

Department of Geography and Environmental Science,  
University of Reading

# Disability and Inclusive Access to the Built Environment

**Geographical Paper No. 193**

Brian Goodall

September 2010

Series Editor: A M Mannion  
Email: [a.m.mannion@reading.ac.uk](mailto:a.m.mannion@reading.ac.uk)

# Contents

Contents .....	2
List of Tables .....	3
Abstract .....	4
1. Introduction .....	5
2. Disability .....	5
2.1 The Scale and Diversity of Disability .....	6
The Scale of Disability .....	6
The Prevalence of Disability .....	6
The Severity of Disability .....	7
Disability Predictions .....	7
2.2 The Lifestyle/Life Choice Consequences of Disability .....	9
Employment Disadvantage .....	9
Education Disadvantage .....	10
Income Disadvantage .....	10
Housing Disadvantage .....	10
Living Cost Disadvantage .....	11
Social Disadvantage .....	11
Coping Strategies .....	12
2.3 Disability and the Built Environment .....	12
Accessibility of the Built Environment .....	12
The Home Environment .....	13
Movement around the Built Environment .....	13
Access to Buildings .....	13
Using Buildings .....	14
Using Facilities within Buildings .....	14
New versus Existing Buildings .....	14
3. The Challenge to the Built Environment Sector .....	14
3.1 Making Inclusive Access a Mainstream Built Environment Activity .....	15
Understanding the Scale and Diversity of Disability .....	15
Better understanding of Disabled People's Requirements and Expectations regarding the Built Environment .....	16
Acknowledging the Interconnections between Areas of a Disabled Person's Life .....	16
Recognizing Complementarity between Built Environment Design, Assistive Technology and Assistance/Support Services .....	16
3.2 Implications for the Built Environment Project Process .....	17

Integrating Inclusive Access into the Project Process .....	17
Involving Disabled People in the Project Process .....	17
Composition and Leadership of the Project Team .....	18
Quality Assurance for Inclusive Access .....	19
Continuing to Improve Access .....	19
3.3 Possible Obstacles to achieving Inclusive Access .....	19
The Cost Implications of providing Inclusive Access .....	20
Health and Safety .....	20
Uncertainties arising from disability discrimination legislation .....	21
Uncertainties arising from planning and building control .....	21
4. Response and Prospect .....	22
4.1 The Role of the Public Sector .....	22
Commitment to Social Inclusion .....	22
Government and the Built Environment .....	23
4.2 Initiatives in the Private Sector .....	25
The Education and Training of Built Environment Professionals .....	25
Other Initiatives .....	26
4.2 Prospect .....	26
References .....	29

## List of Tables

Table 1: Disability and Age	3
Table 2: Disability by Type	4
Table 3: Estimated Increases in Selected Impairments	5
Table 4: Comparative Employment Figures for Disabled and Non-disabled Working Age Population, Great Britain, 2006	7

# Abstract

More than a decade since the passing of the Disability Discrimination Act 1995 physical barriers still constrain disabled people's use of the built environment and, therefore, their participation in many everyday activities. A built environment providing inclusive access will help redress this imbalance.

Designing, constructing and maintaining an inclusive environment is shown to depend upon a better understanding of the scale and diversity of disability and of the consequences of disability for lifestyle/life choices, particularly in using the built environment.

The challenge to the built environment/construction industry is outlined, the implications for the built environment design process explored from briefing to occupation and the obstacles to achieving inclusive access reviewed.

Progress, including review of the roles of both public and private sectors of the built environment industry towards establishing inclusive environments is demonstrated. But, long lead-times are involved before a fully inclusive and sustainable built environment is delivered and action is needed to ensure disabled people are effectively involved in the process.

## Author

**Brian Goodall** is Professor Emeritus in Reading's Department of Geography, now part of the School of Human and Environmental Sciences. He was Head of Geography 1980-1990 and 1994-1997 and Dean of the Faculty of Urban and Regional Studies 1990-1993 and 1997-2002. Since retiring in 2002 he has acted as Research Adviser to the charity Inclusive Environments and with colleagues at Inclusive Environments, the College of Estate management and the Vassall Centre Trust is presenting a series of workshops on *Inclusive Access for Higher Performing Buildings*, funded by the Ove Arup Foundation.

**Email: [B.Goodall@reading.ac.uk](mailto:B.Goodall@reading.ac.uk)**

# 1. Introduction

The form and structure of the built environment marginalises, and even excludes, disabled people by restricting their behavioural and operational milieu. Buildings, public spaces and transport systems designed and constructed for people who do things in a 'normal' way often incorporate 'barriers' which disable people with impairments who do things differently. Disability is therefore not a medical condition but an experiential, social and attitudinal state. The problem is not located in the individual but with society, its economy and culture, which fails to deliver a built environment capable of meeting the needs of people with impairments. Fundamental to this approach is acceptance of the social model of disability (Shakespeare & Watson, 2002; Barnes & Mercer, 2005), in which *impairment* describes an individual's condition and *disability* is the social discrimination and disadvantage that ensues. Although inequitable access is not wholly a scientific or engineering problem but also a complex social issue, the design, construction and management in use of the built environment is a basic facilitator of everyone's ability to use that environment.

To what extent can the accessibility of the built environment be improved for disabled people? The built environment, representing sunk capital over generations, is notoriously slow to adjust. Even though the Disability Discrimination Act 1995 introduced pressures for change major barriers to the full participation of disabled people in the everyday activities of living still exist and cannot all be eliminated in the short-, or even, medium-term. However, not only new-build but also redevelopment, rehabilitation, refurbishment, and even redecoration and refitting/refurnishing provide opportunity to improve access. *Inclusive access* is an established concept, defined here as the design, planning and management of change to cater for everyone regardless of age, ability and circumstance. Applying the concept places people, as users, at the heart of the change process and seeks to deliver environments which maximise the independence and integration of disabled people and promote their full participation in everyday activities. An exclusionary model of participation is replaced by an inclusionary one. Unless fully accessible the built environment cannot be inclusive and, therefore, neither can it be sustainable.

The technical potential for improving access, albeit continually evolving, exists but a lack of application may be ascribed to ignorance, apathy, or insensitivity of the market to inclusive access priorities. Delivering inclusive access is, therefore, a challenge to developers, built environment professionals and the construction industry. This paper highlights the understanding of the scale and diversity of disability which is necessary for inclusive access to be delivered effectively and discusses the implications for built environment professions and processes. Initiatives in both public and private sectors form part of a concluding review of the prospect for a better performing, more accessible built environment.

## 2. Disability

Disability cannot be regarded as a minority or marginal issue. Today it directly affects at least 1 in 5 adults and 1 in 15 children in Great Britain, as well as many more individuals indirectly. Disability is an umbrella term for the disadvantages experienced by an individual as a result of physical, procedural and attitudinal barriers that impact upon people with impairments, limiting their activities and restricting their participation in society. In the United Kingdom disability is defined in the 1995 *Disability Discrimination Act* [DDA] as 'a physical or mental impairment which has substantial and long-term effect on a person's ability to carry out normal day-to-day activities'. This definition provides the legal basis for assessing compliance with public duties and anti-discrimination legislation, as well as

recognising the multi-dimensional spectrum embedded in the concept. In order to improve access to the current built environment and to ensure future developments are accessible to all, built environment professionals need an evidence base to understand:

- The extent and diversity of disability;
- The lifestyle consequences of disability;
- How disability affects a person’s use of the built environment.

## 2.1 The Scale and Diversity of Disability

### The Scale of Disability

‘It is not possible to state with precision the numbers of disabled people within the DDA definition of disability’ (Disability Rights Task Force, 2003a) since comprehensive national statistics are not collected. Estimates suggest a significant proportion, some 20%, of the adult population (i.e. circa +11m today) qualify as disabled (Disability Rights Commission, 2007a; Office of the Deputy Prime Minister, 2003; Grundy, et. al, 1999). [It should be noted that the disabled population is distinct from the population claiming disability benefits, which totals only 3.07m (Prime Minister’s Strategy Unit, 2004).] Disability demonstrates heterogeneity by impairment type (age of onset, severity, duration, constant versus intermittent, stable versus deteriorating) and by socio-demographic characteristics (age, gender, social class, ethnicity, region).

**Table 1: Disability and Age (proportions)**

	<i>Total Population</i>	<i>Disabled Population</i>
Under 16	20	6
Working Age	65	54
65+	15	40

Source: Disability Rights Commission, 2007a.

Disability and age are related as shown in Table 1: the disabled population having a much older profile than the total population. Disability onset rates increase with age (Jenkins and Rigg, 2003): of disabled people only 10% were born with their disability, 12% became disabled during childhood, and the remaining 77% during their working/later lives (Burchardt, 2003). Although females exceed males by only 0.5m in the total disabled population (Disability Rights Commission, 2007a), there are twice as many women as men over 65 suffering at least one impairment – a fact noted as early as 1971 (Harris, et. al, 1971).

**The Prevalence of Disability** The prevalence of types of disability can be viewed both as a health condition (physical impairment [e.g. paralysis, arthritis, spinal cord injury, stroke], sensory [e.g. loss of sight, hearing], cognitive [e.g. mental illnesses and handicaps, learning and language difficulties]) and as an activity limiting condition (affecting mobility, strength and stamina, lifting and carrying, seeing and hearing, perception of risk, etc.). The latter condition best assists understanding of the difficulties a disabled person faces in using the built environment. Social services in the United Kingdom already use an ‘activities of daily living’ [ADL] approach when assessing support needs, e.g. whether a person needs assistance getting into/out of bed, with washing, dressing, etc. and the Department of Work and Pensions has a pensioner customer segmentation model which distinguishes independent, assisted and special needs. Data on prevalence are not readily available but Table 2 gives numbers from the Office of the Deputy Prime Minister (2003); these give a total in excess of that quoted

above for the total disabled population because some people have multiple impairments. Information on persons with multiple impairments is, however, scarce: research commissioned by the Department of Work and Pensions reported three-fifths of disabled respondents with 3 or more impairments (Grewal, et al., 2002) whereas the Office for Disability Issues (2008c) indicated 2 out of 3 disabled people have only one impairment. A breakdown of work-limiting disabilities is provided in the Labour Force Surveys (Disability Rights Commission, 2007a) but the categories cannot be reconciled with those in Table 2.

**Table 2: Disability by Type**

<i>Difficulty</i>	<i>No. of Disabled People</i>	<i>% of Disabled Population</i>
Lifting & carrying	7m	60
Mobility	6m	55
Physical co-ordination	5.6m	48
Learning & understanding	3.9m	33
Seeing & hearing	2.5m	21
Manual dexterity	2.3m	20
Continence	1.6m	14
Perception of risk	0.7m	6

Source: Office of the Deputy Prime Minister (2003)

### **The Severity of Disability**

For any disability the pathologies vary greatly, e.g. visual impairment may result from macular degeneration, diabetic retinopathy, glaucoma, cataracts, etc., as does the degree of severity. Assessment of the **degree of severity** is not well recorded. A 10-point categorisation (from 1= least to 10= most severely handicapped) is used to classify severity and the 1996/97 distribution of the disabled population by severity category was 1-2 (mild disablement) 34%, 3-6 (moderately disabled) 45%, 7-10 (severely disabled) 21% (Grundy, et. al, 1999).

Later figures from the Prime Minister's Strategy Unit (2004) give 54%, 21% and 21% respectively.

### **Disability Predictions**

The **demographic shift** being witnessed in the United Kingdom has significant implications for the incidence of disability. By 2040 the number of people over 65 is forecast to increase by some 40% against an overall population increase of only 7% (Prime Minister's Strategy Unit, 2004) and the number over 85 by 84% (Centre for Policy on Ageing, 2008). With an ageing population, given the correlation between age and disability, the proportion of disabled people in the overall population will increase dramatically.

With people living longer the concept of 'aged' has been revised to recognise the 'young old' (60 – 79), the 'middle old' (80 – 99), and the 'oldest old' (100+). Even so ageing is heterogeneous and there is a broad spectrum of later-life diseases, e.g. cancers, coronary heart disease, diabetes, osteoarthritis, cognitive impairment, etc., which lead to different people losing different functions in different ways at different times. It is generally agreed, however, that the functional problems of the middle and oldest old are not being fully addressed so their quality of life is poor (Brown, 2008). If age-specific disability rates remain constant numbers

of disabled people will increase by 40% by 2020 (IPPR, 2007). Even if age-specific disability rates fall in line with increases in life expectancy (the compression of morbidity thesis) numbers of disabled people will still increase by 23% by 2020 (IPPR, 2007). Some 58% of older people are likely to experience long-term health problems (including the broad spectrum of later-life diseases) by 2020 (Government Actuary's Department, 2008). Table 3 summarises Age Concern/Help the Aged estimates of increases in numbers reporting certain conditions by 2025. The charity Carers UK estimates, within the next 30 years, an additional 3.4m people will have to become carers to meet the needs of this ageing population, on top of the 6m who already provide unpaid care (Brindle, 2009). Additionally, older people not considered disabled may also experience a general reduction in their stamina, mobility and sensory acuity which has implications for their use of the built environment.

**Table 3: Estimated Increases in Selected Impairments**

<i>Impairment</i>	<i>Current Numbers</i>	<i>Estimated increase by 2025</i>
Stroke	0.6m	46%
Dementia	0.7m	50%
Incontinence	+3.0m	37%
Coronary heart disease	1.8m	42%
Osteoporosis	3.0m	37%
Osteoarthritis	8.0m	37%
Deafness	7.3m	37%
Other Disability	0.9m	67%

Source: Childs (2009).

The nature of impairments and long-term health conditions can change over time. For example, it is now extremely rare, since vaccination was introduced, for children to be affected by polio in Britain but a steep rise in child obesity, which can lead to long-term health problems, is being experienced. Conditions such as asthma, autism, mental illness and learning disorders appear to be growing in prevalence but it is not clear whether reported increases represent growth in actual incidence, greater awareness and improved diagnosis, reduction in stigma of reporting disability, or better survival rates (especially for pre-term infants). Significant changes in the prevalence of disability are therefore projected for other age groups. Numbers experiencing a range of learning difficulties are estimated to rise by 3-5% per year due to improved medical care enabling people with complex and severe learning disabilities to live longer, leading, for example, to a 10-15% increase in the number of people with Down's syndrome

(Bowcott, 2009). The number of children (under 16) reporting disability in 2020 is forecast to increase by two-thirds although the total number of children falls by nearly 10% (IPPR, 2007). The working age population will increase to 38.8m by 2020, largely as a result of the adjustment of women's statutory pension age and the prevalence of long-term health problems is forecast to decrease moderately for people in their 20s, increase moderately for those in their 30s and 40s, but increase significantly for those in their 50s (IPPR, 2007). The DDA definition of disability, which has been extended in recent years to include long-term conditions such as cancer and HIV, may be subject to further revision.

Increasing obesity, particularly among children, is of concern for Government because of its implications for long-term-health conditions (Foresight Report, 2007; Department of Health,

2008). The design of the built environment can be a significant factor in helping people lead active lives and staying fit and healthy.

The social model of disability (Shakespeare and Watson, 2002) could be challenged. Developments in genetic technology could reduce many disabilities once again to medical impairments, i.e. genetic science could define disability in terms of biology and abnormality, leading to a process of ‘geneticisation’ whereby social problems are redefined as genetic problems (IPPR, 2007).

## 2.2 The Lifestyle/Life Choice Consequences of Disability

Being disable, whether from birth, sudden onset (e.g. result of serious accident) or gradual physical deterioration (e.g. a degenerative health condition) forces an individual to adjust their everyday life pattern. How a disabled person fits into society and the extent of their participation depends on interactions between their health conditions (impairments), personal factors (such as gender, age, education, experience, etc.) and their behavioural or operational milieu (reflecting the built environment, social attitudes, legal and social structures, climate, terrain, etc.). [See also National Centre for Social Research, 2004.] Different impairments have different implications for health and individual capacity as well as drawing different responses from the broader social milieu. For many disabled persons impairment implies problems engaging in everyday activities within the home, limitations in finding and holding employment, and isolation and difficulty integrating socially with non-disabled people. The effects may be direct, e.g. where the disabled person is treated less favourably because of their disability; indirect, e.g. where it is harder for the disabled person to qualify or participate; or involve unequal burdens, e.g. where a physical impairment imposes restrictions and/or extra costs on a disabled person’s participation. Effects are felt not only by the individual concerned but also by other family members and friends. Research into effects has concentrated upon the socio-economic consequences rather than interaction with the built environment, although the two dimensions are obviously inter-related.

### Employment Disadvantage

Disabled people of working age are 2-3 times more likely to be unemployed and to remain unemployed for longer periods of time than the rest of the working population (Commission for the European Communities, 1999). The figures in Table 4 for Great Britain could be further broken down by region, age, ethnicity, education/qualifications, type of impairment, occupation/industry, and benefit receipt: for example, only 21% of those with mental health problems and 17% of those with learning difficulties are in employment. Although there are no marked differences in the industrial sectors where disabled people work the latter are more likely to work in manual and lower occupations than in managerial, professional and high-skilled jobs (Grewal, et. al, 2002). Disabled persons are less likely to be employed in the public sector (11% against 18% of non-disabled) and public sector disabled employees are less likely to occupy higher-skilled professions such as nursing, teaching and social work (Hirst, et al., 2004).

**Table 4: Comparative Employment figures for Disabled and Non-disabled Working Age Population, Great Britain, 2006**

2	3 <i>Non-disabled Working Age Population</i>	4 <i>Disabled Working Age Population</i>
5 Economic Activity Rate	8 84.4%	11 53.3%

6	Employment Rate	9	80.2%	12	50.4%
7	Unemployment Rate	10	5.0%	13	8.8%

Source: Disability Rights Commission, 2007a.

Attitudes of employers confirm the difficulties disabled people of working age experience in finding jobs: 33% of employers consider appointing a disabled employee to be a major risk and 47% reckon it difficult to retrain an employee who became disabled (Roberts, et. al, 2004), whilst 90% of employers feel a blind person would be difficult or impossible to employ (Taylor, 2005).

### **Education Disadvantage**

The employment situation reflects the education/qualification disadvantage suffered by disabled people. In 2003, 40% of disabled people had no qualifications at all and 35% of people in Great Britain with no formal qualifications are disabled (Disability Rights Commission, 2006a). Disabled people are only half as likely as non-disabled to be qualified to degree level and are twice as likely to have no qualification at all (a pattern

of inequality that has not changed with time) (Disability Rights Commission, 2007a). The problem is more than a lack of educational opportunities since, for disabled people with a higher education qualification the 'lacking but wanting work' rate of 14% is actually higher than the 'lacking but wanting work' rate of non-disabled people with no qualifications at all (Palmer, et. al, 2005). Also, fewer disabled workers receive on the job training compared to non-disabled people (WERS Information and Advice Service, 2010).

### **Income Disadvantage**

It follows from employment and qualification disadvantages that households with at least one disabled person are more likely to be in the bottom two quintiles of income distribution (Tibble, 2005), i.e. with incomes some 30% below the average for all households, although income per household with a disabled person does not vary greatly by severity of impairment (Grundy, et. al, 1999). Disabled people who share socio-economic group and job characteristics with people without disabilities earn up to 25% less than their non-disabled counterparts (European Disability Forum, 2003). Disabled people are therefore at a disproportionate risk of being poor, i.e. having an income below 60% of the national median. A 2002/03 study showed 29% of households with a disabled person as being poor compared to 17% of non-disabled households (Smith, et. al, 2004).

State benefits do not bring disabled household income up to the same level as households containing wage earners (Prime Minister's Strategy Unit, 2005) and the transition from benefits to employment is seen as risky and complicated by many disabled people (Tibble, 2005).

### **Housing Disadvantage**

The majority of the housing stock is not inclusive so existing housing, especially in the private rented sector, is often unsuitable for disabled persons. Therefore, disabled people experience higher than average problems with housing – from homelessness, to standards, suitability, choice and access to home ownership (Disability Rights Commission, 2006a). They are twice as likely to live in social housing (35% of those renting such houses are disabled) and less likely to own their own home (65% of disabled are owner-occupiers compared to 74% of non-disabled) (Grundy, et. al, 1999). Many disabled adults, especially those with learning difficulties, live with their parents and 55% of disabled people over state

pension age live alone (Grewal, et. al, 2002). Some 23% of disabled adults live in unsuitable housing; only half of disabled children live in suitable housing and 70% of families with a disabled child say their housing is unsatisfactory (Disability Rights Commission, 2006a), although the Office for Disability Issues (2008c) found 9 out of 10 disabled people said their home meets their needs (younger and visually impaired disabled were most likely to say their home was not suitable).

### **Living Cost Disadvantage**

Disabled persons face additional costs for day-to-day living as well as for special needs – from major expenditure on building adaptation and equipment for independence, to higher living expenses for food, clothing, utilities and recreation (Smith, et. al, 2004;

Tibble, 2005). In the Family Resources Survey, 91% reported extra expenses on medications, 33% on medical supplies, 45% on heating, and 35% on transport (Grundy, et. al, 1999). Those with mobility and care needs face the highest additional costs, which can also be influenced by geographical location (e.g. region of residence; urban or rural).

Disabled people frequently need assistance: 40% of disabled people need help at least once a week, e.g. with cooking, shopping or cleaning; 13% need personal help at night and 19% personal day-time care (Grundy, et. al, 1999). Much of this care is provided by partners (Grundy, et. al, 1999) but full-time care is not compatible with employment for the partner (Burchardt, 2003): 2.2m people have quit full-time work to become informal carers (Disability Rights Commission, 2007b), bringing consequences for their household's income.

Although 89% of disabled people receive some form of social security (Grundy, et. al, 1999), the benefit system only meets 40% of the additional costs of personal care and specialised equipment (Burchardt, 2000). Local authority performance indicators show a poor record for supporting disabled people to live at home (CSCI, 2004) since services and support are currently not provided as of right but based on professionally assessed 'needs' (Disability Rights Commission, 2006a), i.e. an echo of the medical model of disability.

### **Social Disadvantage**

Disabled people suffer social isolation and limited leisure opportunities (Burchardt, 2003), economising on holidays and going out. In the past 12 months only 32.3% of disabled people had participated in an active sport (cf. 59.6% of non-disabled), 24.1% had attended at least two arts functions (cf. 36.3%), 59.5% had visited an historical environment (cf. 72.7%), and their cinema attendance was half that of non-disabled people (Office for Disability Issues, 2008).

Some 73% of disabled people with mobility and sensory impairment report difficulties in accessing goods and services, 43% of them finding it very difficult (Disability Rights Commission, 2004a). Over a quarter of disabled people experience difficulties using transport, particularly those with mobility problems who make one-third fewer trips than those without such difficulties, are twice as likely to live in a household without a car, and have problems getting to and from bus-stops, whilst only half of those using rail travel were satisfied with how the arrangements worked out on the day of travel (Office for Disability Issues, 2008a).

Disabled people are under-represented in public appointments in Great Britain – only 3% of such (Disability Rights Commission, 2006a), and their participation in civic activities (as local councillors, school governors, etc.) is limited (Department of Communities and Local Government, 2006a). Disabled people also face disproportionate rates of violence, harassment, bullying and rejection (Disability Rights Commission, 2006a), e.g. 8% of

disabled people in London suffered a violent attack in 2001/02 (compared to 4% of non-disabled (Mayor of London, 2003). In addition, disabled people suffer prejudice given the attitudes of others in society (Deal, 2007).

### **Coping Strategies**

Disabled people do get out and about, often using **coping strategies** to overcome ‘barriers’ around the home and in the wider built environment to their activity limitations and participation restrictions. From 1988 OPCS data, Denman and Clarkson (1991) reported only 8% of disabled people as housebound, 14% needing assistance to go out, and 78% able to go out on their own: even in the severest disability categories (9-10) 60% did get out. Most disabled people had made an outing during the previous month – 69% for shopping, 77% to visit family/friends (Grundy, et. al, 1999). National Online Statistics (2003), using 1988 OPCS data, show the most common mobility aid used by disabled people over 16 to be the walking stick (69%), then manual wheelchairs (9%), crutches and walking frames (8% each), and powered wheelchairs (2%). Of people using wheelchairs just over a quarter manage without help but nearly two-thirds always need assistance.

Historically disabled people have been treated as dependent, expected to fit into any services provided, rather than being recognised as full citizens entitled to independent living. A risk aversion culture has also limited opportunities for disabled people because other people see them as vulnerable to harm or exploitation or posing a risk to others. But, in essence, disabled people’s needs are the same as those of other people although sometimes requiring different means to satisfy those needs.

## **2.3 Disability and the Built Environment**

### **Accessibility of the Built Environment**

Ergonomics established the 95<sup>th</sup> percentile as a reasonable benchmark for inclusion, reflecting the dimensional characteristics of people at rest and moving and their range of physical capabilities. Whilst acceptable for single-task products, there is a cumulative exclusion effect in complex built environments where a much lower proportion of people will be accommodated if the least mobile 5%, the lowest vision 5%, the poorest hearing 5%, the lowest literacy 5%, the most obese 5%, etc. are excluded. Some 30-40% of the population face ‘physical barriers’ in using the built environment: not only disabled people are disadvantaged but also their companions and carers, those with temporary mobility problems, those pushing prams, people with luggage, etc. The ‘barriers’ are numerous: gradients, steps/stairs, rough/uneven and slippery surfaces, problems using both public and private transport, absence of level access to buildings, lack of resting places/seating, heavy doors, poor lighting, lack of colour contrast, narrow corridors/passageways, inadequate directional signage, as well as fittings, furnishing and equipment which are difficult to use and/or poorly positioned. Different aspects of the built environment will be barriers for people with different impairments.

People with disabilities focus on the functions of spaces, e.g. whether a fast-food restaurant has fixed or open seating, but lack of information on accessibility is a particular problem for the disabled person seeking to understand their local built environment. Social changes, however, are altering the expectations of disabled people as medical advancements and assistive technologies give more independence to some individuals but the full opportunities will only be realisable with inclusive access to the built environment.

## **The Home Environment**

In 2006, 75% of disabled people were satisfied with their accommodation (down 5% on 2005), with unsuitable housing most prevalent in the private rented sector (where only 53% satisfied against 75% of social housing tenants and 78% of owner-occupiers) (Office for Disability Issues, 2008a). The existing housing stock will not cater for an ageing population with increasing numbers of disabled people expressing a preference for 'ageing-in-place'. There is, for example, already a 300,000 shortfall of accessible housing for wheelchair users (Disability Rights Commission, 2006a) and many local authorities have yet to introduce 'disability housing registers' to help match stock with need. Thus, for example, depending on their impairment disabled people can experience difficulty moving around their home because of limited space/steps/stairs; have problems using the bath; opening/closing doors and windows; reaching cupboards and the height of sinks/ovens/working surfaces; the positioning of switches/power points; with poor lighting; lack of audio/visual warnings, etc. More attention needs to be given to the availability/provision of facilities between 'hip and shoulder' height, adaptations such as stair-lifts and level access showers/baths. As well as the development of support-related housing based on telecare technology. The projected increase in older disabled people will also require an increase in residential and nursing home places and in home care hours (alongside a significant increase in number of older spouse carers of disabled people) (IPPR, 2007).

## **Movement around the Built Environment**

The accessibility of the transport system (vehicles and termini) is critical if disabled people are to use the built environment to the full. However, the 1995 DDA suggests long lead-times for transport systems to improve the accessibility of their vehicles/fleets (Matthews, 2002). Nearly 60% of local buses now have low floor wheelchair access and priority seating for disabled passengers but 69% of disabled people do not use buses at all, two-thirds have problems getting to a bus stop and over half problems waiting at the stop; whilst 80% of disabled rail passengers were satisfied with the booking process, only a half with how the arrangements worked on the day (Office for Disability Issues, 2008a). How does a visually impaired person travelling independently find the correct bus stop, know which their bus is, find a vacant seat, and know when to alight from the bus: and how do they cope at unmanned railway stations?

Attention to the detail of the built environment is important, e.g. kerbs are the single important navigational tool for the visually impaired. 'Naked streets', involving 'shared' space, (where kerbs are taken away so the distinction between path and road disappears) are a major threat to the mobility of visually impaired people, exposing them to a much higher risk of accidents than other pedestrians. Some 2.3m parking badges have been issued to disabled people in England (Office for Disability Issues, 2008a) but location, number and layout of designated disabled parking spaces still poses problems, especially for disabled drivers using vehicles equipped with self-operated mechanical hoists to enable them to enter/leave their vehicle.. Most attention has been devoted to problems of using wheelchairs outside the home (e.g. Disability Living Foundation, 2003; Sapey, et al, 2004).

## **Access to Buildings**

Gaining entry to buildings is a problem for many disabled people, especially those with mobility and visual impairment. The preferred means is a main entrance permanently accessible for everyone but, because of steps, thresholds greater than 25mm, narrow and/or heavy doors, lack of audio intercom, poor directional signage, etc., this is not always possible. Alternative means of entry, e.g. via an adapted side or rear entrance is often provided. Such 'special' provision is not compatible with the concept of independent and integrated access.

Egress from a building, particularly in the case of emergency evacuation from a multi-storey building, raises particular issues where there are disabled occupants.

### **Using Buildings**

The internal layout and ‘legibility’ of the built environment can impose choice limitations which disadvantage disabled people, not only those with mobility and visual impairment but also those with memory/place orientation difficulties: for example, the availability, type and positioning of seating or entry lines/queuing procedures in banks, main post offices, or fast-food restaurants. Lighting, decoration, and signage/communication issues are raised in addition to considerations affecting both horizontal movement within buildings (e.g. floor surfaces, doors and openings, thresholds, corridors) and vertical movement (e.g. usability and safety of steps/stairways, availability of lifts and functionality of their controls for the visually impaired user). Particular issues may arise where the disabled person is an employee working in the building, such as access to rest/social rooms and the need for a personal evacuation plan in the event of an emergency.

### **Using Facilities within Buildings**

In the disabled person’s home focus is on the person’s ability to undertake basic daily activities and on how kitchens, bathrooms, toilets and possibly other rooms should be adapted/equipped to meet the needs of the occupant’s particular disability. For example, the usability of sinks, hobs/ovens, cupboards, etc. in a kitchen by a person in a wheelchair, or their need for a level-access bath or shower. This fit-for-purpose argument should apply to all fittings and furnishings, e.g. door handles that can be used by anyone; switches/power points at the right height for all users which are strongly contrasted against their background; lever taps that need no grip to turn on and off; equipment, from washing machines to computers, adapted to make them automatically available to the visually impaired. Such reasoning applies equally to all workplaces and other buildings.

### **New versus Existing Buildings**

Issues of inaccessibility remain commonplace in the existing, non-adapted built environment. Whilst refurbishment and even refurnishing/redecoration of existing buildings can deliver certain access improvements, new-build might be expected to incorporate current universal design thinking. This is not always so since the adoption

of best practice is voluntary and regulatory standards may fall short of that level. Moreover, inclusion is only one of several objectives of built environment design, but in the context of sustainability (of which inclusion is an integral element) it is expected that functionality and performance take precedence over pure aesthetics.

## **3. The Challenge to the Built Environment Sector**

Modifying features of the physical/built environment is fundamental to achieving inclusive access (and social inclusion) if full benefit is to be gained from concomitant reductions in the incidence and severity of disability brought about by enhancing a disabled person’s functional capacity and also by improving their performance through modifications to their social environment. In the case of the built environment, end-users (including disabled people) and paying clients are usually different – always with speculative projects but often too with

bespoke ones – whilst the ‘designers’ (the architects, etc.) and the ‘gatekeepers’ (such as planning and building control officers) are not typical end users (and are rarely themselves disabled).

‘New build’ provides an obvious opportunity to deliver inclusive built environments where inclusive access is fully considered from the briefing stage of a project, through the design, planning/building control and construction phases, and incorporated into occupation plans and management in use. Much of the existing built environment pre-dates current disability legislation but such environments can be adapted or improved and opportunities certainly arise whenever buildings need refurbishment or renovation or even redecoration and refurnishing. Management in use of existing buildings therefore plays a significant role in identifying where access improvements are required and should contribute to the briefing, design and construction phases necessary to implement the improvement. Many service providers, however, claim lack of access to professional advisers about inclusive access (Pottinger, et al., 2005).

Promoting inclusive access throughout the built environment sector calls for an understanding of disability allied to the necessary skills to initiate design practices and implement systems which deliver fully accessible environments, i.e. the ability to think inclusively throughout the design, construction and management processes. Attitudes, including that of the stereotypical disabled person (in a wheelchair or with a white stick) and value systems must change. Inclusive thinking rests on three principles:

- *Understanding difference*, i.e. the diversity of disability and its consequences for individuals’ cognitive and physical capabilities in using the built environment;
- *Acknowledging independence*, i.e. providing choice, autonomy and dignity for disabled people using built environments;
- *Ensuring integration*, i.e. disabled persons should be able to access and use the same space and facilities on similar terms to non-disabled persons.

Getting it right for disabled people means everybody benefits.

### 3.1 Making Inclusive Access a Mainstream Built Environment Activity

‘Inclusive practice’ should be the norm, in which client, architect, project manager, etc. are committed to improving access and to involving disabled people as ‘development partners’. Disabled people should become active participants, not simply passive recipients. The client can be the key in developing and communicating a clear brief, in making realistic financial commitment at the outset, and signalling adoption of integrated processes. Moreover, inclusive access is consistent with the sustainability concept, i.e. an inclusive environment is also a sustainable environment since whole-life durability and resource efficiency principles are common to both.

Inclusive access (or for that matter universal design) is a constantly evolving philosophy (not a fixed set of access/design criteria). The process monitors and delivers an environment guaranteeing not only equitable access but also allocating appropriate space for people and their activities, whilst ensuring ease of use in terms of understanding, physical strength, etc., and is safe, comfortable and healthy for all. Changing attitudes and priorities within the built environment professions/construction industry will depend on the factors discussed below.

#### **Understanding the Scale and Diversity of Disability**

Built environment professionals must raise their understanding of disability and of how impairments affect a disabled person’s ‘performance’ in the built environment. They must

recognise there is no single, 'packaged' solution for generating inclusive environments: the means to achieving independent and integrated living will be different for disabled persons with different impairments and circumstances. Disabilities, such as mobility and visual impairment require more of the built environment (e.g. alert paving/directional guidance paving for the visually impaired) than other disabilities, such as HIV. Issues may arise where the environmental adaptations required by disabled people with a particular impairment cause problems for disabled people with a different impairment, e.g. drop-kerbs are essential for wheelchair users but confuse visually impaired persons unless tactile surfaces or audio signals are incorporated.

### **Better understanding of Disabled People's Requirements and Expectations regarding the Built Environment**

Disabled people should be able to get out and move around a place and use/enjoy its facilities in the same way and to the same extent as non-disabled persons. Disabled people have a similar range of interests and therefore need to engage in the same range of activities as non-disabled people. 'Coping strategies', still commonplace in the United Kingdom, should not be necessary. Social changes are raising the expectations of disabled people and the next generation of older people have higher expectations than previous generations (Boaz, et. al, 2005; Hayden, et. al, 2005). Needs-led provision/adaptation of the built environment, of which the concept of **independent living** (Disability Rights Commission 2006c; Gillison, et. al, 2005; Hurstfield, et. al, 2007; Parry, et. al, 2004) is an integral part, should become the norm. Even though concepts such as lifetime homes and neighbourhoods are well developed (Summer, 2002; Centre for Policy on Ageing, 2008), more research is needed to establish details of the environmental and housing preferences of disabled people (e.g. Percival, et. al, 2006).

### **Acknowledging the Interconnections between Areas of a Disabled Person's Life**

The emphasis on an independent and integrated solution to disabled access must apply throughout the mobility-access chain. Often solutions at project level lead to separate facilities, i.e. independent but not integrated, but the 'joining-up' of projects is critical to inclusive access since, for example, the right to work and an accessible workplace are no help if the disabled person cannot get to work because of transport and other physical barriers. In a wider context the design and management of the built environment can play a role in promoting and sustaining health and delaying onset of certain impairments since it is estimated that environmental and lifestyle factors are a major contributor to 60% of deaths nationwide due to chronic disease (CABE, 2006b).

### **Recognizing Complementarity between Built Environment Design, Assistive Technology and Assistance/Support Services**

Activity limitations can be mitigated via assistive devices and/or personal assistance (e.g. a powered wheelchair can help overcome severe mobility and dexterity impairment) but participation restrictions normally require inclusive access solutions (e.g. shopping malls need to be fully accessible from bus stops and car parks to personal wheelchair users). Developments in technology are changing disabled people's social patterns, e.g. text messaging, signing and television sub-titling in the case of hearing impaired. Research, by way of example, is being undertaken into 'wearable independence', i.e. development of 'smart' clothing to monitor vital signs, body temperature and located geographical position, as well as protect against falls and offer impact protection (with all information collected being relayed to a 24-hour care provider (ESRC, 2007). The RNIB (Gill, 2007) review the potential of a suite of radio frequency

identification devices, smart card systems, mobile communications, wireless systems, new field communications, biometric systems, etc. to help visually impaired persons to negotiate and use the built environment. Such ambient intelligence systems will need geographical positioning to be an integral part of built environment/buildings.

Assistive technology may be substituted for assistance/support services (Heywood and Turner, 2007), the pay-back period estimated at no more than 10 years (Wanless, 2002) but the effect could be to increase the isolation of single, older disabled people unless their participation in civic/community activities is enhanced via inclusive built environments and, where necessary, appropriate support services. Such complementarity of built environment design, assistive technology and support services points to the multi-professional nature of the overall design process, raising issues of designer responsibility and the potential roles of non-built environment specialists in project teams.

## 3.2 Implications for the Built Environment Project Process

Inclusive access must be a clear objective from the outset of any built environment project. However, since most built environment projects are likely to have multiple objectives/goals (e.g. including energy-efficiency and other aspects of sustainability, profitability/cost-effectiveness, etc.), issues arise as to how best to involve the 'disability perspective' in the process, how to integrate this with other stakeholder interests and professional roles, and the development of any assurance system to check compliance with inclusive access principles. Design decisions are rarely the preserve of a single property actor since design specification brings together diverse strategies/interests, although certain property actors have more power than others to shape development, i.e. not all viewpoints will necessarily be equally represented.

### **Integrating Inclusive Access into the Project Process**

Consideration of inclusive access must be formally structured into an integrated process; the latter should not be viewed as a set of separate deliverables at each stage but as a sequence to be managed by the same project team. An access strategy needs to be formulated at the proposal stage; developed during the design/planning phase into access statements for both planning and building control approval; tender/contract documentation must include access specifications and provide the basis for compliance monitoring during the construction phase; and incorporated in occupancy access statement plans approved at handover, so providing the basis for regular access review by management (Goodall and Pottinger, 2010). A British Standard, BS 7000-6, exists for managing inclusive design at corporate and project levels (British Standards Institution, 2005),

### **Involving Disabled People in the Project Process**

An equal opportunities argument, rooted in human and civil rights legislation, underpins the participation of disabled people in all of society's activities, including decision-making. Put simply, disabled people are best placed to know what they need from their environment and they should therefore be involved at both policy formulation and project development levels. [Social science discussion has highlighted the critical/emancipatory approach, i.e. that research involving disability should be undertaken/controlled by disabled people (see, for example, Barnes, 2001; Beazley, et al, 1997; Bury, 1996).] Government policy seeks to empower disabled people in decision-making, including the planning/built environment field

(Prime Minister's Strategy Unit, 2004; Office of the Deputy Prime Minister, 2003) and the independent living strategy (Office for Disability Issues, 2008).

At issue, on the one hand, is the nature of the empowerment since involvement may range from tokenism through consultation and collaboration to full participation in decision-making, as experience from planning and community-based tourism development demonstrates (e.g. Arnstein, 1969; Bahaire and Elliott-White, 1999; Dredge, 2006; Jamal and Getz, 1995; Morris, 2006; Plummer, et. al, 2006; Pretty, 1995; Simpson, 2001; Tosun, 2006; Tyler and Dinan, 2001). On the other hand, who should be involved in the process to ensure appropriate consideration of all relevant disabled users' needs – volunteer samples, organisations representing disabled persons and their interests (e.g. RNIB, SCOPE, etc.), carers, social/care services, or local access groups? The Disability Rights Commission (2004a, 2004e) recommended that local access groups should play a role in the process.

Opportunities for creative thinking and collaboration are greatest at the earliest project stage: design needs to understand and cater for end-users' requirements (Cole-Colander, 2003). There is a need to involve and communicate with all stakeholders such that end-user engagement is vertically integrated into the project design, i.e. design through briefing and briefing throughout the design stages. Foreseeing key issues at the earliest opportunity and maintaining contact throughout project design and statutory processes leads to effective solutions which can be confirmed via post-occupation evaluation involving disabled stakeholders. Although an initial 'vision' statement may involve at best probably only client and architect, the other stakeholder inputs are needed from the outline/proposal stage: design professionals can learn from disabled users' experience of similar environments elsewhere and especially from any coping strategies they have evolved in order to use those environments. Site visits during construction (or use of sample rooms) involving potential users should be considered. Increasing the number of stakeholders involved in any project adds layers of complexity, especially how compromise is reached between various stakeholder interests. Finding a common language (see Luck, 2003; Luck and McDonnell, 2005) between client, architect/designer and disabled end-user may be a problem and require some 'training' for any disabled participants beyond that currently available regarding their DDA rights.

### **Composition and Leadership of the Project Team**

Interdisciplinary project teams will only be formed for the largest projects and understanding the roles and responsibilities of team members in planning and delivering inclusive access raises issues of leadership, knowledge transfer and integration. The professionals comprising the project team will be drawn primarily from built environment specialisms and led by an architect, or increasingly, a project manager. Whilst all members of the project team should have an awareness of access issues (and some might even have inclusive access/design training) it is highly unlikely that many will have personal experience of being disabled. Most project teams will not contain an access specialist, although such person may be retained on a consultancy basis to advise, for example, on the preparation of access statements required for planning and building control approval. Depending on the project, the team may or may not contain other specialists (e.g. occupational therapist in the case of a new community health centre, a sports science specialist for a new leisure centre), even on a 'temporary' membership basis. Understanding the potential of each expert's input to the design process is critical, e.g. a facilities manager may offer new insights into the long-term use of a proposed building based on their experience with existing properties.

End-users will rarely be represented on project teams so consultation is the primary means of contact with potential disabled end-users. Since the latter will not be participating in design/decision-making, the extent and nature of the feedback must be considered. The role

of the client (individual or organisation commissioning a project) should also be stressed, since, although reliant on their professional advisers, clients need to appreciate from the outset the importance of accessible buildings (CABE, 2003) and need to be educated that legislation/regulations provide only a lowest common denominator.

### **Quality Assurance for Inclusive Access**

Progress towards equality for disabled people in the built environment should be evaluated (Office for Disability Issues, 2007). Poor access is the result of many factors – poor advice on access arrangements, low quality of building work, poor decisions about fixtures and fittings, poor management and maintenance of facilities, inadequate signage, etc. (Knight and Sked, 2007). Thus, at project level, there is a place for a quality assurance system which ensures compliance with inclusive access design principles throughout the whole project process. The design process is a logical examination of options leading to a preferred solution, which becomes a detailed brief/plan from which specification of materials, equipment, etc. follows (e.g. choice of materials which facilitate inclusion by their texture, colour contrast or acoustic properties). On-site project management, by ensuring specifications and plans are strictly adhered to, delivers the appropriate quality of implementation. Performance criteria/benchmarks for inclusive access should be set in the project brief's access strategy and a work plan developed which incorporates inclusive access monitoring through all stages of the design/construction process (since external requirements, such as design and access statements which now accompany most planning applications, merely ensure perceived rather than actual needs of disabled people are considered). Operational performance is as important as design performance and whole-life cycle thinking must start at the earliest design stage: post-occupancy review will reveal any shortcomings. The desirability of introducing a certification scheme [cf.: 'green' accreditation/energy-efficiency schemes) might be considered.

### **Continuing to Improve Access**

The 1995 DDA made accessibility a **continuing duty** for service providers (who are major owners/occupiers of existing and new buildings). Means and levels of accessibility should be regularly reviewed. Future developments in assistive technology, for example, will extend opportunities for disabled people to participate in society and built environment professionals need to anticipate how such developments can be assimilated into the built environment. For example, sat-nav systems (which can already pinpoint the nearest filling station for a motorist getting low on fuel) must have potential as an information and guidance source for disabled users of the built environment; SMART rehabilitation should make it possible for more to continue to live at home as they age. For a new building complex, post-occupancy evaluation provides the first test of whether the inclusive access design intentions have been met: user/non-user or visitor/non-visitor profiling may be required to reveal limitations. For existing buildings, 'wear and tear' in use is to be expected, thus maintenance and repair, alongside redecoration and refurbishment, are necessary to maintain and improve the level of accessibility. The facilities manager has a pivotal role to play in the case of buildings in use.

## **3.3 Possible Obstacles to achieving Inclusive Access**

Alongside the issues discussed above, reservations may exist as to what can be achieved because the built environment industry has concerns about cost implications, arising from competitive pressures, health and safety, and uncertainties arising from the legal framework.

## **The Cost Implications of providing Inclusive Access**

There is concern that inclusive access/design slows down time to market and increases costs. Even prior to the current economic downturn with its severe consequences for the level of building activity and financial stability of property markets, the industry was under pressures to reduce unit costs. In housing, for example, in both public and private sectors dwelling space standards have been pushed down towards the regulatory minimum in the public sector and what the market will bear in the private sector. Policy driven pressures to increase housing density and reduce costs is leading to smaller dwellings, mitigate against the adoption of higher accessibility standards and sits unhappily with disabled households needs, especially those using wheelchairs, which highlight the importance of space. In the United Kingdom, financial or other assistance for commissioning clients is limited to favourable treatment under schemes such as Industrial Buildings Allowance.

There have been relatively few studies to date of the relative costs and benefits of improving accessibility to the built environment (Meager, et al., 2002; Lansley, et al., 2004) but clients and developers must be convinced inclusive access represents good practice. Inclusive access/design will add little to new build costs, including allowance for costs of appropriate consultation with representative disability interests. Lifetime costs, not initial build costs, should be the focus. Inclusive access can be cost-effective in terms of lifetime project costs since early consultation eases the planning process, reduces the risk of potentially costly alterations during later design and construction stages, and avoids adaptations during the building's early life. Moreover, an inclusively accessible property enjoys a competitive advantage, increases market size, greater end-user satisfaction, and therefore enhanced market value. From society's viewpoint investment in inclusive access, e.g. housing, can lead to savings elsewhere, such as in social/support services (Heywood, 2001).

Standardisation of those elements of a building or space that must meet a precise design standard, e.g. the accessible toilet, will increase opportunities for off-site construction and cost control. Such elements are preferred by many disabled people because the layout is predictable. Standardisation can be problematic given the diversity of disability and the lack of standardisation of assistive equipment, e.g. specifying door widths given the variability in design, size and functionality of wheelchairs, or of disabled parking spaces where disabled drivers use vehicles of varying size and entry/exit methods differ (vehicles with rear or side-extending hoists/lifts need very different parking dimensions).

## **Health and Safety**

Health and safety considerations, under a culture of risk aversion, may be justification for not improving access, especially in existing buildings, on grounds that a disabled person's presence poses risks to others. Who is being protected in this case: the service provider, the built environment professionals, other users/visitors? Sensible risk management balances benefits and risks, with a focus on reducing real risks and acknowledges that end users (in this case disabled people) must exercise responsibility (see also CAGE, 2005).

Egress from buildings, however, does require better consideration. Emergency egress routes, informed by fire risk assessment, must be specified in access statements but designer and service provider perceptions of their capacity to offer accessible evacuation from a building – especially their understanding of the different forms of emergency evacuation (protective, preventive, rescue and reconstructive) (Christensen, et. al, 2007) – is limited. Particular problems arise for wheelchair users evacuating a multi-storey building in an emergency when lifts cannot be used: alternatives, such as 'evac-chairs' (usable on stairs) require storage, 'refuge' space and (trained) assistants to use.

### **Uncertainties arising from disability discrimination legislation**

Disability discrimination legislation is not property or planning law (see also Lawson, 2008) and uncertainties arise as to how the DDA requirement for **reasonable adjustment** applies to the built environment, since ‘reasonableness’ is a subjective concept. The DDA introduced a retroactive requirement which applies to existing buildings but reasonable adjustments are not defined in the DDA, nor in the accompanying code of practice (Disability Rights Commission, 2002b). Implicit in the concept is that some adjustments may be viewed as unreasonable (perhaps on the grounds of excessive cost for the benefit of only a few disabled users, or on health and safety grounds). Refusal of planning consent does not excuse a service provider from compliance with the DDA. Moreover, compliance with access standards, such as Building Regulations Part M, does not guarantee compliance with the DDA (it is also noted that the definition of disability used in Part M differs from the DDA definition). Prideaux (2006) suggests the reasonable adjustment concept dilutes the effectiveness of the DDA requirement, arguing the test of reasonableness favours the service provider, i.e. it involves discretionary choice which may lead to or preserves discrimination.

The DDA adopts an individual rights-based approach to the problem of discrimination (Doyle, 1997), placing the onus on a disabled person who believes they have been unlawfully discriminated against to institute a claim, which, if not settle via conciliation will be determined by a civil court. The cumulative effect of civil court decisions over time will clarify what reasonable adjustments are required under the DDA.

The intention is that DDA requirements can change in line with advances in technology and national best practice, thus the Act imposes the continuing duty on service providers to review regularly access policy. This raises uncertainties about the ‘shelf-life’ of any building adjustment (although any construction, post-October 1994, to current Building Regulation Part M standards will not have to be removed/altered for 10 years from the date of completion).

The uncertainty is exacerbated by the flexibility inherent in the DDA with regard to the options to service providers which qualify as reasonable adjustments. The DDA is not specifically about making structural alterations to the built environment and a building/property-based response may not be the only solution to providing disabled access – a means of avoiding a physical barrier or an alternative method of delivering a service may be a reasonable adjustment.

### **Uncertainties arising from planning and building control**

The design and access statements now required with most planning applications are not as comprehensive as the access statements described by the Disability Rights Commission (2004d) and do not remove the need for a further access statement to inform Building Regulation consent (CABE, 2006a). For planning purposes such statements should take a holistic approach demonstrating appreciation of site context (topography, local transport links, etc.); explaining how the design ensures all users have equal and convenient access to the building, spaces and public transport network [or explaining deviations from guidance due to site constraints and how adverse impacts have been minimised]; setting out layout and interior design considerations, landscaping and appearance; and noting how consultation with community and access groups informed the process. Access statements to secure building control approval focus on internal and structural design features, require only limited formal consultation (e.g. with the fire service), and have to demonstrate how design satisfies Building Regulations Part M [or explaining deviations therefrom].

The Lifetime Homes Standard has variable status: in Wales and Northern Ireland it is compulsory for all new social housing, whilst in Scotland similar but not identical criteria

apply, but in England a voluntary approach is adopted through the Code for Sustainable Housing (Disability Rights Commission, 2007a) (although the top level 6 rating can only be achieved if the lifetime homes standard is met).

The benefits of inclusive environments may be widely understood and legislation/regulation exists to promote better accessibility of new developments and to encourage upgrading of existing environments (the majority of which date from earlier periods when inclusive access was not a priority). Physical barriers are still commonplace and reasonable adjustments not always straightforward. The time-lag before the majority of buildings and the built environment are fully accessible will be considerable. There is a danger that Part M standards are seen as prescriptive, lending support to the argument that access statements ensure perceived rather than actual needs are considered. However, if these standards are regarded as minima creative design need not be stifled and superior standards such as BS 8300 (British Standards Institution, 2009) or ideas from consulting disabled people can be adopted. Even so, by 2020 Building Regulations Part M will have applied to new dwellings for 20 years and the proportion of dwellings meeting the 'visitability standards' will have increased in the overall housing stock but, at current building and demolition rates, the proportion of housing stock in Great Britain conforming to Part M standard will be only 12% (IPPR, 2007). Raising the rate at which accessibility is improved in existing buildings and environments remains a major task, especially where the overall policy context has multiple objectives, including energy efficiency and sustainability. Major projects, such as the 2012 London Olympics, will deliver significant improvements in specific places but economic recession and funding problems, as experienced by Metronet in the upgrading of the London tube network, are likely to delay progress.

## 4. Response and Prospect

Transforming the built environment to be all inclusive is a mammoth task but positive action has increased significantly in both public and private sectors over the past decade.

### 4.1 The Role of the Public Sector

Public sector efforts to promote an inclusive built environment are embraced within the wider context of government social inclusion policy (since the complementarity of the built environment, assistive technologies, and support services is acknowledged when implementing policy).

#### **Commitment to Social Inclusion**

As part of social inclusion policy the Government is committed to improving disabled people's life chances (Prime Minister's Strategy Unit, 2004) and, in June 2009, signed the United Nation's Convention on Rights of Persons with Disabilities which embodies principles of independence and freedom of choice for disabled persons. In April 2008 the Government launched its **Independent Living Strategy [ILS]** designed to deliver real choice and control for disabled persons to ensure them greater access to housing, health, education and training, employment, leisure, transport and mobility opportunities, and participation in community and family life. A consultation exercise on how best to involve disabled people in monitoring progress in implementing the ILS confirmed the problem of achieving full representative coverage of the disabled population; concluded it would be best to use and develop existing networks, such as Putting People First and Equality 2025, to create a two-way communication channel between Government and disabled people; and highlighted the importance of

building capacity among disabled people to enable them to play a role at national and local levels (Office for Disability Issues, 2008b).

It is acknowledged that the means for achieving independent living varies between disabled persons in different situations and does not involve disabled persons doing everything for themselves (Prime Minister's Strategy Unit, 2004). Thus, for example, developments in social care and housing policy are of significance (e.g. Department of Health, 2006). Most people would choose to remain living independently in their own homes as they age and 90% of the public anticipate, if they need support, they would receive social care services enabling them to do so (Disability Rights Commission, 2006b). Hence, part of Government policy on ageing – *Lifetime Homes, Lifetime Neighbourhoods: A National Strategy for Housing in an Ageing Society* – seeks to deliver not only affordable but age-friendly homes that can adapt as residents' needs change, so broadening the options beyond care homes and sheltered housing to help older people live independently in their own homes. This will also 'be facilitated by **personalisation** of social care via individualised budgets and person-centred planning to give disabled/older service users greater control over the services they get and who delivers them, alongside technological developments in 'telecare' using sensors for remote monitoring of disabled persons' 'activity signatures'.

Anti-discrimination and pro-equality legislation is still bedding down and is likely to be strengthened. The Disability Rights Commission (2006a) asserted that disability rights needed to be mainstreamed into wider equality and human rights thinking. A start was made, from October 2007, when the Disability Rights Commission was subsumed into the new Commission for Equality and Human Rights but there is still work to be done to ensure the Government's commitment to the single 2010 equality law replacing existing anti-discrimination laws improves upon the Disability Discrimination Acts. Disability legislation has introduced 'legal duties' for employers and service providers requiring reasonable adjustments, which (as demonstrated above in 3.3.3) may or may not include removal/modification of physical barriers in the built environment. Such legislation goes further for all public bodies, national and local, involving, under the 2005 *Disability Discrimination Act*, a positive obligation under the **disability equality duty** to build disability into their policy making (with implications for buildings directly under their control).

Government employment policy is based on both 'carrots', e.g. the Access to Work scheme which seeks to expand opportunities for disabled people of working age, and 'sticks', e.g. the recent introduction of a tougher work capability assessment procedure aimed at controlling numbers receiving disability benefits. Education policy aims to integrate children with special educational needs into mainstream schools wherever possible. Whilst policy for social inclusion is now extensive, its implementation is another matter.

## **Government and the Built Environment**

Through persuasion and regulation the Government can influence the quality of the built environment. Currently both building control and planning are subject to major review to make procedures more responsive, simple and timely. Building Regulations, whose purpose is principally the health and safety of people in and around buildings, promote minimum standards for most aspects of a building's construction, including access and freedom from hazards. Part M of the regulations targets access issues, the 2004 revision extending the responsibilities of providers of buildings, and in some cases those undertaking alterations to existing buildings. The Lifetime Homes Standard (involving wider doors, improved bathroom design, staircases suitable for stair-lifts, etc.) will be compulsory for all publicly funded housing by 2011 and the same criteria will apply to all new, private sector homes by 2013 even though the Government rejected calls to amend Building Regulations Part M to incorporate such lifetime homes design standards (Disability Rights Commission, 2006c). In

addition, government housing policy also promises funds for a national rapid repair and adaptations service developed from local authority handy person schemes whereby older people have free or subsidised repairs or adaptations to their homes.

Changes to the planning application procedure, introduced May 2006, encourage thinking about how inclusive, practical and attractive a place will be once built by requiring **design and access statements** to accompany most planning applications (CABE, 2006a, Planning Advisory Service, 2008a; also, see 3.3.3 above). The effectiveness of statements supporting planning applications is still being evaluated. Planning authorities face practical problems where these statements add to an already burdened and complex system; planning officers regard themselves as recipients, not participants, especially where developers prepare statements retrospectively rather than as part of an evolving design; guidance is lacking on how statements match to best practice leading to some confusion between planning, building control and access officers; developers are inconsistent in the ways they engage with the local community; and statements are not required for change of use applications although the latter can have access implications (Planning Advisory Service, 2008a).

Good practice guides relating to disabled access abound in the public sector: for example, the Department of Communities and Local Government's guides cover disability and equality; safer places; disabled access; better places to live; and urban design. *Planning and Access for Disabled People* (Office of the Deputy Prime Minister, 2003) is the primary good practice manual in the planning arena: it outlines inclusive access policies for development plans and supplementary planning guidance, the role of development control and working with applicants, as well as noting training needs for planning officers and improving contacts with local access groups. The revised PPS12 *Plan Making Manual* (Department of Communities and Local Government, 2008) seeks to ensure necessary social, physical and sustainable infrastructure is delivered. Planning-related quangos are also in on the act – the Commission for Architecture and the Built Environment is currently developing guidelines for more age-friendly neighbourhoods (involving better paving and kerb design, improved access to public toilets and amenities, improved street lighting, well located bus stops, etc.); the Homes and Communities Agency, created in 2008, has a remit to deliver good design and sustainable development and should produce a new set of core design and sustainability standards by 2011; and English Heritage provides guidance on easy access to historic buildings and sites. Beyond the built environment field the Disability Rights Commission (2000, 2002a, 2003a, 2004b, 2004c, 2004d) has produced advisory guides targeting existing service providers, such as small businesses, publicans, guest house operators, and the retail sector. British Standards exist for the design of buildings and their approaches to meet the needs of disabled people (BS8300) and for managing inclusive design at corporate and project level (BS7000-6).

Consultation is deemed important, especially since the 1995 DDA, and the Government stresses it should be an on-going relationship which extends through design, planning, into management and operational matters. The Barker Review of Land Use Planning (Department of Communities and Local Government, 2006b) advocated increased use of pre-application discussions, suggesting it was advisable to go beyond the statutory consultation requirements and engage local people via development control forums, demographic sampling and structural participation processes (Sparks, 2007). Design and access statements must specify what groups and people have been consulted and how that consultation influenced the proposal. The Planning Advisory Service (2008b) has produced a customer/stakeholder workshop toolkit to assist local planning authorities in arranging consultation, whilst in a more general context the Office for Disability Issues (2009) has published a communications toolkit to help local authorities communicate more effectively with disabled people as a basis for embedding good practice in local authorities. Opportunities should therefore be opening up for disabled people to have their say on the development of their local built environment but there is little evidence of the extent to which it is happening in practice and a note of

caution is expressed that such consultation is not a substitute for professional advice or technical guidance (Office of the Deputy Prime Minister, 2003).

## 4.2 Initiatives in the Private Sector

The private sector's emphasis on creating economically viable places leads to the exclusion of certain types of people, thus 'a new, genuinely inclusive approach to public space and community is needed' (Minton, 2006, p.4). Pressures from the disability lobby, specially charitable organisations representing particular impairments, not only continue to highlight discriminatory aspects of the built environment but also frequently demonstrate the way forward to innovative solutions, e.g. the RNIB and **ambient intelligence systems** (Gill, 2008). Examples of best inclusive access practice can be found in building projects, from new homes to football stadia, but the critical factor in the widespread application of such practice depends on the universal design/inclusive environment skills of built environment professionals.

### **The Education and Training of Built Environment Professionals**

Delivering inclusive environments requires competencies and skills across the built environment spectrum, from design through construction to operational management. Concerns exist about the supply of high quality professional skills in the built environment field and of the knowledge professionals in one area have of the work of other disciplines in the field (Gann and Salter, 1999). General skills gaps, (e.g. regarding client handling, communication skills, agreeing project requirements, etc.) amongst existing staff have been identified by 80% of construction sector professional services firms in private practice (Construction Industry Council, 2004). The design and management skills base relating to inclusive access appears limited therefore across the built environment field. Thus, '... we need to ensure that our designers and decision-makers have the necessary skills base to consider effectively inclusive design issues', and acknowledge that '... a particular problem lies with the educational training of some professionals ... (where) over the last 25 years this has increasingly emphasized a commercial client focus and moved away from the end user focus' (Coleman, 2005, p.52).

The Council of Europe (2001) has recommended that universal design and accessibility should be an integral and compulsory part of all levels of education and training programmes of all occupations working on the built environment and that adequate further training should be available for active professionals. Institutions controlling entry into the built environment professions are in a position to define the nature and extent of knowledge and understanding of inclusive environments at point of entry to a profession and to influence subsequent professional career development via approved academic qualifications, tests of professional competence and CPD (continuing professional development) requirements.

Whilst no comprehensive data have been collated, anecdotal evidence suggests increasing attention to inclusive design and access in professional institutions' approved academic qualifications and CPD programmes:

- A 'blueprint' exists for teaching inclusive design within built environment courses (Special Interest Group in Inclusive Design, 2002);
- syllabuses of approved academic qualifications normally cover disability/inclusive design issues (although specialist modules may be optional);
- teaching and learning methods increasingly use mock-ups, simulation/role-play exercises, user testing techniques, etc. (but rarely involve direct contact with disabled people);

- specialist post-graduate courses in inclusive environments have been developed in a number of tertiary educational establishments (and these may or may not be formally recognised by professional institutions);
- professional institutions increasingly have CPD opportunities which embrace inclusive design and access;
- numerous short courses run by organisations from both within and outside the built environment field (which may or may not be recognised for CPD purposes).

‘Access professional’ will become a specialist competency following the 1999 establishment of the National Register of Access Consultants (NRAC, 2005) and the introduction in 2006 of an accreditation scheme for inclusive access consultants by the RICS (2006). Educational and professional training initiatives will have a long-term beneficial effect on the inclusivity of the built environment.

### **Other Initiatives**

Good practice in implementing inclusive access principles is increasingly evident. In relation to design, the Royal Institute of British Architects has a recommended 7-stage process for the implementation of these principles at project level which acknowledges the need for inter-disciplinary working and consultation. This complements BS7000-6 outlining best practice for managing inclusive design at corporate and project levels (British Standards Institution, 2005). Relevant design advice, adding to that from public sector sources, is available from building industry/professional organisations such as CIBSEE, CIRIA, RIBA, etc. and this is supplemented by similar advice from outside the built environment sector, e.g. from disability charities, such as RNIB, and service sector organisations, such as the British Hospitality Association.

Service providers, as major players in the existing built environment, have developed ‘certification schemes’, such as the National Accessible Scheme introduced by the tourism industry to provide tourist accommodation and visitor attractions with nationally recognised accessibility ratings. For building occupation management the adoption of an accessible housing register approach enables local authorities, in collaboration with the Ability Housing Association to match their social housing to disabled persons’ needs.

Paralleling design initiatives targeting accessible/lifetime homes, private house-builders have rebranded forms of sheltered housing as retirement housing featuring facilities such as hotel-style services, swimming pools/fitness centres, etc, with extra-care/assisted living options for those in an ageing population able to pay. Considerable research has focused on accessible buildings (e.g. Bone, 1996), and especially lifetime homes (e.g. Brewerton and Darton, 1997), as well as on specific features of the environment/building of concern for particular disabilities, such as people-oriented lighting (e.g. Thomas Pocklington Trust, 2007).

Examples of best practice, including in education/training/professional development, need to be highlighted and disseminated since the inclusive environment approach is still not commonplace. Whilst annual awards, such as ‘the accessible hotel of the year’ amongst the Automobile Association’s annual hospitality awards, are a means of advertising good examples, more needs to be done in identifying ‘exemplars’, for example, in the context of disabled persons’ employment – the Vassall Centre Trust’s Bristol building (Vassall Centre Trust, 2008).

## **4.2 Prospect**

The built environment still restricts access for disabled people and physical barriers will remain for many years to come. Whilst the mainstreaming of inclusive access as an integral

component of a sustainable built environment is acknowledged in theory, in reality a fully inclusive built environment may remain a 'pipedream' since 'reasonableness' (as required of remedial actions under disability discrimination legislation) implies compromise. There will be progress but will it keep pace with increasing need and demand, especially if increased life expectancy does not bring freedom from impairments or long-term health problems? Any progress towards inclusive environments benefits more than the disabled community – at least 18m additional people according to current population figures (Office of the Deputy Prime Minister, 2003).

The two, key change strategies are regulation (coercion) and education (persuasion). The approach in the United Kingdom has largely been via amicable cooperation and negotiation to establish reasonable adjustments to improve access to existing and new buildings, in contrast to a prescriptive course of technical detail and legal compliance as favoured in the USA (Prideaux, 2006). Whilst regulatory approaches are likely to be strengthened they will not deliver the scale and nature of change sought for the built environment because regulations are target/goal-oriented, work best where simple cause/effect relationships exist, and are likely to be treated as maximum standards. Universal design could play a role in developing standards, which must be quantitative and performance-based. In certain instances standards should be mandatory, as with health and safety, and in others advisory, as with many British Standards codes of practice, providing guidance on best practice but there is always the danger that designers view them as requirements which stifle creative design.

In the longer term education has greater potential to change attitudes and practices across the built environment industry/professions (as well as for other service providers, etc.) and, therefore, deliver user-centred design strategies where designers are accountable to end-users. The 'education' strategy requires definitive information on disability, particularly a better understanding of how impairment affects a person's use of the built environment. In 2008 the Office for Disability Issues commissioned the Office for National Statistics to prepare a plan for a longitudinal disability study but this will not report before 2011 and will not include assessment of disabled people's built environment preferences. Traditionally professions focus on learning discipline-specific information and are seldom exposed to critical information from outside their expected areas of expertise. What, for example, could an architect learn from an occupational therapist (and vice versa)?

There is, therefore, a need to develop and broaden the built environment skills base in order to integrate concepts of accessibility and sustainability into whole-life planning. The joined-up thinking required spills over from built environment into assistive technology and support services. Thinking inclusively, interdisciplinary working and effective consultation are paramount and, in this context, genuine consultation with disabled people is required. Knowledge transfer/interaction needs to be promoted. How do policy makers, professional practitioners, etc. access research results, opinions, etc.? Networking and tailored dissemination will play a significant role: built environment designers, project and facilities managers need to be brought face-to-face with medical, occupational and social care personnel; assistive technology specialists; and, very importantly, disabled people and disability organisations.

There is also the issue of how progress towards equality for disabled people in the built environment should be evaluated (Office for Disability Issues, 2007) and consideration needs to be given to the concepts and tools for assessing built environment inclusivity. Any such measures will need to be aware that inclusive access is not only a function of the physical built environment but also of certain kinds of behaviour and attitudes, e.g. raised-kerb bus-stops with shelter/seating may be provided in residential areas according to a maximum distance from the furthest dwellings but, if the bus service is infrequent, the aim of accessible travel is not achieved. In the broadest context, 'disability support services' need to be

developed and integrated with the provision of inclusive environments if disabled people are to enjoy maximum accessibility and fullest participation in societal activities.

# References

- Arnstein, S.R. (1969) A ladder of citizen participation. *American Institute of Planners Journal*, **35** (4) 216-224.
- Bahaire, T. and Elliott-White, M. (1999) Community participation in tourism planning and development in the historic city of York, England. *Current Issues in Tourism*, **2** (2 & 3) 243-276.
- Barnes, C. (2001) 'Emancipatory' disability research: project or process? *Public Lecture*, The City Chambers, Glasgow, 24<sup>th</sup> October, 2001.
- Barnes, C. and Mercer, G., Eds. (2005) *The Social Model of Disability: Europe and the Majority World*. Leeds: The Disability Press.
- Beazley, S., Moore, M. and Benzie, D. (1997) Involving disabled people in research: A study of inclusion in environmental activities. In C. Barnes & G. Mercer (Eds.) *Doing Disability Research*, 142-157. Leeds: The Disability Press.
- Boaz, A., Hayden, C. and Bernard, M. (2005) Attitudes and aspirations of older people: A review of the literature, *Research Report 101*. London: Department of Work and Pensions.
- Bone, S. (1996) *Buildings for All to Use*. London: CIRIA.
- Bowcott, O. (2009) In the balance. *Society Guardian*, Wednesday 29 October, 2009, p.3.
- Brewerton, J. and Darton, D. (1997) *Designing Lifetime Homes*. York: Joseph Rowntree Foundation.
- Brindle, D. (2009) At the heart of the system: How will the proposals help carers? *Fair Outlook: supplement to Society Guardian*, 9/9/09, p.2.
- British Standards Institution (2009) BS8300: Design of buildings and their approaches to meet the needs of disabled people – code of practice. London: BSI.
- British Standards Institution (2005) BS7000-6: Design management systems: Managing inclusive design. London: BSI.
- Brown, G. (2009) The long game. *Society Guardian*, Wednesday, 10 October, 2009, pp. 1-2.
- Burchardt, T. (2003) Being and becoming: Social exclusion and the onset of disability, *CASEReport 21*. London: CASE, London School of Economics.
- Burchardt, T. (2000) Enduring economic exclusion: Disabled people, income and work, *Work and Opportunity Series*, 21. York: Joseph Rowntree Foundation.
- Bury, M. (1996) Defining and researching disability: Challenges and responses. In C. Barnes & G. Mercer (Eds.), *Exploring the Divide*, 18-38. Leeds: The Disability Press.
- CABE (2006a) *Design and access statements. How to write, read and use them*. London: Commission for Architecture and the Built Environment.
- CABE (2006b) *Physical activity and the built environment*. London: Commission for Architecture and the Built Environment.
- CABE (2005) *What are we scared of The value of risk in designing public space*. London: Commission for Architecture and the Built Environment.
- CABE (2003) *Creating Excellent Building: A Guide for Clients*, 1<sup>st</sup> Edition. London: Commission for Architecture and the Built Environment.

- Centre for Policy on Ageing (2008) *Lifetime Homes, Lifetime Neighbourhoods – a national strategy for housing in an ageing society*. London: CPA.
- Childs, A. (2009) The future of your health starts now. *Healthy Ageing, supplement to The Sunday Telegraph*, 29 November, 2009, p.2.
- Christensen, K.M., Blair, M.E. and Holt, J.M. (2007) The built environment, evacuations and individuals with disabilities. A guiding framework for disaster policy and preparation, *Journal of Disability Policy Studies*, 7 (4) 249-254.
- Cole-Colander, C. (2003) Designing the customer experience, *Building Research & Information*, 31 (6) 357-366.
- Coleman, R. (2005) *Living Longer. The new context for design*. London: Design Centre.
- Commission for the European Communities (1999) *Establishing a General Framework for Equal Treatment in Employment and Occupation*. Brussels: CEC.
- Construction Industry Council (2004) *Built Environment Professional Skills Survey, 2003/2004: Survey Results*. London: CIC.
- Council of Europe (2001) Resolution ResAP(2001) 1 on the Introduction of the Principles of Universal Design into the Curricula of All Occupations working on the Built Environment. Adopted by the Committee of Ministers on 15 February 2001 at the 742<sup>nd</sup> meeting of the Ministers Deputies. Strasbourg: Council of Europe.
- CSCI (2004) *State of Social Care in England 2003-2004*. London: Commission for Social Care Inspection.
- Deal, M. (2007) Aversive disablism: Subtle prejudice towards disabled people, *Disability & Society*, 22 (1) 93-107.
- Denman, R. and Clarkson, S. (1991) The disabled visitor, *Insights*, 2, B49-60.
- Department of Communities and Local Government (2006) *Barker Review of Land Use Planning*. London: DCLG.
- Department of Communities and Local Government (2008) *PPS 12: local Spatial Planning*. London: DCLG.
- Department of Communities and Local Government (2006a) *Citizenship Survey, 2005*. London: DCLG.
- Department of Communities and Local Government (2006b). *Barker Review of land Use Planning*. London: DCLG.
- Department of Health (2008) *Healthy Weight, Healthy Lives: A Cross-Government Strategy for England*. London: Department of Health.
- Department of Health (2006) *A New Ambition for Old Age*. London: Department of Health.
- Disability Living Foundation (2003) *Out and about with your wheelchair*. London: DLF.
- Disability Rights Commission (2007a) *Disability Briefing*. London: DRC.
- Disability Rights Commission (2007b) *Housing the baby boom generation*. London: DRC.
- Disability Rights Commission (2006a) *Changing Britain for good. Putting disability at the heart of public policy*. London: DRC.
- Disability Rights Commission (2006b) *Public attitudes towards social care*. London: DRC.
- Disability Rights Commission (2006c) *Independent Living: Discussion Paper*. London: DRC.

- Disability Rights Commission (2004a) *NOP survey on disabled peoples' experiences of physical access to goods and services in Britain*. DRC website: <http://www.drc-gr.org/campaigns/campaigndetails.asp?id=401> (accessed 14 January 2004).
- Disability Rights Commission (2004b) *Bringing the DDA to life for publicans*. Stratford-upon-Avon: DRC.
- Disability Rights Commission (2004c) *A practical guide for the retail sector: Part III of the 1995 DDA: What shop or store owners need to know*. Stratford-upon-Avon: DRC.
- Disability Rights Commission (2004d) *Access Statements. Achieving and inclusive environment by ensuring continuity throughout the planning, design and management of buildings and spaces*. Stratford-upon-Avon: DRC.
- Disability Rights Commission (2004e) *Towards Access Standards: The Work of Local Access Groups in England and Wales*. Stratford-upon-Avon: DRC.
- Disability Rights Commission (2003) *The Disability Discrimination Act: What do guest accommodation owners need to know*. Manchester: DRC.
- Disability Rights Commission (2002a) *Bringing the DDA to life for small shops: Café case study*. Stratford-upon-Avon: DRC.
- Disability Rights Commission (2002b) *Code of Practice. Rights of Access. Goods, facilities, services and premises*. London: The Stationery Office.
- Disability Rights Commission (2000) *Making access to goods and services easier for disabled customers. A practical guide for small businesses and other small service providers*. Manchester: DRC.
- Disability Rights Task Force (2003) *From Exclusion to Inclusion. Final Report of the DRTF*. London: Department of Work and Pensions.
- Doyle, B. (1997) Enabling legislation or dissembling law? The Disability Discrimination Act 1995, *The Modern Law Review*, **60**, 64-78.
- Dredge, D. (2006) Networks, conflict and collaborative communities, *Journal of Sustainable Tourism*, **14** (6) 562-581.
- ESRC (2007) *Wearable independence. Social Sciences: News from the ESRC*, Summer 2007, Issue 66, p.13. Swindon: ESRC.
- European Disability Forum (2003) *Working with Disabilities*. Brussels: Manpower Inc.
- Foresight Report (2007) *Tackling Obesity: Future Choices*. [<http://www.foresight.gov.uk/Obesity/Obesity.html>. (accessed 14 April 2008)]
- Gann, D. and Salter, A. (1999) *Interdisciplinary Skills for Built Environment Professionals: A Scoping Study*. London: Ove Arup Foundation.
- Gill, J. (2007) *Accessibility for visitors who are blind or partially sighted. How technology can help*. London: RNIB.
- Gillison, S., Green, H. and Miller, P. (2005). *Independent Living. The right to be equal citizens*. London: Demos.
- Goodall, B. and Pottinger, K.G. (2010) *Promoting Inclusive Access to the Built Environment, CEM Occasional Paper*. Reading: College of Estate Management.
- Government Actuary's Department (2008) *National Population Projections*. <http://www.gad.gov.uk/>.

- Grewal, I., Joy, S., Lewis, J., Swales, K. and Woodfield, K. (2002) 'Disabled for Life?: attitudes towards and experiences of disability in Britain, *DWP Research Report 173*. Leeds: Centre for Disability Studies.
- Grundy, E., Ahlberg, D., Ali, M., Breeze, E. and Sloggett, A. (1999) Disability in Great Britain: Results of the 1996/97 disability follow-up to the Family Resources Survey, *DWP Research Report 94*. London: Department of Work and Pensions.
- Harris, A., Cox, E. and Smith, C. (1971) *Handicapped and Impaired in Great Britain*, Vol. 1 and Economics Dimensions, Vol. 2. London: HMSO.
- Hayden, C., Boaz, A. and Taylor, F. (2005) Attitudes and aspirations of older people: A qualitative study, *Research Report 102*. London: Department of Work and Pensions.
- Heywood, F. (2001) *Money well spent. The effectiveness and value of housing adaptation*. York: Policy Press for Joseph Rowntree Foundation.
- Heywood, F. and Turner, L. (2007) *Better Outcomes, Lower Costs. Implications for health and social care budgets of investment in housing adaptations, improvements and equipment: review of the evidence*. London: Office for Disability Issues/Department of Work and Pensions.
- Hirst, M., Thornton, P., Drearey, M. and Campbell-Maynard, S. (2004). *The employment of disabled people in the public sector. A review of data and literature*. London: Disability Rights Commission.
- Hurstfield, J., Parashar, U. and Schofield, K. (2007) *The Costs and Benefits of Independent Living*. London: Office for Disability Issues/Department of Work and Pensions.
- IPPR (2007) *Disability 2020: Opportunities for the full and equal citizenship of disabled people in Britain in 2020*. London: Institute for Public Policy Research.
- Jamal, T.B. and Getz, D. (1995) Collaboration theory and community tourism planning, *Annals of Tourism Research*, **22** (1) 186-204.
- Jenkins, S.P. and Rigg, J.A. (2003) Disability and disadvantage: Selection, onset and duration effects, *CASEpaper 74*. London: CASE, London School of Economics.
- Knight, B. and Sked, A. (2007) *Opening Doors across London*. London: The City Bridge Trust.
- Lansley, P., McCreddie, C., Tinker, A., Flanagan, S. Goodacre, K. and Turner-Smith, A. (2004) Adapting the homes of older people: a case study of costs and savings, *Building Research & Information*, **32** (6) 468-483.
- Lawson, A. (2008) *Disability and Equality Law. The role of reasonable adjustment*. Oxford: Hart Publishing.
- Luck, R. (2003) Dialogue in participatory design, *Design Studies* **24** (6) 523-535.
- Luck, R. and McDonnell, J. (2005) Architect and user interaction: the spoken representation of form and functional meaning in early design conversations, *Design Studies* **27** (2).
- Matthews, B. (2002) The Disability Discrimination Act and developments in accessible public transport in the UK, *World Transport Policy & Practice*, **8** (2) 42-49.
- Mayor of London (2003) *Another Planet? Disabled and deaf Londoners and discrimination*. [http://www.london.gov.uk/mayor/eydp-2003/disabilitycapital\\_report.jsp](http://www.london.gov.uk/mayor/eydp-2003/disabilitycapital_report.jsp) [accessed 10 May 2007].

- Meager, N., Dewson, S., Evans, C. and Harper, H. (2002) Costs and benefits to service providers of making reasonable adjustments under Part III of the Disability Discrimination Act, *DWP Research Report 169*. Leeds: Centre for Disability Studies.
- Minton, A. (2006) *What kind of world are we building?* London: RICS.
- Morris, J. (2006) *Removing the barriers to community participation*. London: Institute for Public Policy Research.
- National Centre for Social Research (2004) *Disability and Personal Characteristics*. London: Department of Work and Pensions.
- National Statistics Online (2003) *Data results for Mobility of Disabled Persons*. <http://www.statistics.gov.uk/cci/nscl.asp?ID=6441> [accessed 14/7/2003]
- NRAC (2005) [National Register of Access Consultants] *Client Guide*. [http://www.nrac.org.uk/Client\\_guide.html](http://www.nrac.org.uk/Client_guide.html) (accessed 11 January 2007).
- Office for Disability Issues (2009) *Producing better information for disabled people: a toolkit for local government*. London: ODI – <http://odi.gov.uk/working/improving-information.php> [accessed 15/2/2010].
- Office for Disability Issues (2008a) Factsheets: Employment, Transport, Housing, Culture and Leisure, Civic Participation, and Crime. London: ODI.
- Office for Disability Issues (2008b) *Involving Disabled People*. Government response to the consultation on implementation and monitoring of the Independent Living Strategy. London: ODI.
- Office for Disability Issues (2008c) *The Experiences and Expectations of Disabled People*. London: ODI.
- Office for Disability Issues (2007) *Equality for disabled people. How will we know we are making progress*. A Consultation Document. London: ODI.
- Office of the Deputy Prime Minister (2003) *Planning and Access for Disabled People: A Good Practice Guide*. London: ODPM.
- Palmer, G., Carr, J. and Kenway, P. (2005) *Monitoring Poverty and Social Exclusion*. York: Joseph Rowntree Foundation.
- Parry, J., Vegeris, S., Hudson, M., Barnes H. and Taylor, R. (2004) *Independent Living in Later Life, DWP Research Report 216*. Leeds: Centre for Disability Studies.
- Percival, J.; Hanson, J. and Osipovic, D. (2006) A ‘positive outlook’? The housing needs and aspirations of working age people with visual impairment, *Disability & Society*, **21** (7) 661-676.
- Planning Advisory service (2008a) *Design and Access Statements*. Report from a ‘learning group’ comprising 16 local planning authorities. London: PAS.
- Planning Advisory Service (2008b) *Customer/Stakeholder Workshop Toolkit*. London: PAS.
- Plummer, R., Kulczycki, C. and Stacey, C. (2006) How are we working together? A framework to assess collaborative arrangements in nature-based tourism, *Current Issues in Tourism*, **9** (6) 499-515.
- Pottinger, K.G., Plimmer, F., Russell, H., Goodall, B., Dixon, T. and Leverton, P. (2005) *Historic Environments and Tourism: Improving access for disabled people*. Reading: College of Estate Management.
- Pretty, J. (1995) The many interpretations of participation, *Tourism in Focus*, Summer (16), 4-5.

- Prideaux, S. (2006) Good Practice for Providing Reasonable Access to the Physical Built Environment for Disabled People. Leeds: Centre for Disability Studies, University of Leeds.
- Prime Minister's Strategy Unit (2004) Improving the Life Chances of Disabled People: Analytical Report. London: Cabinet Office.
- RICS (2006) [Royal Institution of Chartered Surveyors] *RICS to launch accreditation scheme for inclusive access consultants*.  
<http://www.rics.org/RICSWEB/getpage.aspx?p=jyQ1MSUy70Co03-4Gt8AiQ>.
- Roberts, S., Heaver, C., Hill, K., Rennison, J., Stafford, B., Howat, N., Kelly, G., Krishnan, S., Tapp, P. and Thomas, A. (2004) Disability in the workplace: Employers' and service providers' responses to the DDA in 2003 and preparation for 2004 changes, *DWP Research Report 202*. London: Department of Work and Pensions.
- Sapey, B., Stewart, J. and Donaldson, D. (2004) *The Social Implications of Increases in Wheelchair Use*. Lancaster: Department of Applied Social Sciences, Lancaster University.
- Shakespeare, T. and Watson, N. (2002) The social model of disability: an outmoded ideology?, *Research in Social Science and Disability*, **2**, 9-28.
- Simpson, K. (2001) Strategic planning and community involvement as contributors to sustainable tourism development, *Current Issues in Tourism*, **4** (1) 3-41.
- Smith, N., Middleton, S., Ashton-Brooks, K., Cox, L. and Dobson, B., with Reith, R. (2004). *Disabled People's Cost of Living: 'More than you would think'*. York: Joseph Rowntree Foundation.
- Sparks, L. (2007) Constructive Talk: Investing in pre-application discussions. London: Planning Advisory Service.
- Special Interest Group in Inclusive Design (2002) *Building and Sustaining a Learning Environment for Inclusive Design: Final Report*. Salford: Centre for Education in the Built Environment.
- Summer, K. (2002) Our Homes, Our Lives: Choice in Later Life Living Arrangements. London: Centre for Policy on Ageing.
- Taylor, D. (2005) Understanding blindness. In *Vision of the Future*, supplement to *The Society Guardian*, 6<sup>th</sup> April, 2005, p.2.
- Thomas Pocklington Trust (2007) Lighting homes of people with sight loss: an overview of recent research, *Occasional Paper 13*. London: Thomas Pocklington Trust.
- Tibble, M. (2005) Review of existing research on the extra cost of disability, *Working paper 21*. London: Department of Work and Pensions.
- Tosun, C. (2006) Expected nature of community participation in tourism developments, *Tourism Management*, **27**, 493-504.
- Tyler, D. and Dinan, C. (2001) The role of interest groups in England's emerging tourism policy network, *Current Issues in Tourism*, **4** (2-4) 210-252.
- Vassall Centre Trust (2008) *Creating Ripples, Making Waves: 10<sup>th</sup> Anniversary Review*. Bristol: Vassall Centre Trust.
- Wanlass, D. (2002) Securing Our Future Health: taking a long-term view. Final Report for the King's Fund. London: HM Treasury.
- WERS Information and Advice Service (2010) *Workplace Employee Relations Survey, 2004*.  
<http://www.wers2004.info> [accessed 15/2/2010].