appraised intervention studies, however evidence from cross-sectional studies, relating to associations between housing and health, is also included.

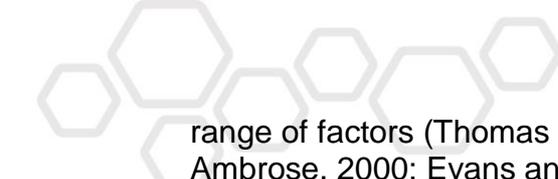
The evidence is presented according to the key determinants identified in the literature. We start with housing conditions, moving on to building design and tenure, then on to considerations within the neighbourhood context, and finally we consider the processes of housing redevelopment and regeneration.

Housing conditions

Indoor dampness and mould

In terms of the impact at the individual level, the WHO guidance (Braubach, Jacobs and Ormandy, 2011) presents evidence from longitudinal and case-control studies that indoor dampness and mould is linked to asthma and respiratory conditions (Jaakkola *et al.*, 2005; Wickman *et al.*, 2003; Belanger *et al.*, 2003; Nafstad *et al.*, 1998). Based on data for 45 countries of the WHO European Region, mould exposure is associated with 83 deaths per year (Braubach, Jacobs and Ormandy, 2011: 210). The guidance identifies several intervention studies which had shown an improvement in symptoms as a result of the reduction of indoor dampness and mould (Jarvis and Morey, 2001; Sudakin *et al.*, 1998). Thomson *et al.*'s review found similar evidence; the authors found significant evidence that improvements to warmth and energy efficiency can improve health. Interventions in this area included cavity wall insulation, loft insulation and installation of central heating. In the better conducted studies, general health was found to improve following the intervention. In two randomised controlled trials from New Zealand (Howden-Chapman, Pierce, Nicholls *et al.*, 2008; Howden-Chapman, Matheson, Crane *et al.*, 2007), statistically significant improvements in asthma and respiratory health were found. A range of positive, unclear, or conflicting respiratory outcomes were reported in the remaining studies. This evidence is supported by another recent review which found that the removal of mouldy items combined with the elimination of water intrusion led to a reduction in asthma symptoms (Kreiger *et al.*, 2010). In the WHO guidance there was unclear evidence relating to whether mould-induced asthma or respiratory symptoms could be reversed following remediation, highlighting the importance of prevention. Specifically, the WHO guidance recommends good design including adequate ventilation, insulation and moisture control to minimise the risk of damp and mould problems (Braubach, Jacobs and Ormandy, 2011).

Cold and damp housing is also associated with mental ill health (Harris *et al.*, 2010; Evans *et al.*, 2003), however overall the evidence is inconclusive. Thomson *et al.*'s reviews have found mixed evidence in the area of housing improvement and mental health. Whilst a number of studies on housing improvement interventions found no clear impact on the Short-Form Health Survey (SF-36) measures of mental health (Kearns *et al.*, 2008; Thomson *et al.*, 2007; Critchley *et al.*, 2004), other less rigorous studies reported that housing improvement interventions boosted mental well-being across a



range of factors (Thomas *et al.*, 2005; Barnes, 2003; Blackman and Harvey, 2001; Ambrose, 2000; Evans and Layzell, 2000; Halpern, 1995). The evidence is therefore inconclusive in relation to the impact of internal housing conditions on mental health. However, it has been argued that living in poor housing can contribute to stress through a lack of control over living space and fuel poverty (Evans *et al.*, 2003; Liddell and Morris, 2010). It has also been found that people in homes that are warm and dry are more likely to invite friends and family to stay overnight than those whose homes are cold and damp (Scottish Executive, 2007). These factors impact upon the extent to which social networks can operate, and the opportunities for social interaction available to individuals.

Overcrowding

Overcrowding has been linked to a range of conditions and diseases in children and adults. A weak relationship between overcrowding and respiratory conditions and meningitis was identified in a review by the Office of the Deputy Prime Minister (2004). Whilst some studies in the review found that overcrowding is a significant factor in some childhood illnesses (Baker *et al.*, 1998; Mann *et al.*, 1992; Essen *et al.*, 1978), others treated overcrowding as a confounding factor and argue that mould and dampness have more of a significant association with children's respiratory conditions (Platt *et al.*, 1989). The 2004 review also found evidence that overcrowding in childhood can contribute to respiratory symptoms in adulthood.

Toxins and pollutants

Toxins such as radon, tobacco-smoke, formaldehyde and pollutants resulting from solid fuel use are associated with respiratory symptoms and conditions such as wheezing, respiratory infections, lung cancer and coronary heart disease. The most relevant of these in Wales are exposure to radon and tobacco smoke. There is relatively little that can be done from a design perspective to reduce risks associated with tobacco smoke as it is the result of individual action, although 'designing-out' smoking can be considered for development projects where housing is one aspect of a larger regeneration programme. In public areas planners have some control over creating smoke-free environments, whereas in the home there is no jurisdiction over smoking. From a sociological point of view, the most likely way to reduce the risk of exposure to tobacco smoke is to improve the socio-economic position of individuals as smoking is most prevalent among the poorest people in the UK. Thus it has been argued that interventions to improve housing and neighbourhood conditions are more useful than targeting smoking behaviour itself (Peretti-Watel *et al.*, 2009).

Radon is an odourless gas which is the result of radioactive decay of uranium, which exists in all rocks and soils (Public Health Wales, 2010). Exposure to radon can occur from being inside a mine but radon may also be found within the home. In 2007, the Health Protection Agency and British Geological Society conducted a comprehensive mapping exercise which estimated the number of homes in England and Wales as being above the action level (more than 200 Becquerels of radon per metre cubed) for radon exposure (Miles *et al.*, 2007). Evidence relating to the association between radon exposure and lung cancer has been pooled from all known international studies prior to 2005 (Darby *et al.*, 2006; Krewski *et al.*, 2006; Darby *et al.*, 2005; Krewski *et al.*, 2005; Lubin *et al.*, 2004), and evidence consistently shows a relationship between lung cancer and indoor radon. New homes in Wales are protected through the building regulation requirements in high radon areas. Comprehensive preventive radon programmes for the building of new homes are recommended by the WHO (2011), along with measures to mitigate risks in existing housing.

Building Design and Tenure

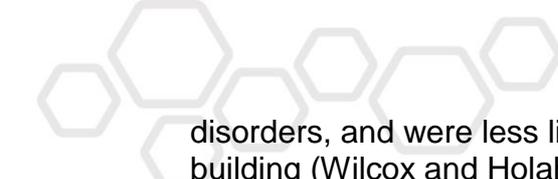
Building design

Certain aspects of building design have been associated with poor health. These relate mainly to noise, accidents and injuries, and high rise living.

Noise is defined in the Oxford English Dictionary as “*a sound, especially one that is loud or unpleasant or that causes disturbance*”. In relation to housing, the source of noise can be from within one’s own home, noise from adjacent properties, or noise from external sources. People living in crowded neighbourhoods, or in poorly designed houses, are more likely to suffer with noise disturbances (Evans and Marcynyszyn, 2004). The impact of noise on well-being has been explored. A study of wind turbines in Sweden found that annoyance stemming from wind turbine noise was associated with lower sleep quality and negative emotions (Pedersen and Persson Waye, 2007). In the USA, excessive noise has also been found to contribute to annoyance and lower sleep quality, along with adverse social behaviour, reduced performance and cardiovascular and psychophysiological problems (Centers for Disease Control and Prevention, 2006). Other than this, there is little evidence linking noise disturbance to adverse health impacts, although the impact on stress and therefore well-being is worth noting.

Injuries inside the home are the leading cause of death for children aged 5 and under (Sethi *et al.*, 2008). In Wales, more than 92,000 people are injured in their own homes every year; 95% of these injuries are preventable (Welsh Government, 2012). A study conducted in Wales found that some types of housing were associated with higher injury rates. Those living in apartments, rather than houses, had higher rates of attendance at hospital emergency departments. However, the study was unable to identify the environmental or behavioural risk factors from the data (Lyons *et al.*, 2006). The WHO guidance presents evidence that certain aspects of the home environment posed a risk of personal injury within the home. These relate mainly to falls and fire safety and the presence/absence of safety equipment. Two key variables are the presence or lack of window guards for second floor levels and above, and the presence or lack of smoke detector alarms. The guidance concludes that there is little intervention research on the prevention of personal injury in the home as this is seen as the private sphere and thus harder to research (Braubach, Jacobs and Ormandy, 2011). However, a recent study from the USA (DiGuseppi *et al.*, 2010) reviewed interventions to reduce injury in the home, and found that three interventions had sufficient evidence to warrant implementation: swimming pool fencing, installed and working smoke alarms, and temperature regulated hot water systems. In Wales, it is rare for homes to have swimming pools. But fire-related injuries do happen. In 2011-12, there were over two thousand fires in dwellings in Wales. Of these, a third (664) had no smoke alarm fitted. There were 19 fatal casualties and 581 non-fatal casualties from fire-related injuries in Wales in 2011-12 (Welsh Government, 2012). Temperature regulated hot water systems are also relevant; the Health and Safety Executive identifies that people at risk of scalding from hot water include children, older people, people with reduced mental capacity, reduced mobility, a sensory impairment, or people who cannot react appropriately, or quickly enough, to prevent injury (HSE, 2007).

Some characteristics of housing have been found to minimise opportunities for social contact. The evidence is not clear-cut in this area, and authors have come to differing conclusions about the impact of housing design, particularly high rise buildings. Several early studies found that people living in high rise buildings had less social support than people living in low-rise buildings, had more visits from their GPs for psychoneurotic



disorders, and were less likely to experience social activity or interact with others in their building (Wilcox and Holahan, 1976; McCarthy and Saegert, 1976; Fanning, 1967). More recently, it has been found that families living in high rise buildings may suffer increased crime, increased social isolation, reduced privacy and fewer opportunities for children to play (Gabe and Williams, 1993). However, although associations have been found between floor level and health, some have questioned whether it is the nature of high rise buildings *per se* that create poor living experiences. The quality of evidence in this area has been described as poor and some argue that there are many confounding factors related to living in a flat (Evans *et al.*, 2003; Thomson and Petticrew, 2005).

Kearns *et al.* (2010) draw attention to the competing discourses surrounding high rise dwellings. On one hand, tall buildings are promoted as being an essential characteristic of city centre 'vitality' (Urban Task Force, 1999), most observably in London (but also in other UK cities) where the construction of iconic towers for commercial and residential use has been happening over the past decade (Kearns *et al.*, 2010). High rise living has thus been associated with luxury accommodation and affluence, as well as a way of regenerating city centres (Costello, 2005; Burton, 2000). This can be seen in Wales, where the regeneration of Tiger Bay (now Cardiff Bay) has included the construction of many 'luxury' high rise apartment blocks overlooking the bay and marina. On the other hand, social housing trends have seen the demolition of high rise dwellings rather than their refurbishment, in favour of groups of low-rise houses and bungalows with gardens, thought to promote better health and social outcomes (Kearns *et al.*, 2010). In Wales, there is very little social housing in high rise buildings.

Housing Tenure

The lack of clarity of the evidence relating to building design as a causal factor for health may point to housing *tenure* as the determinant of poor health, rather than building design (Waters, 2001). Associations have been found between housing tenure and physical and mental health (MacIntyre *et al.*, 2003). It is argued that people living in social housing experience worse health outcomes than owner-occupiers. People living in social housing are also the poorest and often the most vulnerable members of society, and are more likely to be socially excluded than those in owner-occupied houses (Arthurson, 2004; Randolph & Holloway, 2004; Palmer *et al.*, 2004). However, it has been suggested that the link between home ownership and health may be independent of income. Ellaway and MacIntyre (1998) found that housing tenure exposes people to different levels of health hazards such as dampness, overcrowding, hazards and difficulty heating the home. After controlling for income, age and sex, the authors suggested that whilst housing tenure is associated with income, it is tenure (and not income) which is the main predictor of these housing stressors. Those in owner-occupied homes also reported more positive neighbourhood conditions such as more amenities, less fear of crime, more neighbourliness, better area reputation and satisfaction than those in social rented accommodation. Ellaway and MacIntyre (1998) concluded that poor housing and neighbourhood conditions may contribute to longstanding life-limiting illnesses, anxiety and depression, independently of income (Ellaway and MacIntyre, 1998).

It is worth considering that although housing tenure has been linked independently to adverse living conditions, it has also been shown that occupants of privately-owned flats within the same block as flats which are rented or social housing suffer from the stigma faced by those in social housing (Henderson-Wilson, 2008). Furthermore, Nettleton and Burrows (1998) argue that those on the fringes of home ownership may suffer from financial hardship and be at risk for mortgage arrears, resulting in increased insecurity

and poorer mental health. This highlights the complexity of this field, in which issues of housing tenure, poverty and health are so tightly bound that making causal links can be extremely challenging.

Neighbourhood characteristics and perceptions

Theories framing neighbourhood and health

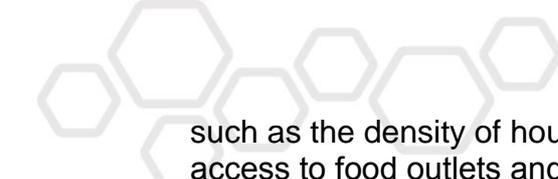
As Ellaway and MacIntyre (1998) and others have noted, there is evidence linking neighbourhood characteristics to health and well-being (Bernard *et al.*, 2007; Fone and Dunstan, 2006; Ross *et al.*, 2004). There are also a number of theories that link the physical environment to health, well-being and other factors such as crime. These perspectives may help planners to consider the broader context of housing, neighbourhoods and communities.

In criminology, *Broken Windows Theory* has been developed as a way of understanding the relationship between neighbourhood characteristics and crime (Wilson and Kelling, 1982). This theory argues that a neighbourhood, or part of a neighbourhood, which has deteriorated or become derelict (for example, buildings with broken windows or no nearby shops) attracts vandalism and anti-social behaviour. In contrast, neighbourhoods which are well-maintained and attractive are more likely to be looked after. Hence neighbourhood characteristics such as cleanliness and the quality of the housing, low housing density and distance to shopping facilities have all been found to have an impact upon neighbourhood satisfaction, which in turn is associated with higher general quality of life (Permentier *et al.*, 2011).

Defensible Space Theory puts forward the idea that environmental design features can reduce crime by creating the impression that a space is defensible against crime, rather than that it is vulnerable to crime (Newman, 1972; Jacobs, 1961). There are two key signifiers of a defensible space according to this theory: physical barriers, such as high fences or hedges, and symbolic barriers such as personal characteristics that indicate the property owners are prepared to defend it (Ham-Rowbottom *et al.*, 1999). Houses which are harder to see from the road, yet which have a good view of potential intruders from within, and which are not too expensive, have been found to be the least vulnerable to crime (Ham-Rowbottom *et al.*, 1999).

Although *Defensible Space Theory* and *Broken Windows Theory* focus on crime, the links between fear of crime and health have been identified (Dolan and Peasgood, 2007; Kruger *et al.*, 2007; Chandola, 2001; Ross, 1993). Residents' perceptions of their neighbourhood have been found to have a strong bearing on their health and well-being, and how they feel their neighbourhood is perceived by others is also important. Hence the reputation of an area is argued to mediate the health and well-being of its occupants (Permentier *et al.*, 2011). Neighbourhood satisfaction (measures of which include fear of crime) has been linked to a higher overall quality of life (Mohan and Twigg, 2007; Sirgy and Cornwell, 2002). It is therefore important for planners to consider this issue and, if possible, to incorporate into future housing developments measures that may mitigate this fear.

The field of environmental psychology has investigated the role of the natural and physical environment in health and well-being. This has taken place in health care settings (e.g. Ulrich *et al.*, 2006; Parsons and Hartig, 2000), but also in the context of neighbourhood planning. Wells, Evans and Yang (2010) carried out research in the USA into how planning decisions impact upon health. They found that characteristics



such as the density of houses, height and size of buildings, size and presence of parks, access to food outlets and road layout affect people's health and well-being. In particular, areas with access to parks and open space were associated with higher levels of physical activity (Wells, Evans and Yang, 2010). In terms of neighbourhood satisfaction, Leslie and Cerin (2008) have found links between aesthetic perceptions of the neighbourhood and enhanced mental health.

In cultural geography, the notion of *therapeutic landscapes* has been developed in order to conceptualise the ways in which places have a bearing on health and wellbeing (Lea 2008; Curtis *et al.*, 2007; Gesler and Curtis, 2007; Conradson, 2005; Gesler *et al.*, 2004; Milligan *et al.*, 2004; Palka, 1999). Locations such as mountain ranges and places with spiritual significance have been studied, along with more everyday settings such as the home environment and community gardens (Milligan *et al.*, 2004; Palka, 1999; Williams, 1999). Whilst much of the literature discusses therapeutic environments in the context of healing and recovery, this concept can also be used to relate to the maintenance of health and well-being. Analysis of the qualities of therapeutic landscapes looks at the interplay between physical, social and symbolic features of the environment, including the complex web of inter-personal exchanges and relationships that form a key part of place identity (Conradson, 2005). A strong sense of place is linked to the notion of therapeutic landscapes, where a positive sense of place-identity can contribute to better mental health, a sense of security and feelings of belonging (Jackson, 1989).

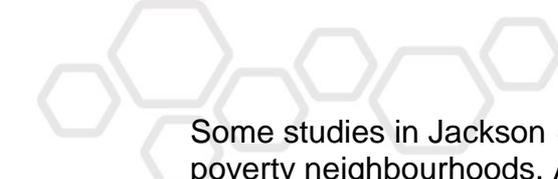
This focus on non-physical aspects of the environment is important as it highlights the role of social networks and *social capital* in the maintenance of health and well-being, which much of the literature on housing and health ignores. *Social capital* is a concept that has been used within sociology to refer (very broadly) to the importance of social networks, trust, reciprocity and connection (Ziersch *et al.*, 2005; Bourdieu, 1972; Coleman, 1988; Hanifan, 1916, 1920). Studies looking at the associations between social capital and health tend to explore issues such as perceived neighbourhood safety, neighbourhood connections, civic activity, local services and social support (e.g. Ziersch *et al.*, 2005). However, definitions and applications of social capital to health and health inequalities are extremely diverse and there is no unilateral definition of the term (Macinko and Starfield, 2001). Furthermore, some have argued that social capital can also have negative impacts (Kawachi and Berkman, 2000), such as groups which increase trust among their members being less trusting of those outside the group (Stole, 1998). In relation to housing, social capital is simply a useful concept to consider alongside neighbourhoods and communities, as it draws attention to the role of social networks, support and connectedness which are implicated in housing interventions.

Neighbourhood-level interventions

This section looks at how interventions to improve housing are linked to health and well-being. This focuses specifically on the processes of rehousing and regeneration, which are often area-based rather than being focused on individual dwellings. During these types of interventions, the process of change can sometimes be experienced as stressful or disempowering for occupants. Yet, in relation to health, this area is relatively unexplored in comparison to other aspects of housing. This section does not look at the detail of specific improvements such as the reduction of dampness and mould, or changes to building design, as these have been addressed in previous sections. Rather, the emphasis is upon the overall process of rehousing and regeneration and its relationship with health and well-being.

Evidence in this area is limited. A review by Thomson *et al.* (2006) looking at the health and socio-economic impact of large UK regeneration projects found that only three studies reported health impacts. Two studies reported a reduction in mortality following regeneration (although mortality increased in one case study area within one of these studies), and one study reported deterioration in three out of four self-reported measures of health (Rhodes *et al.*, 2002; Brennan *et al.*, 2000; Cambridge Policy Consultants, 1999). In Glasgow, the *Go Well* study is a 10-year study looking at the health impact of a city-wide regeneration programme. *Go Well* has looked at residents' experiences of living in high-rise dwellings planned for demolition, including their feelings about relocation, and found that despite looking forward to moving, residents also felt anxious for a number of reasons. These reasons included not knowing who one's neighbours would be, lack of familiarity in the new area, the risk of burglary from living in a house rather than a flat, and the possibility of having more social contact with people when living on a street at ground level (Lawson and Egan, 2012). *Go Well* has also explored community and neighbourhood outcomes over time, reporting on findings from community surveys which took place in 2006, 2008 and 2011 (Bond *et al.*, 2013a, 2013b). In terms of community outcomes, the authors reported on four indicators of social cohesion: informal social control, perceptions of honesty, feelings of safety and the extent to which people feel part of their community. Residents reported high levels of support and contact with friends and family, and these results were sustained for all three surveys. However, in terms of wider community cohesion, the findings were less positive. It was found that, overall, all four indicators of social cohesion had seen a decline, although there was some evidence that residents in regeneration areas felt safer and part of the community. The worst outcomes were experienced by residents in the wider surrounding areas of the regeneration area, highlighting the need to consider the impact of developments on peripheral and surrounding communities (Bond *et al.*, 2013a). Conversely, in terms of neighbourhood outcomes, Bond *et al.* (2013b) found that most people felt their neighbourhoods were improving. The results showed steady improvements in perceptions of the environment, local shops and resident empowerment, and perceptions of lower levels of antisocial behaviour (Bond *et al.*, 2013b).

In the USA, Jackson *et al.* (2009) conducted a meta-analysis of evaluations of the *Moving to Opportunity* intervention which moved families in high-poverty neighbourhoods to low-poverty neighbourhoods in five US cities between 1994 and 2006. *Moving to Opportunity* followed a randomised controlled design and therefore represents the perceived 'gold standard' in terms of evidence. Several evaluations of the programme found statistically significant improvements in adult mental health, particularly in women, following the move to low-poverty neighbourhoods (Kling *et al.*, 2006; Popkin *et al.*, 2006; Acevedo-Garcia *et al.*, 2004; Goering, 2003; Orr *et al.*, 2003; Del Conte and Kling, 2001; Leventhal and Brooks-Gunn, 2001). Many of the improvements related to material and social factors: in high-poverty neighbourhoods, families had been living in very low quality housing often with vermin infestation. Fear of crime and violence was also very high with gunshot often being heard in the evenings. Moving to the new neighbourhoods represented an opportunity to escape crime and violence, and was borne out in the results of some studies whereby residents felt significantly safer in their new neighbourhoods (Del Conte and Kling, 2001; Popkin *et al.*, 2006). Mental health outcomes also improved for adults (in particular for women), boys aged 6-12 and girls aged 6-19, although there was evidence that mental health worsened for boys aged 13-19 (Kling *et al.*, 2006; Leventhal and Brooks-Gunn, 2003; Orr *et al.*, 2003).



Some studies in Jackson *et al.*'s (2009) review found adverse effects of moving to low-poverty neighbourhoods. As mentioned above, mental health outcomes for adolescent boys worsened in the intervention group following the move to new neighbourhoods, whilst it improved for other groups. Jackson *et al.* (2009) suggest that this may be due to social factors. Boys in the intervention group, who may have moved because their mothers (rather than themselves) wanted to, may have disrupted social ties to the old neighbourhood including male role-models such as biological fathers and uncles. Forms of social support and social capital which were established in the old neighbourhoods may therefore have been lost. These have been identified as protective factors which appear to minimise the likelihood of young people engaging in high risk behaviours such as drug taking and violence (Freidman *et al.*, 2007), and social network has been found to predict mental health (Leslie and Cerin, 2008). This may also help to explain the differences in mental health outcomes between boys and girls, and the feelings described by boys in the new neighbourhoods, which were less racially diverse, that they were being discriminated against and being viewed as a threat (Clampet-Lundquist *et al.*, 2006).

Indeed, there are examples where well-intended, well-funded regeneration projects have failed due to the complexity of human organisations and the challenges of urban environments. Peter Marris has conducted seminal research in this area, looking at loss and change in the context of slum clearance and the displacement of communities (Marris, 1961, 1987). In his work on slum clearance in Lagos in Nigeria, Marris addresses the question of how a neighbourhood can be physically destroyed whilst retaining the social and economic circumstances of the people who live there. Marris found that, overall, peoples' livelihoods and patterns of life were affected severely, especially middle-aged and older people whose ways of life were set and hard to re-establish in the new surroundings (Marris, 1961). This research highlights the difficulty of implementing large, well-meaning (and often well-funded) programmes in the complex settings of human organisations and urban environments. Marris' work is useful in relation to housing projects which may use 'decanting'¹ as part of the (re)development process, or those which may disperse people from the same neighbourhood across several locations. Whilst improvements to housing and neighbourhoods may be seen by many to be a good thing, the literature in this area highlights the need to be aware of peoples' established social ties and the potential loss of these as a result of housing interventions. As Jackson *et al.* (2009) point out:

A strong, positive sense of belonging can exist – at least for some groups – even in a context where there may be 'negative' neighborhood physical or social conditions (e.g., poor quality schools, violence). For others, a 'sense of belonging' may be negatively impacted by these same characteristics.

(Jackson *et al.*, 2009: 968)

Some studies have found that housing improvements have had other adverse impacts, such as rises in rents, which means that less money is available for other necessities such as fuel to heat the home and food. As well as contributing to stress, fuel and food poverty can result in difficult decisions having to be made in relation to whether to heat a home or buy food to eat. Hence fuel and food poverty may negatively affect physical and mental health by creating low indoor temperatures and poor dietary opportunities (Marmot, 2011). There are currently 4.5 million homes in fuel poverty in the UK (Department of Energy and Climate Change, 2013).

¹ Decanting is the term used to describe the process by which residents are moved out of their homes whilst renovations, improvements or buildings works take place.

Knowledge from previous HIAs

Summary of HIA reports in housing

The purpose of this section of the review is to identify learning from existing HIA reports, both in relation to the impact of housing interventions upon health and also the recommendations that have been made by HIA assessors. We also identify the kinds of evidence that have been used and the ways in which communities were involved in HIA. HIA is not currently standard practice in the field of housing. There have been a number of HIAs completed both nationally and internationally, although only a handful of these took place outside of the UK. The HIAs covered a range of housing projects which are listed below.

In total, 41 HIA reports were included in the review. Twenty-eight were obtained from the HIA Gateway, and the remaining thirteen from 'grey' sources including academic websites and directly from researchers. The earliest HIA report was published in 2001, and the most recent in 2013. HIAs were conducted on housing projects in England (n=23), the USA (n=6), Wales (n=5), Australia (n=2), Scotland (n=2), Northern Ireland (n=2) and New Zealand (n=1).

Housing was used in a broad sense and projects on any area of housing were included. The table below shows the types of projects included:

Type	Number
Regeneration or neighbourhood renewal	14
Land Use Strategy	5
Housing improvement or repair	5
Demolition and new build	5
Housing Strategy	3
Brand new estates or communities	3
Rental voucher scheme	1
Flooring policy	1
Inspection policy	1
Landlord accreditation scheme	1
Gypsy and Traveller Accommodation Assessment	1
Strategy on homelessness, supporting people and housing,	1
Total	41

The largest group by far consisted of regeneration or neighbourhood renewal projects, coming from all over the UK as well as the USA. Regeneration sometimes took place at the city/town level (for example in Rhyl where the whole town was to be regenerated), as well as at the local level, such as a council estate or ward within a city.



Views of health and range of determinants identified

HIA is a process which acknowledges the multiplicity of influences upon health. It is therefore unsurprising that health was invariably perceived as being influenced by a variety of factors and processes ranging from intra- and inter-personal factors to wider economic and cultural factors. A very broad range of determinants and impacts were identified across the HIA reports which spanned all levels of the social determinants model of health. Many of these were material factors in relation to housing such as mould and damp, dust, noise, overcrowding, water and waste disposal, hazards and building design. Lifestyle and individual factors were also considered, such as smoking, substance misuse and physical activity. However, more attention was paid to broader determinants which have an influence over individual behaviour and lifestyle: income, employment, education, access to services and transport.

A range of factors relating to subjective well-being and mental health were also identified. These included factors relating specifically to the project being assessed, such as involvement in the development process, but also to wider social factors such as social support and networks, social cohesion and capital, inclusion, resilience and community participation.

Forms of Evidence

Most HIAs used existing data as a form of evidence to describe the communities being affected by developments. Routinely collected data relating to deprivation, employment, health, quality of life, crime, housing conditions and socio-economic status were used to build community profiles and to identify any areas of inequality to justify focusing on particular groups when conducting HIAs.

Additional secondary evidence such as previous HIA reports, previous consultation reports and academic literature were also used as evidence. Desk based research comprised a significant amount of the HIA work in this area, demonstrating the wealth of research into housing and health.

In terms of new data collection, 19 HIAs included findings from stakeholder workshops, consultations or meetings as evidence, and 17 included interview, focus group or survey data. Five HIAs included both types of evidence. Workshops, interviews and focus groups were the most commonly used methods, and four studies included surveys of residents or stakeholders as evidence.

Community involvement

More than half of the HIAs involved local residents or community stakeholders in some way. Involvement varied considerably; some HIAs were conducted to very short timescales and therefore limited involvement to attendance of a stakeholder workshop. Others included communities in interviews, focus groups, consultation sessions and steering groups. Below are a number of case studies which provide examples of the ways in which community involvement can be conducted, and the impact that the inclusion of community views can have upon HIA.

Case Study 1: Regeneration - Castlefields, Liverpool

This HIA assessed a three-year Masterplan for regeneration of the Castlefields area of Liverpool. The aim of the regeneration was to improve environmental, economic and social well-being, looking at housing, community, employment, infrastructure,

environment and leisure. This HIA demonstrates how community views can be collected, synthesised and embedded within a set of recommendations, and also how drawing evidence from a range of sources can be useful in highlighting areas for improvement.

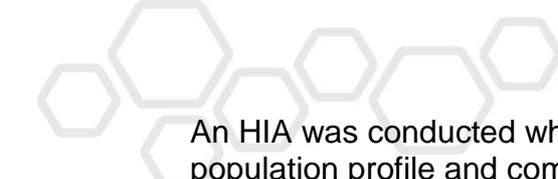
Focus groups were held with 29 young people and 69 adults, consisting of local residents and organisational stakeholders. Participants were asked to discuss the following topics: influences on health; perceptions of living in Castlefields (past and present); perceptions of the current state of health and well-being of people in Castlefields; and perceptions of the proposals on health and wellbeing. The focus was on ensuring that *all* views and opinions were recorded, rather than identifying the most common views and focusing upon those. The results were condensed into tables and grouped thematically, showing the issues identified by community residents as having an impact on health, well-being and quality of life. Separate tables were presented for positive and negative impacts. Recommendations from community residents were synthesised and grouped under three headings: partnerships, community cohesion and services. An important finding, which was later embedded into the recommendations, was that social support and social cohesion was regarded by community residents as having a strong influence on health and well-being, yet there had been little community involvement in the regeneration strategy to date.

A detailed policy analysis was also performed which interrogated the Castlefields Masterplan for its strategic vision and ethos, action plans and funding allocation. Interviews, workshops and observation also took place. The combination of different kinds of evidence drawn from the community and documentary analysis enabled the HIA to identify gaps and incongruences in the Masterplan, and make recommendations in order to rectify these. For example, the Masterplan portrayed a clear holistic ethos with well-founded objectives and a positive vision. However, the evidence conveyed a difference between the Masterplan's vision and the reality of its development to date. There was no shared vision among members of the Steering Group, and important partners were missing from its membership. It was also found that senior members of the Steering Group had very little understanding of the relationship between housing, health and regeneration. As a result of this, the HIA recommended that the regeneration strategy should "extend and improve partnership working in the Regeneration Strategy planning and co-ordination process" through a number of action points.

This HIA provides an example of how multiple sources of evidence can contribute to a comprehensive analysis of the health impacts of a regeneration strategy. It was the *combination* of talking to community residents and organisational stakeholders with documentary analysis which enabled the HIA to identify important areas in which the strategy could be amended to have a more positive impact upon the health of the community.

Case Study 2: New Build – Sherford New Community, Plymouth

Sherford New Community is located four miles outside of Plymouth in a large area of green space. The proposals for the new community included plans for 4000 new homes, with the expectation that this number would rise in the coming years. The proposals also included plans to create a mixed use of the land through business and commercial units, primary and secondary schools, a health care centre, sports facilities and a youth centre. A community park and a Park and Ride interchange also featured in the plans.



An HIA was conducted when the site was still green space, and included a detailed population profile and community consultation with stakeholder interviews and workshops. The consultation included qualitative interviews with 25 stakeholders, and followed the principles of realistic process evaluation which identify what works, for whom, in what context, the barriers and facilitators to implementation, and the mechanisms involved in implementation (Linnan and Steckler, 2002; Pawson and Tilly, 1997). A broad range of stakeholders was included in the consultation. This provided a diversity of opinions and expertise on the development process. The HIA used an inductive approach to the interviews, starting with questions based upon available evidence, then refining the interview questions as pertinent issues relating to social cohesion, housing affordability and urban design began to emerge. This approach produced more focused and in-depth data.

The interviews were triangulated by an online survey which asked respondents how they thought the development could generate social cohesion, i.e. to identify the major drivers of social cohesion, significant problems with the development and whether they themselves could identify how the development of a new community could affect residents' health. Respondents were also asked how they thought the HIA could be improved and what key recommendations could be included in the process.

The authors reflected on the consultation process and felt that the face-to-face interviews were time-intensive and that telephone interviewing enabled the HIA to reach a wider number of people. The online survey had technical difficulties, resulting in only 14 completed surveys.

The majority of data resulting from the community profile and projected profile of residents in the new community focused upon demographic and socio-economic information. However, the key theme resulting from the *consultation* was social cohesion and belongingness, and how the new community would be able to generate and sustain this. Social cohesion was prioritised as the most important goal or outcome that the new community should aim to deliver. This emphasis on social factors may not have been prioritised in the absence of in-depth interview data. The importance of seeking community perspectives during an HIA is therefore highlighted by this case study.

Case study 3: Housing Improvement - City West Housing, West Salford

City West is a housing association responsible for approximately 14,500 houses in four areas of West Salford. In order to meet the Decent Homes Standard, set by the government for all social housing to reach by 2010, City Homes was part-way through a large programme of improvement when the HIA was commissioned. The improvements included modernising kitchens and bathrooms, creating warmer better insulated homes, making homes safer with smoke alarms, carbon monoxide detectors and outside lighting, and providing play areas and off-road parking.

The HIA used existing data in its analysis as well as generating new data as part of the HIA process. Alongside a detailed community profile, literature review and policy analysis, the HIA used participatory methods to gather evidence from the experience, knowledge, opinion and perceptions of stakeholders and key informants. Categories of community stakeholders, organisational stakeholders and key informants were defined in a mapping process. The intended method of participation was a series of workshops for stakeholders to attend. Workshops are commonly used in HIA to exchange dialogue between different individuals, organisations and agencies with a stake in the proposal or project, and to identify and discuss the key issues relating to health. Often, HIAs have

time for one workshop only, so the intention to run a series of workshops indicates that this would have provided significant in-depth data relating to the health impacts of the improvements.

However, there was a very small response from people invited to attend the workshops, and an even smaller turnout which meant the HIA had to abandon this method. The HIA assessors speculated that this was symptomatic of the issues of community engagement in West Salford. To overcome this, the HIA assessors attended the annual City West customer feedback event to pose questions relating to the HIA in one of the workshops and identify individuals that would like to be interviewed for the purposes of the HIA. A series of one to one interviews with stakeholders to discuss their understanding of the issues and health impacts of the improvement programme was conducted. In addition, a telephone survey of a 5% sample of City West customers identified issues and impacts and assessed the consistency and consensus with the findings of the one to one interviews.

Case Study 4: Rapid HIA - Housing Renewal, Denbighshire

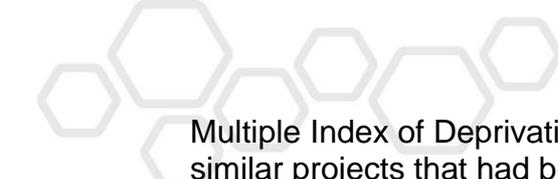
This Rapid Participatory HIA assessed an Area Housing Renewal Plan for the regeneration of a specific area of West Rhyl.

The objectives of a Renewal Area are to halt a downward spiral of decline in an area and achieve a more pleasant, safe, attractive environment to live in, in which its residents can live more securely and healthily and in which they can take pride. Funding for works in a Renewal Area is received on an annual basis from the Welsh Government through a bidding process. This amount can vary each year and schemes are programmed accordingly. Improvements are carried out to external elements of buildings within the Renewal Area.

The HIA built on a variety of evidence that had already been collated by the project team and aimed to inform the review and future development of the Housing Renewal Plan within Denbighshire County Council and the impact that it has had within its 10 year lifespan.

The HIA was led by Liz Green, Principal HIA Development Officer from the Wales Health Impact Assessment Support Unit (WHIASU) and was supported by Delyth Wyn Jones, Principal Public Health Officer from Denbighshire local public health team and was qualitative in nature. It followed the systematic methodology described in the Welsh HIA guidance. The HIA incorporated a brief literature review, local community and health data and a participatory workshop with local key stakeholders including health and housing officers, public health and local people. The Housing Department also sent out a questionnaire and included questions about health and well-being on this. The responses were limited and were not formally included in the HIA.

In putting together the Area Renewal Plan 10 years previously, the local authority (LA) had consulted with many partner organisations and members of the public. It used the available evidence base to inform the direction of the Plan and the principle of it ties in with national and local Regeneration strategies. This evidence included community information and statistics from local authority and census data and supporting research that indicates that the quality of housing and internal and external environments that people live in can have a detrimental or beneficial impact on their health and well-being. The Area Renewal Plan wanted to provide better quality of housing and living conditions for those in identified target areas. This included areas of Rhyl which have been recognised as amongst the most deprived in Wales according to the Welsh



Multiple Index of Deprivation. The HIA Development Officer searched for previous similar projects that had been subject to an HIA via the HIA networks but, whilst there were a few which had been completed on associated housing plans and schemes, none had been undertaken specifically on a scheme like this.

As statistical evidence on the health impacts had been considered already, the aim of the workshop was primarily to gather lay and community knowledge and evidence around the impacts of the Housing Renewal Area Plan. A half day participatory workshop took place and helped to inform the authors of the Plan - not just about the positive impacts but also about any mitigation that might be needed in order to alleviate any current or future detrimental impacts. It followed a systematic process and made connections to other policy areas and identified vulnerable groups within the population who had been affected (or excluded) by the Plan. It also fitted the wider local authority engagement strategy in order to gather evidence to support the Plans review.

The final HIA was published on the WHIASU website www.whiasu.wales.nhs. The HIA was disseminated throughout the LA and the information and evidence gathered as part of the HIA was used to inform the redrafting of the Area Renewal Plan in 2011.

Case Study 5: Regeneration – Llangeinor, South Wales

This HIA was carried out for Bridgend County Council for a regeneration project in a former coalmining community in the Garw Valley in South Wales. Llangeinor is one of the most deprived wards in Bridgend. At the time of the HIA, the village of Llangeinor had a Council-owned housing estate comprising a mixture of traditional post-war semi-detached and a 1970s infill development of higher density non-traditional housing that was more problematic. The condition of the housing stock, together with its geographically isolated location and limited employment opportunities locally, had resulted in a range of problems.

The HIA was carried out by the Cardiff School of Social Sciences and Regeneration Institute. As well as a scoping exercise and community profiling through statistical data, researchers conducted a number of qualitative interviews with stakeholders, including residents, as well as holding a number of meetings for stakeholders. A literature review on the impact of housing upon health also informed the HIA. Interviews were conducted with people living or working in the area and included children as well as older people. After the interviews had been transcribed and analysed, a community meeting with 50 people was held in order to develop the findings. Small groups discussed a number of specific questions such as *What aspects of housing in Llangeinor do you think most damage health?* and *What aspects of housing in Llangeinor do you think help to maintain health?* Presenting the provisional findings to a public forum of this kind allowed the research to include a check on whether the findings resonated with a wider local audience, and to prioritise community concerns.

The HIA report included a comprehensive section reflecting on the HIA process, including the apprehensions of stakeholders, an economic analysis of the HIA, reflections on the usefulness of the HIA tools that were used, the Steering Group as a mechanism for partnership working, the degree to which local people were involved and the impact of the HIA itself upon the community. This was one of the first HIAs to be performed in Wales, and the level of local participation was high compared to some other examples. The authors speculate that this may have been due to the neutrality of the researcher, who was not a representative of the local council, and also due to the local community development group which helped to facilitate local involvement. As a

result of the HIA, a tenants' association was established and residents became interested in the way in which they could lobby on other issues. It was therefore claimed that the HIA provided a good foundation from which better relationships between the council and the community could develop.

Consideration of specific populations

Consideration of vulnerable groups was present in many of the HIA reports. Several key issues emerged as considerations for housing interventions. This section summarises the key considerations identified in the HIA reports in relation to housing and health for these groups.

Housing conditions

The health impacts felt by those with chronic medical conditions, disability, mental ill-health or psychosocial disorder may be more severe than for the rest of the population. Part of the reason for this is that people in vulnerable groups are also those people who tend to spend more time at home, increasing the importance of paying particular attention to the impact of housing interventions upon these groups. The impact on the vulnerable, such as older people, due to poor housing conditions and low/inefficient heating and thermal comfort, has been shown to reduce life expectancy. In particular, unborn babies and children with asthma or pre-existing lung conditions are susceptible to the negative impacts of both indoor and outdoor air pollution. Engaging with landlords who are commonly known to rent rooms/properties to vulnerable young people, families or ethnic minorities is a key consideration as some of this group will be operating Houses in Multiple Occupation (HMOs) with unfit standards.

Development process

During development works, there may be a potential loss of social networks and access to goods and services for vulnerable groups such as culturally appropriate shops e.g. hairdressers, food shops and family networks. In children, chronic exposure to high levels of noise such as traffic noise can lead to attention deficits, concentration difficulties, poorer speech discrimination and poorer memory and reading ability. For groups such as young families, older people and people with social care/physical needs, scheduling of works can negatively impact if the service does not communicate and maintain high standards of customer care.

Access to transport

Lack of accessibility and transportation differentially affects some groups. In terms of urban design, there is evidence that urban sprawl (low density settlements without a community focus and in which housing, shops and work/leisure functions are separated) differentially impacts on older people and those who are relatively socio-economically disadvantaged. Groups most at risk of ill health (including those with long-term health needs or disabilities) tend to experience least satisfactory access to preventive services, and urban sprawl may exacerbate this as there may be further to travel to seek health services. Enhancing street infrastructure and public transportation may also have considerable effects on groups that traditionally don't have reliable access to a personal vehicle (i.e. "transit disadvantaged"). The "transit disadvantaged" include:

- Senior citizens
- Lower socio-economic communities
- People with disabilities
- People living in rural and/or isolated areas

- 
- Children and youths under the age of 16

Financial strain

The recession poses serious challenges for families and people with limited incomes. This is particularly true of Black and Minority Ethnic (BME) communities, teenage mothers, young people who are entering the housing market for the first time and homeless people. These groups may find it difficult to maintain their own home, even with affordable housing schemes where they own their own home. The opportunity affordable housing presents to vulnerable groups and people who are not able to access housing at market prices appears to be positive, yet the financial impact may outweigh this positive. Hence, where homeless people and vulnerable groups such as teenage mothers access social housing there are positive effects to having a stable home, with the peace of mind that works and maintenance if needed will be undertaken.

Housing for special needs

Housing for special needs groups and people with disabilities is often inadequate. New, appropriately adapted, affordable housing may reduce social exclusion of this group but also provide an environment that supports prolonged life expectancy.

Employment

Many housing programmes promise that new jobs will be created for people in the local area. However, there are some barriers to those in vulnerable groups benefiting from this. Some groups such as lone parents or people with mental health problems are less likely to find suitable/high quality employment than other groups. Jobs may therefore be given to others, perhaps from outside the intervention area, or low quality jobs may actually worsen health outcomes. Without adequate and affordable child care facilities, certain groups such as the socio-economically disadvantaged and in particular lone parents will experience difficulties in accessing employment opportunities. Health benefits could be maximised if job and training opportunities are focused on younger men and single parents.

Involvement

There is evidence that people with low income and educational levels demonstrate a relative lack of involvement in social and civic activities. Transitory groups such as travellers, asylum seekers, and people who use illicit substances are also vulnerable to being excluded from participating in community and local democratic processes.

Crime

Young urban males are most likely to be victims of crime. People living in areas of socio-economic deprivation, homeless people, and those from ethnic minorities are also more at risk.

Road traffic accidents

Road traffic accident deaths for children in the poorest families are four times greater than those in the richest.

Summary of Key Potential Health Impacts

There were many health impacts identified across the 41 HIA studies, both positive and negative, spanning all levels of the socio-ecological model. The tables below provide an overview of the key potential health impacts according to the type of intervention and positive and negative impacts. These have been summarised from those HIA reports which included a description of impacts identified. Some impacts have been identified through interrogation of the recommendations made by the HIA. This should aid planners to be mindful of elements of housing programmes which might cause harm to individuals and communities, whilst also highlighting elements which are likely to improve health. It should be noted that whilst these considerations have come from evidence, evidence can always be contested and the tables are intended as a guide only. Understanding the local context is crucial and impacts on health should always be considered in relation to the specific social, environmental, economic and historical factors at play.

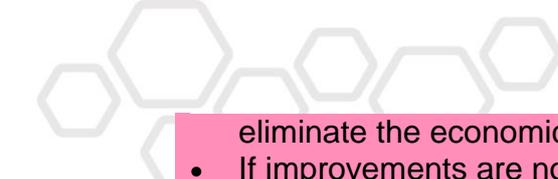
Housing conditions

Positive

- Improved housing (e.g. energy efficiency, warmth, gardens) → increase in health and well-being, reduction in noise pollution, reduction in fear of crime, possible reduction in heating bills;
- Reduction in home hazards → reductions in injury and acute poisoning;
- Interventions to reduce damp and increase warmth in homes → positive impact on health and wellbeing including a reduction in symptoms and morbidity levels for the chronically ill, a reduction in rates of acute illness and levels of excess winter morbidity and mortality;
- The introduction of smoke and CO2 detectors → reduced mortality;
- Interventions to improve home security (e.g. new windows and doors) → positive impacts on health and wellbeing, depending on whether they are maintained in the longer term;
- Early implementation of well-designed adaptations to the home → positive impacts on health and wellbeing for disabled recipients, carers and other family members;
- Ensuring the structural safety of buildings, thereby removing or reducing hazards → positive impact on health and well-being;
- Cheaper to maintain newer houses → reduction in financial stress and indirect positive health impacts;
- Affordable larger homes for families → mitigate the effects of overcrowding → positive impact on physical and mental health.

Negative

- Potential increase in rents for improved homes → less disposable income → fuel/food poverty;
- Poor improvement work / fault-finding may result in negative health impacts;
- Increases in the cost of living, including rents and fuel costs, may reduce or



eliminate the economic benefits of the improvement works;

- If improvements are not maintained the health benefits will wear off.

Urban design and physical environment

Positive

- Improvements to the general physical environment and aesthetics of an area, for example by demolishing unattractive features and replacing them with more attractive features → enhanced community pride and identity;
- Increase and improvement of walkways, footpaths and cycle paths due to regenerated areas → increase in access to nature, accessibility and feelings of safety → increase in physical activity and associated health gains as well as improved opportunities for social connectedness;
- Increase / improvement of parks and green space → positive impact on physical activity, mental health, environmental quality, illness, safety, and social cohesion;
- The provision of physical spaces where young people can congregate such as sports fields/play grounds/community centres will be important mechanisms by which they can interact amongst themselves but also feel socially included within the community;
- Areas of natural landscape provide an opportunity to involve local people in conservation activities, potentially promoting physical and mental well-being;
- The compact nature of higher-density development → less extensive infrastructure to support it → more efficient delivery of basic services like mail, waste collection, and police and fire protection;
- Quality urban design → improved personal and community safety;
- Improved navigation and way finding → increase in community cohesion;
- Preservation and renovation of historical buildings → boost in local pride and heritage.
- Provision of supportive infrastructure, including seats, drinking taps and shaded areas; and soft infrastructure, with a focus on community education → promotion of better use of recreation facilities → promotion of health and well-being;
- Inclusion of principles of Crime Prevention through Environmental Design → enhanced community safety and reduction of risk of injury to children and older adults;
- Use of 'smart growth' and urban/housing design principles (e.g. promoting diversity of lot sizes, ensuring grid like street design, providing housing choice and affordability, encouraging liveable housing design, and incorporating specific guidelines to promote safety such as driveway design/ rear lanes) → greater diversity in housing → safe and healthy lifestyles.
- Where Strategies address homelessness, potential positive impacts on communities living in the vicinity of homeless hostels if they now feel safer within their local neighbourhoods;
- The construction of a diversity of new housing → attraction of a new mixture of people into the area including more affluent people → positive health impacts;
- Mixed size, type and tenure of housing, with 'tenure-blind' design → reduction in concentration of social housing → contribution to a reduction in inequalities;
- Restricted speed limits to 20mph → less road injuries and potential for more social interaction;
- "Safe Routes To School" schemes → increase and normalisation of physical activity in children and increased social interaction.

Negative

- Some of the areas improved may cause local confusion (e.g. raised crossings and redesign of roads);
- Parks, gardens and play areas may serve as hide outs and meeting spots for antisocial elements, criminal gangs and hard drug users → increased usage of hard and illicit drugs → mental ill health (depression, drug-dependence, low self-esteem etc.) and an increased tendency to be engaged in further criminal activities;
- New roads present a potential barrier for people with disabilities, buggy/pushchair users and young children;
- If not properly managed, parks and other recreational facilities can be misused, for example through dumping of refuse, littering and criminal activities → creation of breeding grounds for disease vectors → negative health impacts;
- 'Tenure-blind' houses, without other forms of support, is not enough to reduce health and social inequalities;
- Building on greenfield sites has potential implications for the quality and supply of water, through the clearing of woodland and reduction of permeable surface area.

Community, facilities and services

Positive

- Community groups and projects for local people (e.g. cooking, Communities First, art and craft, rehabilitation) → healthier lifestyles and enhanced local pride;
- Community centres can act as a formal and informal context where people can meet and interact → providing extra activities and opportunities for young people → increase in social support, contact and networks → boost in health and well-being;
- Access to shared, affordable facilities for residential street use (e.g. street-level barbeque facilities, affordable hall hire) → inclusion of families with children and older adults → contribution to good health outcomes for children and older adults;
- Provision of new facilities and their efficient utilisation → improved commercial and business activities → economic empowerment with positive health benefits;
- Increased access to information on health and general issues from community centres & facilities → empowering effect on individuals → positive health benefits.
- Community governing of residential developments, for example through a Community Development Trust comprised of residents → increased capacity of residents to be active citizens → community efficacy and social capital → improved health outcomes, particularly for vulnerable groups including children and older people;
- Formation of new social networks in new homes → enhanced social capital with positive health impacts;
- Forms of participation → increase in social capital → increase in health and well-being;
- There may be opportunities to draw upon the history of some sites and engage residents in activities related to this → boost a sense of community.

Negative

- May have a negative impact on the community and people being displaced in order to increase the mix of families and remove the number of Homes of Multiple

Occupancy;

- If new housing creates social and spatial divisions between (for example) expensive waterfront apartments and blocks of lower quality new and existing social housing elsewhere → negative health impacts;
- The Strategy may nominate a 'premium amenity' location for housing which means that many people cannot afford to live there and will be forced to live in areas with less access to services / employment / support;
- If the social function of community facilities (e.g. older people using local shops) is not considered this may lead to a reduction in social networks and negative impacts on health and well-being;
- Nearby communities may feel resentful that they are not being included in the Strategy → reduced social cohesion;
- Housing in new areas with no supporting services or community facilities → isolation and poorer access to health care;
- New housing in areas where the infrastructure / facilities / services cannot cope with the extra demand (e.g. waste management, GPs, road use, social services, schools, shops) → negative outcomes for health and education;
- Already rural or isolated communities could become still further isolated and see migration out due to lack of amenities;
- Potential conflicts between new neighbours and problems of integration for new occupiers → diminished social capital with negative health impacts;
- High residential instability, family disruption and heterogeneity of ethnicity → weakening of adult relationships → risk of deviance and lack of integration;
- Over-reliance on existing local parish councillors → resentment and burn-out among councillors;
- Public health workforce capacity inadequate to support new community → loss of opportunity to promote healthier lifestyles;
- Lack of youth provision → less integration of young people;
- Some forms of social capital can inhibit social cohesion across different groups, for example within-group capital that excludes people from other groups;
- Lack of integration between homelessness, housing and mental health services may lead to negative health impacts e.g. where someone leaving mental health services is placed in private rented accommodation rather than a supported environment;
- For groups such as young families, older people and people with social care/physical needs, scheduling of works can negatively impact if the service does not communicate and maintain high standards of customer care;
- Potential widening of health inequalities if the use of land space dictates that more demand will be placed upon services;
- Potential negative effects of priority needs housing e.g. if homeless people are given priority over other vulnerable groups, this could lead to upset and bad feeling in communities, and possibly increased stigma for some groups;
- Lack of consideration of cultural values and beliefs may result in worsening health outcomes e.g. placing travellers in bricks and mortar and far away from family networks;
- Benefits may be lost if structures to facilitate social cohesion and community involvement are not established.

Education, skills and training

Positive

- New schools close to housing → increase in social capital and social cohesion → better educational outcomes → raised aspirations, improved lifestyles and community cohesion;
- Locally targeted training for employment → helping local people to access more of the anticipated new employment in the area;
- Improving learning and skills → greater degree of self-motivation and higher aspiration → enhanced self-esteem and confidence → positive mental and psychological health benefits.

Negative

- If no new schooling provision is developed and schools are located a distance too far to walk → more car journeys → increase in likelihood of road traffic injuries and decrease in physical activity;
- If local schools become overcrowded this can lead to lower educational attainment → lower incomes → poorer health;
- Improved learning and skills unmatched with commensurate/expected jobs and standards of living → increased level of awareness, aspirations, and expectations lead to frustration → negative impact on well-being;
- There are potential heightened inequalities in educational standards as new schools with modern facilities are built in the new areas.

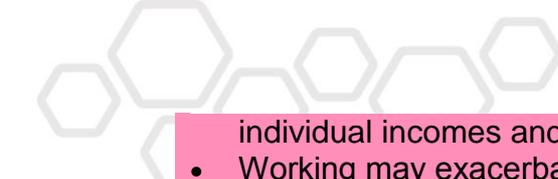
Business, employment and income

Positive

- Sustainable shops linked to regeneration → economic and social benefits → positive impact on health and well-being;
- Regeneration programmes often encourage business, tourism, retail and industry job creation including apprenticeships → potential for local people to take on employment → increased capacity to afford services and activities such as leisure, recreational services & physical activities;
- Employment → participation in new social networks → raised self-esteem and confidence → positive impact on the psychological and mental well-being of those working;
- Inclusion of supermarkets and medical facilities within new developments → increase access to food, employment and health services.

Negative

- Some developments may be perceived as 'not for local people' e.g. elite sports centres, expensive meeting spaces, expensive restaurants and shops, luxurious harbour areas → social inequality and tension;
- Supermarkets may draw trade away from smaller independent retailers → reduction of informal social spaces and reduction in part-time employment opportunities;
- The inclusion of fast food and alcohol outlets may impact negatively on health;
- If new jobs prove to be low-waged and low-skilled → employment may not boost



individual incomes and self-esteem → health benefits may be reduced;

- Working may exacerbate poor eating habits ('fast food' culture) due to time constraints and affordability issues. Diet-related health problems may be worsened;
- Increase in visitors / more affluent residents to the area → increase in road traffic → risk of more accidents, injuries and pollution;
- Developing the night-time economy may increase crime in the local area.
- New job opportunities may be taken up by people living in other areas, worsening the economic conditions of those living in the new community;
- Without adequate and affordable child care facilities certain groups such as the socio-economically disadvantaged, in particular lone parents, will experience difficulties in accessing employment opportunities;
- Cost of renting or acquiring proposed new houses → outsiders 'hijacking' new houses and local residents having to either move out or suffer negative consequences;
- Utility and service bills may be higher for newer homes, and may counter the savings envisaged from reduced maintenance costs → financial burdens, reduced purchasing power;
- Potential negative impacts if housing improvements result in rent increases;
- Potential negative impacts on young people (particularly those in lower socioeconomic groups) if they are unable to access affordable and decent housing (with the necessary support) which meets their specific needs as they make the transition to adulthood;
- New developments potentially raise property values in the area, making access to housing more difficult for those with low incomes.

Regeneration process

Positive

- The fact that regeneration is happening → reduction of stigma → increase in self-esteem and feelings of hope;
- Participation in the regeneration programme → residents having a sense of control over their lives → sense of achievement → inclusion and resilience → positive impact on health and well-being;
- Local residents involved in construction and refurbishment of houses → enhanced employment opportunities and improved financial positions → economic benefits → positive impact on health and well-being.
- Contact with developers / agencies may bring people into contact with services they require but had previously not sought;
- Some people may see decanting as an opportunity to escape from a place they do not like;
- New developments will potentially raise property values in some areas, impacting positively on the economic prosperity of those in the new communities and existing adjacent communities.

Negative

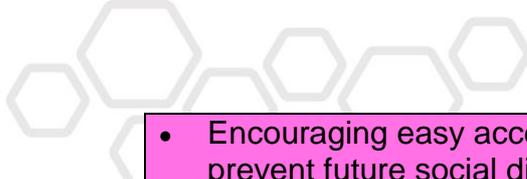
- Conflicts and divisions of opinion in the community with regard to plans for redevelopment of sites and areas;
- Lack of meaningful consultation when trying to be involved in the process → frustration felt by residents → negative impact on well-being;

- Increased stress from process of change → increased propensity to smoke, increase in domestic violence;
- Construction period → repeated periods of exposure to hazards such as noise, light and air pollution → short-term disruption to everyday routines, stress, pollution;
- Difficulties and stress caused by demolition of homes and relocation of families → increased drug and alcohol abuse (esp. where these problems already exist);
- Building sites can be a location for anti-social and even criminal behaviour;
- Poor co-ordination of decanting → isolation of families → increased anxiety, fear for safety;
- If residents are decanted temporarily whilst improvements are carried out, the condition of their temporary homes may have an impact on their health;
- Those who are last to be decanted may have increased fear of crime;
- Increased crime during the development stage with boarded up shops/houses seen as the 'norm';
- Stress prior to the commencement of works may have a negative impact on health, albeit relatively short-term;
- Lack of recognition of ways of life and culture-specific customs → alienation of residents from the process → negative impact on health and well-being.
- Split in family networks and other social support systems, as families move out of homes earmarked for demolition, can be emotionally devastating to affected families and individuals;
- Lifestyles and daily routines will be disrupted, with particularly negative impacts upon school-children (if schooling will be affected or schools are near to building works), older people and disabled people, particularly if local shops / services are not accessible;
- Delays, poor management and poor communication about developments → frustration, stress, resentment, prolonged period of change → potential decrease in well-being;
- Rising property values may persuade social housing providers to sell off or realign their local property assets → social housing residents displaced from the area → negative health impact;
- Delays between closing old facilities and opening new facilities → negative impact on health and well-being;
- People who are not being offered a regenerated home but who are still suffering from the construction process (e.g. people in neighbouring roads) may feel resentment towards those benefiting from the redevelopment.

Transport and access

Positive

- Co-location of, or connectivity to, recreation facilities, services and education and employment hubs in all master plans for residential areas → increased active transport / physical activity and community connectivity, enhanced road safety and decreased air pollution;
- Accessible, effective and affordable transport networks → equitable access to employment, education, health services → opportunities for social and economic participation;
- Incorporating active transport networks, whilst deterring car use, through sensitive land use planning → increased physical activity → positive impact on health and well-being;

- 
- Encouraging easy access by foot and bicycle between different areas may help prevent future social division and polarisation;
 - Greater ease of movement and access to facilities → greater participation in community activities and utilisation of services → enhanced derivation of benefits from the activities and services and less stress moving around.

Negative

- If transport links are not expanded to cope with the rise in demand people may become isolated → negative impact on health and well-being;
- Location of new leisure facilities may be further away or more difficult for people to access → decrease in use of facilities → negative impact on health and well-being;
- New developments will place increased demand on public transport availability and routes. Reduced access to transport impacts on access to services and facilities;
- Cheaper sites on the periphery of the city may be chosen as they have less planning constraints → poorer access to services;
- Increase in road traffic and of heavy vehicles → increased hazard to pedestrians and increase in pollution/noise.

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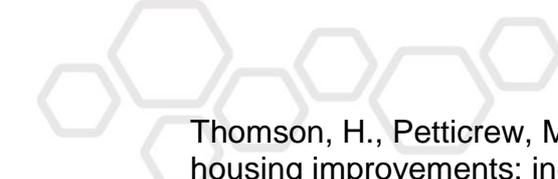
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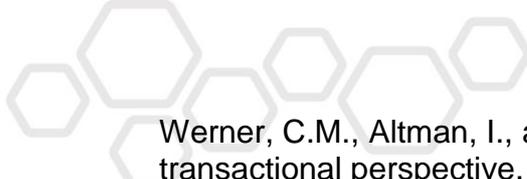
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