

See discussions, stats, and author profiles for this publication at:
<https://www.researchgate.net/publication/258406884>

Assessing Lifetime Homes Standards and Part M Building Regulations for Housing Design in the UK

Article *in* Design Journal, The · March 2013

DOI: 10.2752/175630613X13512595146871

CITATIONS

0

READS

98

3 authors, including:



[Karim Hadjri](#)

The University of Sheffield

43 PUBLICATIONS 125 CITATIONS

[SEE PROFILE](#)



[Cathy Craig](#)

Queen's University Belfast

100 PUBLICATIONS 1,458 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



TEMPUS_G [View project](#)



Enabling Resilience [View project](#)

All content following this page was uploaded by [Karim Hadjri](#) on 13 November 2014.

The user has requested enhancement of the downloaded file.

Assessing Lifetime Homes Standards and Part M Building Regulations for Housing Design in the UK

Clíona Rooney, Karim Hadjri and Cathy Craig

School of Planning, Architecture and Civil Engineering Queen's University, Belfast, UK

ABSTRACT The aims of this article are to examine Lifetime Home Standards (LTHS) and Part M of the UK Building Regulations and to discuss how relevant and successful they are. The UK government expects all new homes to be built to LTHS by 2013. This is increasingly important with an ageing population. The home environment can enable independence and provide a therapeutic place for everyone. As Part M of the building regulations are compulsory in all housing and LTHS are mandatory for public sector housing, a review of research

articles was undertaken on these standards. The paper begins with a brief background on accessibility regulations, followed by a critical review of the standards that takes the body of literature that has been written around them into account. This review suggests that the standards should be improved and that designers and architects face challenges to creatively incorporate them into housing design.

KEYWORDS: ageing in place, building regulations, Lifetime Homes

Background to Part M and Lifetime Home Standards



Since the 1950s, the UK local authorities have encouraged accessibility mainly through non-statutory policies (Imrie, 2003). With the introduction of the Chronically Sick and Disabled Persons Act in the 1970s, it became compulsory to include the requirements of disabled people when creating local housing policy. Following the Housing and Local Government Act 1974, a framework was introduced in the 1980s for housing disabled people. This was criticized for being too vague and, even though it was only applicable to public housing, it was not fully implemented by local authorities (Imrie, 2003). Accessibility became self-regulated with advisory notes being issued to builders in the late 1980s. By the early 1990s these notes were mainly ignored. Part M was developed as a reaction to poor self-regulation in the construction industry in the 1980s (Imrie, 2003).

In 1997, the formation of a Labour Government in the UK signalled a renewed interest in the improvement of the design quality of buildings. This led to the revision of Part M of the Building Regulations in England and Wales, Part R (April 2001) in Northern Ireland and Part T in Scotland (Imrie, 2003, 2004, [2006](#)). The revision was also influenced by the introduction of the Disability Discrimination Act 1995, which presented proposals to make limited wheelchair access compulsory for all new dwellings ([Madigan and Milner, 1999](#)).

Edvinar Housing Association devised a classification system to describe levels of accessibility ([Milner and Madigan, 2001](#)). They developed the four levels of accessibility in ascending order as negotiable, visitable, liveable and universal. They described visitable as the preferred minimum standard, where wheelchair users have access to the lowest level of a dwelling and a WC ([Milner and Madigan, 2001](#)). Part M requires that all homes in England and Wales are built to minimum design standards for the accessibility needs of disabled people (Imrie, 2004). They reach visitability standards and assist occupants with ambulant impairments. Part M includes measures such as level entrances to properties, correct heights for switches and sockets, level or gently sloping approaches to properties from

car parking spaces, WC at entrance level and, if a lift is not installed, then a communal staircase should be designed to cater for the needs of ambulant disabled people (Madigan and Milner, 1999). It sets down the minimum standards for disability access areas, such as ramps, stairs, toilets and doors. Milner and Madigan (2004) argue that Part M of the building regulations (UK) is not adequate to form a basis for the government's 'new agenda for British housing' (Milner and Madigan, 2004: 727). They also found it too interpretive and sensory measures such as Braille are not adequately addressed.

The concept of Lifetime Home Standards (LTHS) was developed in the late 1980s by Habinteg and the Helen Hamlyn Foundation as a result of working on the design of homes for older people. In the early 1990s Habinteg delivered the idea to the Joseph Rowntree Foundation (JRF) to promote and develop LTHS (Donnelly, 2009). LTHS have been described as 'a set of simple home features that make housing more functional for everyone including families, disabled people and older people. They include future-proofing features that enable cheaper, simpler adaptations to be made when needed' (Department for Communities and Local Government, 2008: 88). In Edvnr's classification, LTHS achieve liveable standards but are not universal (Milner and Madigan, 2001).

LTHS are divided into the headings of Access, Inside the Home, and Fixtures and Fittings. Access criteria are concerned with level illuminated entrances and wheelchair-accessible entrances, and car parking spaces should be adjacent to the home and capable of enlargement to attain 3.3 metres width (Brewerton and Darton, 1997; Milner and Madigan, 2004). The standards relating to Inside the Home have an emphasis on wheelchair accessibility. Doorways should be of a suitable width, adequate turning spaces and circulation space should be afforded, a sitting room, bedroom and a fully accessible toilet should be provided on the ground floor and entrance level. Stairs should be designed to allow for the later installation of stairlifts, and bathroom and bedroom walls should be strong enough for the eventual installation of hoists and railings. Bathrooms should be fully accessible for wheelchair users. The final two standards relate to Fixture and Fittings: living room windows should start at 800 mm or less and switches and sockets should be at a height of between 600 mm and 1200 mm (Rooney *et al*, 2011) (Table 1).

The UK Department for Communities and Local Government has aimed to ensure that all public sector housing is built to LTHS by 2011 and these standards are mandatory as part of the code for sustainable homes. The main principle behind LTHS is that building users 'age in place' and are no longer obliged to seek alternative accommodation as they grow older or develop impairments.

Methodology

A scoping study was selected as a suitable research method for this review in order to summarize key findings but also to identify

Table 1 Lifetime Homes Criteria

Access	Inside the Home
1. Car parking widths	12. Stairs and potential for a through-floor lift in dwellings
2. Approach to dwelling from parking	13. Potential for fitting of hoists and bedroom/bathroom relationship
3. Approach to all entrances	14. Bathrooms
4. Entrances	
5. Communal stairs and lifts	
<i>Inside the Home</i>	<i>Fixtures and Fittings</i>
6. Internal doorways and hallways	15. Glazing and window handle heights
7. Circulation space	16. Location of service controls
8. Entrance-level living space	
9. Potential for entrance-level bed-space	
10. Entrance-level WC and shower drainage	
11. WC and bathroom walls	

potential gaps. The aim of this study is to create an impartial, evolving and thorough account of the current literature in the area (CRD, 2001; O'Malley and Croucher, 2005; Rooney *et al*, 2011). The framework used for conducting this literature review was developed by Arksey and O'Malley (Arksey and O'Malley, 2005; [Davis *et al*, 2009](#); [Levac *et al*, 2010](#)). This framework was adopted as this improves the reliability of the study (Arksey and O'Malley, 2005; [Levac *et al*, 2010](#)). It comprises a five-point method for undertaking a literature review. This consisted of: first, identifying a research question; second, identifying the relevant studies; third, selecting the studies; fourth, charting the data; and finally collating, summarizing and reporting the results of the study. In keeping with this, the research began with the formation of a research question as follows:

Should the UK's Lifetime Home Standards (LTHS) and Part M of the Building Regulations be improved?

Having formulated the aims and the objectives of the study, pertinent research studies were chosen with keywords such as LTHS, inclusive design, Part M, building regulations, housing and visual impairments. Suitable references were located using precise search strategies with a broad range of sources. This is with observance of the framework put forward by Arksey and O'Malley, who advise that an extensive approach should be used to generate breadth of coverage ([Arksey and O'Malley, 2005](#); [Rooney *et al*, 2011](#)). Initially, a comprehensive electronic Web-based journal publications search was undertaken of major research registers such as Avery, Compendex, INFORM Global, Web of Science and Zetoc. Existing studies were also searched by hand in keeping with Arksey and O'Malley (2005),

Table 2 Electronic databases accessed and search results

Keywords	Ageing in place	Building regulations	Barrier free design	Sensory impairment	Lifetime Homes Standards	Part M	Lifetime Neighbourhoods
Avery Index to Architectural Periodicals	0	65	173	0	4	4	0
Compendex	63	258	18	6	7	8	16
Web of Science	25	50	7	9	2	0	13
Zetoc: Electronic Table of Contents	18	31	2	0	3	3	4
Google Scholar	75,200	135,000	123,000	28,300	34,100	115,000	26,900
Combined results	106	404	200	15	16	15	33

who assert that some electronic databases can be biased. A general internet search was carried out using Google Scholar to expose further publications or grey literature (Davis *et al*, 2009). Papers, books published and key journals were searched by hand in case of bias and a lack of coverage of abstracts from electronic databases. Bibliographies and references were examined to locate useful information for the study. Further references were generated in this way until a saturation point was reached where no new papers were recognized.

Suitable organizational websites were examined for information, such as JRF, World Health Organisation, the Greater London Authority and the National Disability Authority. The initial search of papers showed that the search method had located a large number of irrelevant studies. During the study selection stage, irrelevant journal articles were eliminated from the research. Similarly to the research method employed by Davis *et al* (2009), only articles with traceable references were used and, following preliminary screening, any papers not meeting this criterion were disregarded (Davis *et al*, 2009). A total of 787 references were identified from the research approach. Titles and abstracts were read in more depth. Based on the title and abstract 109 were selected for further reading of which 31 were used in the final choice of publications for further study. Reference tracking produced another five applicable publications. The grey literature search resulted in another eight publications. In total 44 publications were included in the review and 18 publications fulfilled criteria to be included in this study (Table 3). First, they had to be relevant to the topics of LTHS or Part M of the building regulations, and second, they were required to relate to the topic of housing.

Mapping of findings

The next phase of the research involved sorting the information obtained from the literature included in the review into themes (Table 3). This provided a framework for conducting a thorough literature review and answering the research question.

The initial themes presented in Table 3 are Lifetime Homes, Part M, future recommendations, attitudes towards regulations and disabilities, and opportunities for further research. The themes and authors' findings were compared and contrasted. This process resulted in sub-themes which are discussed in the Review of LTHS and Part M Standards section of this paper. The seven sub-themes relate to cost, mobility, societal attitudes, technology, space standards, stakeholders and inclusive design challenges.

This literature review does not aim to comment on the quality of research studies; instead, it aims to offer a review of the current research in this area (O'Malley and Croucher, 2005). There are limitations associated with this study: the databases may have been restricted in terms of coverage and the limited number of keywords used in the literature search may have influenced the results (O'Malley and Croucher, 2005).

Review of LTHS and Part M Standards

The literature indicates that LTHS and Part M focus on the needs physically disabled and older people (Barlow and Venables, 2004; Imrie, 2004, 2006; Madigan and Milner, 1999; Milner and Madigan, 2004). Imrie (2004) describes the standards as being insensitive as in his opinion 'Part M objectifies the disabled body as primarily, comprising a physiology with impaired mobility, in which wheelchairs are required to facilitate movement, mobility and access' (Imrie, 2004: 423). Authors indicate that they do not adequately address the needs of people with sensory impairments (Holland and Peace 2001; Imrie, 2004; Madigan and Milner, 1999; Milner and Madigan, 2004). Milner and Madigan (2004) also suggest that they do not incorporate the needs of children and people with cognitive impairments. Milner and Madigan (2004) feel that even by amalgamating Part M and LTHS, homes will not become fully wheelchair accessible. Thus, LTHS are not suitable for occupants with severe mobility impairments. However, the benefit of adopting LTHS is that people will be independent for longer and they are of a higher standard than the building regulations (Hanson, 2001; Preiser and Ostroff, 2001; Rooney *et al*, 2011).

As the demands of diverse populations which include people of various ages, pregnant adults and people with impairments vary considerably, it is important that building standards satisfy the needs of different users (Afacan, 2008). Sopp and Wood (2001a) conducted a survey of residents' and developers' views on LTHS. It was a small-scale research project in which 302 Lifetime Home residents and building professionals were interviewed. The majority

Table 3 Mapping of study findings

Themes Author(s)	Lifetime Homes	Part M	Future recommendations	Attitudes towards regulations and disability	Opportunity for further research?
Madigan and Milner (1999)		Part M has an impact on space standards.	Designs should be user responsive. Whilst there is a need for regulations they should not hinder the quality of design or be too restrictive.	The building industry is against extending the regulations. The public is against features such as ramps, believing that they are institutional.	
Stewart et al (1999)	Lifetime homes benefit all users, not just those with disabilities.			Society views disability in terms of separate impairments or limitations.	
Dewsbury and Edge (2000)	Aspects of LTHS meet the requirements of most household types.		LTHS should be revisited to include smart home technology.		
Hanson (2001)	People will benefit from LTHS as older people will be independent for longer. It will reduce costs as there is less need for residential care and less alteration to existing homes. LTHS focus on new homes only.	Part M focuses on visitability.	They advise that Part M should be revised or extended.		

Table 3 Mapping of study findings (*continued*)

<i>Themes Author(s)</i>	<i>Lifetime Homes</i>	<i>Part M</i>	<i>Future recommendations</i>	<i>Attitudes towards regulations and disability</i>	<i>Opportunity for further research?</i>
Imrie (2000)		Part M contributes to a minimalist attitude to the provision of access.	Future research should directly involve building users.		There is scope to concentrate research on how specifically the requirements of disabled people are defined and integrated into the design and development of the built environment.
Kelly (2001)	LTHS make no reference to the space standards. There is an argument that there are savings with LTHS as the need to adapt is reduced. LTHS can meet the needs of an extended family and broad needs.		The author proposes that all homes should be designed to LTHS. Homes should not be designed to facilitate the needs of a single group.	Developers argue against the guidelines due to added cost and restricted space.	
Sopp and Wood (2001b)	Residents were unaware that their homes were built to LTHS. LTHS are of benefit to most people not just people with disabilities.			Builders had a negative attitude towards Part M. Most of the interviewed residents felt that LTHS were a good idea.	

Imrie (2003)	<p>Interviewees believed that Part M increased costs. Part M did not include the needs of those with sensory impairments. Part M refers to visitability only.</p>	<p>Continuing professional development (CPD) should be held on the standards and regulations. Future design guidance should include advice on impairments such as hearing and sight and contain more requirements.</p>	<p>There were negative attitudes from some interviewees to accessibility. Many building officers and builders have a poor knowledge of Part M. Interviewees used loopholes in the standards.</p>	<p>Part M needs to be reviewed and is poorly enforced.</p>
<p>Barlow and Venables (2004)</p>	<p>LTHS are generally welcomed by their occupants. There is no longitudinal research on LTHS as it is a relatively new concept.</p>	<p>Existing homes could benefit from the use of assistive technology alongside the standards.</p>	<p>There was a non-inclusive attitude from some of the interviewees. Few builders went beyond Part M. There is a shortfall of literature based on the building control system and the regulatory system apart from descriptive texts.</p>	
Imrie (2004)	<p>Part M was seen as being not strong enough by some interviewees. It focused too much on mobility impairments. Knowledge of Part M was sometimes poor.</p>			

Table 3 Mapping of study findings (*continued*)

Themes Author(s)	Lifetime Homes	Part M	Future recommendations	Attitudes towards regulations and disability	Opportunity for further research?
Milner and Madigan (2004)	LTHS do not refer to storage. They do not include sensory impairments.	Part M focuses on visitability and mobility needs only. It is not designed for severe disabilities and it is not fully wheelchair accessible. Some user groups are excluded.		Future guidelines should be based on research with disabled building users.	The standards have undergone little critical analysis. As they have, in the authors' opinion, been based on outdated research and sources of future research should be based on detailed research which involves disabled users.
Hanson and Percival (2005)			Communication between service providers and users should be improved.	There is ignorance within society towards impairments.	
Ormerod and Newton (2005)		Interviewees felt that Part M was timid. Although Part M is the minimum standard it is sometimes treated as maximum.		Architects are less reliant on guidance and codes of practice than Part M.	
Imrie (2006)	LTHS are encouraging designers to develop uniform designs. LTHS focus on mobility issues.		Users should have a greater input into the standards	There is a negative attitude towards disability in the construction industry. LTHS do not challenge the negative attitude	Future standards should focus on future trends and how the building user interacts with their environment.

Andrews (2008)	LTHS alone will not meet the housing requirements of our older building users.	LTHS should be implemented alongside the Lifetime Neighbourhood criteria.	which exists in the construction industry towards disability. Architects and builders focus on minimum standards.
Evans (2009)			They believe that it is optimistic to think that the private sector will adapt LTHS voluntarily.
Donald (2009)	It will take almost a century for the benefits of making LTHS compulsory to be fully realized because they do not apply to existing homes.	In the future the demand for the standards may grow as the public become more aware of their benefits.	There is scope for a more systematic review to define what housing interventions are effective.
Monk (2009)	A wide range of people will benefit from aspects of LTHS.	LTHS go further than Part M.	

of residents did not have a disability. It was clear that most of the residents surveyed were unaware that their homes were built to LTHS; however, when the theory of LTHS was outlined to them more than half thought it was a good idea (Sopp and Wood, 2001a). In terms of the most popular features of LTHS, most people did not notice the individual features until they were pointed out to them (Sopp and Wood, 2001a). Often features of LTHS are of benefit to all types of residents not just residents with obvious impairments (Sopp and Wood, 2001a; [Madigan and Milner, 1999](#)). For instance, the downstairs WC was seen as a positive feature not just for wheelchair users but for all occupants. Also, level thresholds improve accessibility for residents with small children, baby buggies and heavy goods ([Madigan and Milner, 1999](#)). Whilst it would seem that LTHS and Part M were devised with people who have impairments in mind, a variety of users are benefiting from them, certainly in terms of level access.

The review has found that there are seven emerging criteria that need further attention when assessing LTHS and Part M standards. These are associated with cost, mobility, societal attitudes, technology, space standards, stakeholders and inclusive design challenges, and are discussed below.

Cost

In terms of reactions to Part M of the building regulations in England and Wales, in the literature many of those interviewed and surveyed from the construction industry felt that they had a negative impact on the cost of a dwelling ([Imrie, 2004](#); [Imrie and Hall, 2001](#); Sopp and Wood, 2001a). However, this sentiment is in contrast to that of [Madigan and Milner \(1999\)](#), who believe that in the long term, it is cheaper to install the criteria at the beginning of a project rather than adapting the homes at a later date ([Madigan and Milner, 1999](#); see also [Goodridge, 2006](#)). [Brewerton and Darton \(1997\)](#) also believe that it is inexpensive to build to LTHS as, in their research, quantity surveyors have demonstrated that many of the features can be installed at no extra cost. [Hanson \(2001\)](#) argues that LTHS reduce costs overall as there is less need for residential care since occupants can live in their homes for longer. [Carrol *et al* \(1999\)](#) assert that the Lifetime Homes are suitable for a wide variety of users thereby increasing their market potential. While [Stewart *et al* \(1999\)](#) have argued that providing housing which is suitable for individual disabled people increases costs. Under the Chancellor of the Exchequer George Osborne's comprehensive spending review, the Department for Communities and Local Government's (DCLG) budget was reduced by nearly three-quarters over a four-year period (NBS, 2010). Potentially there will be a decline in building of new social housing ([Bury, 2010](#)) which is designed to LTHS. This could have an impact on the future LTHS housing stock, especially in the public sector as these standards relate to new builds only.

Mobility

The overall aims of Part M of the building regulations are to improve visitability and to assist occupants with reduced mobility (Imrie, 2004). It refers to the minimum standards only and some authors see this as being a problem as this can give people in the building industry the impression that these solutions are the most appropriate for accessibility (Imrie, 2004). As the regulations are technical and prescriptive in nature, many building professionals see them as hindering the designs of dwellings (Imrie, 2004, 2006; Sopp and Woods, 2001a). When designing future standards Madigan and Milner (1999) contend that while there is a need for regulations, they should not hinder the standard of design or be too restrictive.

Societal attitudes

Dewsbury and Edge (2000) have explained that, as society and the form of families change, the design of the home has not kept pace with these developments. Thus, it is often difficult to make the environment adapt to the changing nature of society. An attitude exists in the building industry that there is no market for inclusive housing and many people in the building industry see accessibility requirements as separate to special needs (Imrie, 2004; Sopp and Wood, 2001a), whereas impairments affect the majority of people at some point in their lives. Some people within the construction industry saw Part M as being disadvantageous for able-bodied people (Sopp and Wood, 2001a). Few of the professionals surveyed by Imrie (2004) went beyond the minimum standards for accessibility. Whilst some people believed that Part M was too timid, vague and easy to implement, others felt that they it was too stringent (Imrie, 2004). Many building officers and builders surveyed by Imrie (2003) had poor knowledge of Part M. Builders felt that Part M did not focus on the needs of the individual as people have different requirements and often adapt homes to suit themselves. Others believed that they did enough for accessibility without having to implement the standards into their projects (Imrie, 2003). Other professionals stated that aesthetically some features of LTHS and Part M were displeasing, for instance, wider doors and low switches and sockets (Imrie, 2003; Sopp and Wood, 2001a). Imrie (2006) believes that the negative attitudes which exist in the building industry towards inclusivity are not challenged enough by the regulations and LTHS. Despite these drawbacks, Part M was successfully adopted by the construction industry and was not as onerous as previously thought (Sopp and Wood, 2001a). Imrie (2006) asserts that minimum standards have reduced definitions of disability to three types of impairments, those of mobility, hearing and vision. Stewart *et al* (1999) argue that in the past, government acts relating to dwellings have viewed disability in terms of separate impairments. The introduction of LTHS and Part M marks a step away from special needs housing.

There are also negative attitudes from society in general, particularly with regard to ageing. Andrews (2008) acknowledges that guidelines and regulations should challenge stereotypes and assumptions as there was a belief that a growing dependency came with ageing. From his research the majority of older people in the UK lived in their own homes rather than sheltered or specialized accommodation (Andrews, 2008). On that basis he believed that LTHS were important as they encouraged people to live at home. However, as not all homes in the future will have been built to LTHS, they are not the only solution to our accessibility problems: 'only a third or so of the homes we will be living in by 2050 will be built between now and then, so building to LTHS will not in itself solve the housing needs of our ageing society' (Andrews, 2008: 607). Thus, existing homes will also require adaptation, for instance including the installation of stairlifts.

Technology

The popularity of technological aid was highlighted in research by Hanson and Percival (2005), who surveyed 121 adults with visual impairments and found that seven in ten people used aids or assistive technology. Lansley *et al* (2005) have stated that the need for the support of older people in existing homes can be reduced with the installation of assistive technology. The literature states that LTHS can be altered to include the principles of smart home technology with a resultant improvement in accessibility. Barlow and Venables (2004) contend that both new and existing homes can benefit from assistive technologies for older people. Dewsbury and Edge (2000) believe that through the creation of a smart home specifying tool, smart homes can be incorporated into the initial design phase of a house. A study carried out by the Joseph Rowntree Foundation and the Chartered Institute of Housing in Northern Ireland (2002) showed that most occupants favoured this approach, although some people who were over 55 did not. On the other hand Hanson and Percival (2005) maintain that technology itself is not always the solution to improving homes for those with visual impairments.

Space standards

The literature suggested that LTHS do not address factors such as temperature and draft control, sound insulation, lighting levels, humidity, tactile surfaces and energy efficiency (Holland and Peace, 2001; Milner and Madigan, 2004). LTHS do not refer to the total floor space and storage needs of the occupant (Kelly, 2001; Milner and Madigan, 2004). Alternatively, Imrie (2003) contends that Part M has helped in terms of storage and space allocation as it produced minimum sizes. However, it was noted that there are conflicts between Part M, LTHS and government directives relating to the size of properties (Imrie, 2003, 2004). Builders felt that reduced space standards in certain parts of the home were a result of the introduction of Part

M. Hanson (2001) contends that there is a known social stigma whereby it is assumed that older people require less space allocation. However, it is important to remember that they need adequate and accessible spaces to facilitate their routines ([Percival, 2002](#)).

Stakeholders

Milner and Madigan (2004) argue that LTHS were based on out-dated research using 1968 and 1973 wheelchair studies, design bulletins and post-occupancy evaluations. They suggest that there is an overall lack of research into the design requirements of disabled people. In their opinion, future guidelines should be based on comprehensive research which fully involves disabled people. Milner and Madigan (2004) believe that LTHS need to take a strong interpretative approach which meets the requirements of all users. Hanson and Percival (2005) believe that there is poor communication between service providers and building users. They believe that building users should have a greater input into creating and improving future design standards ([Milner and Madigan, 2004](#); see also Hanson and Percival, 2005; [Imrie, 2006](#)).

Inclusive design challenges

Whilst inclusive design as a design approach sets out to include as many people as possible without ignoring individual requirements for specific impairments, it is a development of the principles of universal design (Barker *et al*, 1995; [Imrie and Hall, 2001](#)). Universal design is 'the design of all products and environments to be usable by people of all ages and abilities to the greatest extent possible' (Preiser and Ostroff, 2001: 10.3). Rather than acting as an add-on to existing designs, inclusive design wishes to prioritize the views of building users in the design process ([Imrie and Hall, 2001](#)). Traditionally housing focused on an average family or person (Barlow and Venables, 2004) as opposed to using an approach that involves various people in the design process. The structure of families has changed in the past century and the number of people over the pension age has increased (Afacan, 2008; [Dewsbury and Edge, 2000](#)). This, alongside a rise in single occupancy and less traditional support mechanisms, has meant that the structure of care which caters for the needs of home occupants has changed ([Dewsbury and Edge, 2000](#)). A reaction to this has been reflected in regulations and government policies which have been introduced to reduce the need to adapt homes in the future.

The literature suggests that Part M and LTHS need to be revised and improved (Imrie, 2003; [Milner and Madigan, 2004](#)). Imrie (2004) suggests that the standards would be improved if they included more physical and cognitive impairments (Imrie, 2004). He also advocates improving the guidance which accompanies the regulations, to include more requirements. [Milner and Madigan \(2004\)](#) suggest that LTHS should be graded according to the level of adaptability

required in order to avoid the special needs approach. They recommend that LTHS should be revised to address the shortfalls in the areas of sensory issues, storage and environmental controls (Milner and Madigan, 2004). They describe the focus of LTHS on physical impairments as narrow (Milner and Madigan, 2004). Frattari *et al* (2007) have noted that there is a lack of research in the area of cognitive design, 'in particular there is not much documentation in the literature to design for people with cognitive disabilities' (Frattari *et al*, 2007: 90). Whilst regulations need to improve, it was also noted that architects are too reliant on available standards to implement accessible design strategies (Imrie, 2000).

There was a suggestion that standards should apply to some dwellings only as occupants have individual needs (Imrie, 2003). Imrie (2006) believes that LTHS should have been developed in a process which includes the views of both professionals and people who have impairments. He also states that LTHS and Part M should go beyond minimum standards. Furthermore, the literature has indicated that LTHS and Part M focus heavily on visitability rather than on full access for occupants (Hanson 2001; Imrie, 2003, 2004; Milner and Madigan 2004).

Traditionally the UK has adopted a micro-environmental approach to design where people are defined as having different needs, for instance, mobility and sensory needs. Buildings were designed around generic needs. Hanson (2001) favours a macro-environmental approach to housing which aims to eliminate architectural disability rather than the micro approach which separates the needs of the user into different categories. Whilst LTHS are a macro-environmental approach perhaps they are not strong enough and they concentrate too acutely on one group in society. It is noted that, although LTHS are a step towards improved integration, they need to run simultaneously with improvements in other fields such as health care, transport and the concept of Lifetime Neighbourhoods (Harding, 2007).

Discussion and Conclusion

The discussion starts by critiquing the literature on LTHS and Part M of the building regulations and then considers potential improvements that could be made.

This paper delivered a scoping study of existing literature published on LTHS and Part M of the UK building regulations. The study began with the research question which was: *Should the UK's Lifetime Home Standards (LTHS) and Part M of the Building Regulations be improved?* The research identified seven themes for discussion. These are associated with cost, mobility, societal attitudes, technology, space standards, stakeholders and inclusive design challenges. It also considered issues for design professionals and areas which could be considered for further research to improve the standards.

It is clear from the literature that while the 16 criteria of LTHS have assisted design professionals, they can still be improved. The literature has also outlined the lack of critical review of LTHS and Part M, these being widely regarded as the most appropriate way forward to date (Milner and Madigan, 2004). Whilst research from the JPF indicates that occupants are satisfied with the designs using LTHS, it remains to be seen how effective they will be in the future as their occupants age (Sopp and Wood, 2001b).

LTHS and Part M are expensive to implement at the beginning of a project; however, the long-term cost is reduced as the need to adapt is minimized. Recent UK government funding cuts will have an impact on the number of new homes being built in the next few years. As LTHS apply to new buildings only the incorporation of LTHS into new private sector homes in 2013 will be hindered by the current economic recession. The government's building strategy of applying these standards to new builds only is therefore called into question as less fewer new homes are being designed.

It is important that design professionals are aware that LTHS and Part M address minimum standards only. This review has also found that they are timid and easily adapted by the building industry. Whilst LTHS do not fully address the needs of people with severe mobility impairments, they do ensure that homes are easier to adapt and this is allowing people to remain independent for longer. There is scope for the standards to be extended. Currently designers and architects are too reliant on available standards and they should be willing to go further than these criteria to implement accessible design strategies.

The literature suggests that the standards could be altered to include smart technology. If these changes were to take place then it is imperative that architects and designers have the required knowledge to successfully implement this. Future research should look into the role that Continuing Professional Development (CPD) may play in assisting architects and designers with the introduction of technology into residential settings.

A shortfall with LTHS and Part M is that they do not relate or refer to the total floor space and storage needs of the user. This can hinder the quality of designs as public housing has strict space criteria and it is onerous for designers and architects to meet the space standards and incorporate the regulations. Research has also shown that occupants themselves would favour more space, particularly those with visual impairments.

This review shows that design professionals will be challenged to find creative ways of adapting our existing homes in the future. LTHS apply to new buildings only as it would be difficult to convert existing homes to these standards. It could potentially take decades for their full impact to be felt. As not all homes have been built to LTHS and Part M, adaptations will be required for existing homes in the future.

It emerged that children and users with sensory and cognitive difficulties were categories which were not adequately catered for. It

has also been argued that LTHS were based on outdated research; it has been acknowledged that future empirical research should be undertaken with building users with impairments and should include the views of building and health care professionals. These should be revised in a way that focuses on the needs and participation of the users with the aim of including groups which have not already been adequately catered for. Designers should include building users more in the design process.

Many designers view regulations merely as a set of rules. Nonetheless, they influence the creative process in architecture (Imrie, 2007). It is important that building regulations are not overly restrictive and it can be argued that perhaps the existing standards are too prescriptive. This can lead to a situation where designers are rigidly sticking to the criteria and producing standard designs. Whilst some authors favour this approach, others view it as hindering the creativity in architecture. Ultimately this has an impact on design professionals as they are challenged to think imaginatively whilst adhering to rigid design standards.

However, none of these changes to the future regulations would be effective without changes in attitudes from society, design professionals, housing providers and the construction industry. Attitudes in society need to improve, especially in the area of transport. Positive attitudes from the client are essential to achieve inclusive design. Improvements to current building regulations need to be accompanied by a withdrawal of the negative attitudes towards inclusive design which exist in the building industry. Some building professionals view Part M as disadvantageous towards able-bodied people. Many professionals and construction workers view accessibility in terms of individual impairments. One argument is that, as there is a diverse population with various requirements, the standards should address the different needs that they have. Conversely, many building professionals who viewed people's requirements in terms of separate impairments were of the opinion that perhaps future standards should focus on the needs of the individual rather than trying to tackle the conflicting needs of everyone.

References

- Afacan, Y. (2008). 'Computer assisted universal design (caud) plug-in tool for architectural design process'. Dissertation, Bilkent University, Turkey.
- Andrews, B. (2008). 'Lifetime homes, lifetime neighbourhoods: Developing a housing strategy for our ageing population'. *Policy and Politics*, 36(4): 605–610.
- Arksey, H. and O'Malley, L. (2005). 'Scoping studies: Towards a methodological framework'. *International Journal of Social Research Methodology*, 8(1): 19–32.
- Barker, P., Barrick, J. and Wilson, R. (1995). *Building Sight: A Handbook of Building and Interior Design Solutions to Include the Needs of Visually Impaired People*. London: HMSO.

- Barlow, J. and Venables, T. (2004). 'Will technological innovation create the true lifetime home?' *Housing Studies*, 19(5): 795–810.
- Brewerton, J. and Darton, D. (1997). *Designing Lifetime Homes*. York: Joseph Rowntree Foundation.
- Bury, R. (2010.). 'Building drive will cut social housing'. *Homepage of Inside Housing*, November. Available at: <http://www.insidehousing.co.uk/news/development/building-drive-will-cut-social-housing/6512412.article> [accessed 26 January 2006].
- Carrol, C., Cowans, J. and Darton, D. (1999). *Meeting Part M and designing Lifetime Homes*. York: Joseph Rowntree Foundation.
- CRD (2001). *Undertaking Systematic Reviews of Research on Effectiveness: CRDs Guidance for those Carrying Out or Commissioning Reviews*. CRD Report 4, 2nd edn. York: University of York, NHS Centre for Reviews and Dissemination.
- Davis, K., Drey, N. and Gould, D. (2009). 'What are scoping studies? A review of the nursing literature'. *International Journal of Nursing Studies*, 46: 1386–1400.
- Department for Communities and Local Government, Department of Health and Department for Work and Pensions (2008). *Lifetime Homes, Lifetime Neighbourhoods: A National Strategy for Housing in an Ageing Society*. Wetherby: Communities and Local Government Publications.
- Dewsbury, G. A. and Edge, H.M. (2000). 'Designing the home to meet the needs of tomorrow... today: Deconstructing and rebuilding the home for life'. In *ENHR Conference*, 26–30 June. Gavle: ENHR.
- Donald, I. P. (2009). 'Housing and health care for older people'. *Age and Ageing*, 38(4): 364–367.
- Donnelly, M. (2009). *Lifetime Adaptable Homes Seminar*. Paper Presented at the Centre for Excellence in Universal Design, Seminar: Lifetime Homes in Policy and Practice, Dublin, July. Available at: <http://accessit.nda.ie/newsandevents/eventsarchive/seminarquotlifetimehomesinpolicyamppracticequot> [accessed 26 July 2006].
- Evans, S. (2009). 'A response to Baroness Andrews, Lifetime homes, lifetimes neighbourhoods – developing a housing strategy for our ageing population'. *Policy and Politics*, 36: 151–154.
- Frattari, A., Dalpra, M. and Chiogna, M. (2007). 'Smart home and architecture: The case study of dwellings for people with cognitive disabilities'. *Journal for Housing Science*, 31(2), 89–98.
- Goodridge, C. (2006). *Accessible London: Achieving an Inclusive Environment Lifetime Homes (PDF)*. London: Greater London Authority. Available at: <http://legacy.london.gov.uk/mayor/strategies/sds/docs/lifetime-homes.pdf> [accessed 19 October 2010].
- Hanson, J. (2001). 'From sheltered housing to lifetime homes: An inclusive approach to housing. In Winters, S. (ed.), *Lifetime Housing in Europe*. Leuven: Katholieke Unversiteit Leuven, pp. 35–57.

- Hanson, J. and Percival, J. (2005). 'The housing and support needs of visually impaired adults living in England today'. *British Journal of Visual Impairment*, 23(3): 102–107.
- Harding, E. (2007). *Towards Lifetime Neighbourhoods: Designing Sustainable Communities for All – A Discussion Paper*. Wetherby: Community and Local Government Publications.
- Holland, C. and Peace, S. (2001). 'Inclusive housing'. In Peace, S. and Holland, C. (eds), *Inclusive Housing in an Ageing Society: Innovative Approaches*. Bristol: The Policy Press, pp. 235–261.
- Imrie, R. (2000). 'Responding to the design needs of disabled people'. *Journal of Urban Design*, 5(2): 199–219.
- Imrie, R. (2003). 'The impact of Part M on the design of new housing'. *Access by Design*, 96: 6–8.
- Imrie, R. (2004). 'The role of the building regulations in achieving housing quality'. *Environment and Planning and Design*, 31: 419–437.
- Imrie, R. (2006). 'Independent lives and the relevance of lifetime homes'. *Disability and Society*, 4: 359–374.
- Imrie, R. (2007). 'The interrelationship between building regulations and architects' practices'. *Environment and Planning B: Planning Design*, 34(5): 925–943.
- Imrie, R. and Hall, P. (2001). *Inclusive Design Designing and Developing Accessible Environments*. New York: Spon Press.
- Joseph Rowntree Foundation and the Chartered Institute of Housing in Northern Ireland (2002). *Lifetime Homes in Northern Ireland Evolution or Revolution?* Belfast: Chartered Institute of Housing in Northern Ireland.
- Kelly, M. (2001). 'Lifetime homes'. In Peace, S. and Holland, C. (eds), *Inclusive Housing in an Ageing Society: Innovative Approaches*. Bristol: The Policy Press, pp. 55–77.
- Lansley, P., Flanagan, S., Goodacre, K., Turner-Smith, A., and Cowan, D. (2005). 'Assessing the adaptability of the existing homes of older people'. *Building and Environment*, 40(7): 949–963.
- Levac, D., Colquhoun, H. and O'Brien, K. (2010). 'Scoping studies: Advancing the methodology' [electronic version]. *Implementation Science*, 5. Available at: from <http://www.implementationscience.com/content/> [accessed March 16, 2011].
- Madigan, R. and Milner, J. (1999). 'Access for all: Housing design and the Disability Discrimination Act 1995'. *Critical Social Policy*, 19(3): 396–409.
- Milner, J. and Madigan, R. (2001). 'The politics of accessible housing in the UK'. In Peace, S. and Holland, C. (eds), *Inclusive Housing in an Ageing Society: Innovative Approaches*. Bristol: The Policy Press, pp. 77–101.
- Milner, J. and Madigan, R. (2004). 'Regulation and innovation: Rethinking 'inclusive' housing design'. *Housing Studies*, 19(5): 727–744.

- Monk, P. (2009). 'Homes for our lifetime needs'. *Access by Design*, 118: 22–30.
- NBS (2010). *The Construction Information Service Briefing: UK*, November 2010. Newcastle upon Tyne: NBS.
- O'Malley, L. and Croucher, K. (2005). 'Supported housing services for people with mental health problems: A scoping study'. *Housing Studies*, 20(5): 831–845.
- Ormerod, M. G. and Newton, R. (2005). 'Briefing for accessibility in design'. *Facilities*, 23(7/8): 285–294.
- Percival, J. (2002). 'Domestic spaces: uses and meanings in the daily lives of older people'. *Ageing and Society*, 22: 729–749.
- Preiser, W. F. E. and Ostroff, E. (eds) (2001). *Universal Design Handbook*. New York: McGraw-Hill.
- Rooney, C., Faith, V., Hadjri, K. and Craig, C. (2011). 'Cognitive disabilities: Why the physical environment is important'. In *Include Conference*, 18–20 April. Helen Hamlyn Centre. London: Royal College of Art.
- Sopp, L. and Wood, L. (2001a). *Consumer and Industry Views of Lifetime Homes*. York: Joseph Rowntree Foundation.
- Sopp, L. and Wood, L. (2001b). *Living in a Lifetime Home a Survey of Residents' and Developers' Views*. York: York publishing Services.
- Stewart, J., Harris, J. and Sapey, B. (1999). 'Disability and dependency: Origins and futures of "special needs" housing for disabled people'. *Disability and Society*, 14(1): 5–20.

Biography

Cliona Rooney is an Architectural Assistant from Ireland. She was awarded a Bachelor of Science (Hons) in Architecture in 2007 and a Bachelor of Architecture degree in 2010 from Queen's University Belfast. She is currently a PhD candidate at the same University. She has worked as both an architect and a researcher in Ireland and Italy. Her research interests embrace architectural design, housing and disability studies. Her current research is concerned with housing design for an ageing population, design for visual impairment and inclusive design.

Karim Hadjri is an Architect from Algeria where he was awarded a Diploma in Architecture in 1985, and a scholarship to pursue post-graduate studies in the UK. He completed a Master of Philosophy in 1989 and a Doctor of Philosophy in 1992 at the Joint Centre for Urban Design at Oxford Brookes University, on housing studies. He has worked as a scholar in the UK, UAE and Saudi Arabia, and managed academic units and research centres in both Cyprus and Colombia. His teaching and research interests embrace architectural design, housing and CAD. His current research is concerned with housing design for an ageing population, design for dementia and

inclusive design. Karim has also practised architecture in parallel with academia and designed a school of architecture, a university library and private housing. He is an affiliate member of the RIBA, and a fellow of the UK Higher Education Academy.

Cathy Craig obtained her MA in Psychology in 1993 from the University of Edinburgh. She continued her studies in Edinburgh where she completed her PhD in Perception in Action in 1997. She then spent eight years in Marseille, France, in the Movement and Perception Lab at Luminy where she first encountered virtual reality as a tool for understanding how the environment influences human behaviour. Her teaching and research interests concern the area of perception and action with the theory underpinning her research being strongly influenced by the notion of affordances and environment actor interactions. Recently she has been involved in creating interactive computer-based games that are more inclusive in their design. By adapting the action affordance, older adults have been able to take pleasure from playing games whilst training both balance and cognitive function.

Addresses for Correspondence

Cliona Rooney, David Keir Building, Stranmillis Road, Belfast BT9 5AG, UK.

Tel: +44 (0)28 9097 4438

Fax: +44(0)2890974278

Email: crooney21@qub.ac.uk

Karim Hadjri, School of Built and Natural Environment, University of Central Lancashire, Harris Building, Corporation Street, Preston, Lancashire, PR1 2HE, UK.

Tel: +44 (0)1772 895788

Email: khadjri@uclan.ac.uk

Cathy Craig, School of Psychology, Queen's University Belfast, 18–30 Malone Road, Belfast BT7 1NN, UK.

Tel: +44 (0)28 9097 5482

Email: cathy.craig@qub.ac.uk