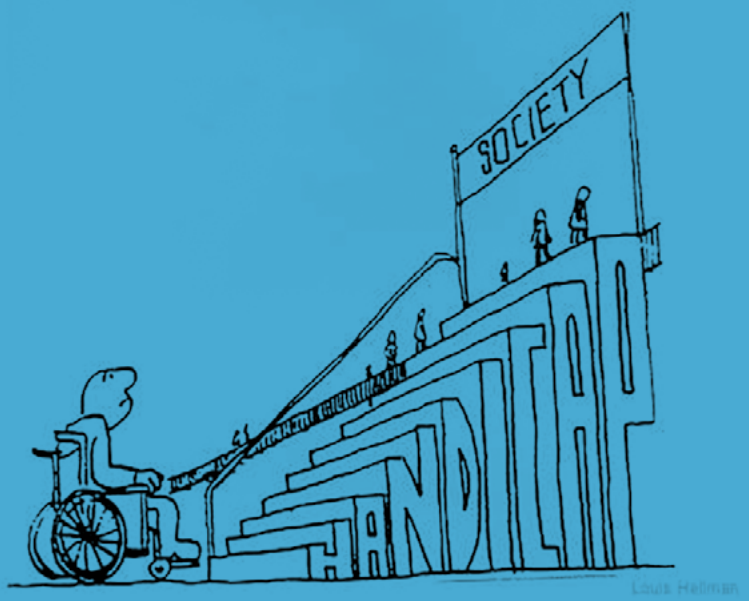
INCLUSIVE DESIGN IN THE BUILT ENVIRONMENT

WHO DO WE DESIGN FOR?

Training Handbook
March/April 2016

By Sandra Manley



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This handbook has been prepared to accompany training delivered on behalf of Welsh Government during March and April 2016 in Aberystwyth, Cardiff, Llandudno and Swansea. It also provides a resource for anyone seeking to understand more about inclusive design and its application.

It is important to recognise that the principles of inclusive design and the legislation and regulations relevant to inclusive design are evolving over time. This evolution occurs as society recognises the importance of designing inclusively and moves forward to make improvements. Always check the latest legislation, building regulations and most importantly recent ideas about the philosophy of inclusive design. Remember also that inclusive design needs good, imaginative designers and their designs should result in buildings and spaces that are not only inclusive, but also beautiful.

The training and this document have been developed and compiled by Sandra Manley, Visiting Research Fellow, University of the West of England, Bristol. The training was organised and promoted by Design Commission for Wales, RSAW, CEW and RTPI Cymru.

Sandra Manley was a Principal Lecturer at the University of the West of England in Bristol for over 35 years where she taught urban designers, planners and architects and acted as Associate Head of the Department of Planning and Architecture. She also ran the department's Short Course and Conference unit and taught many courses for built environment professionals herself.

In childhood she noted how a disabled family member was discriminated against and excluded from mainstream society and this undoubtedly influenced the development of her longstanding concerns about inequality of opportunity for all minority groups and for disabled people in particular.

In her teaching, conference papers and writing she has criticised the way in which the built environment continues to exclude many people, both at the level of building design and in relation to the streets and spaces that make up the public domain. Sandra has run short courses on behalf of RSAW on access auditing, inclusive design and designing for the ageing population. She has spoken at a number of conferences in the UK, Ireland, USA and most recently acted as keynote speaker in Jerusalem and Izmir. In her role as a Visiting Research Fellow at UWE she continues to lecture, undertake research and write articles about inclusive design. Her most recent contribution was a chapter in the Handbook on Green Infrastructure entitled 'Towards Inclusive Green Infrastructure.'

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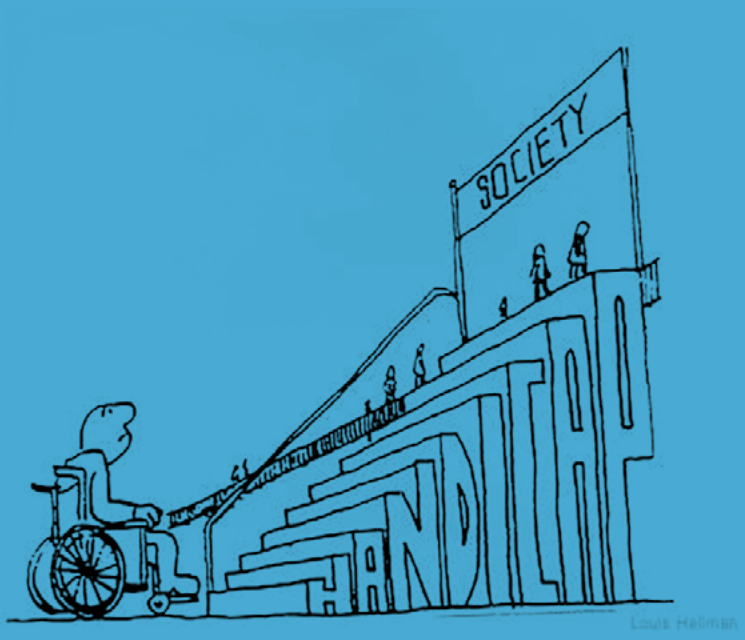


In this cartoon Hellman depicts the idea that it is society that creates the 'handicap' that disabled people experience

1 The Social Model of Disability

To understand the preferred social model of disability, it is necessary to consider the alternative models that have existed, in some cases, for centuries. The following explanations sum up the main characteristics of each.

Charitable Model

- Disabled people pictured as pitiable, rather helpless creatures, that deserved (or in some cases did not deserve) aid from charitable individuals or organisations or, more recently, from the state;
- Negative image of disabled people – stress on inabilities rather than capabilities with each person's situation seen as a personal tragedy;
- Often run by so-called non disabled people many of whom are or were motivated by religious beliefs;
- Removed independence and autonomy so that disabled people had little or no say in their lives or the running of charities;
- Tended to focus on physical impairments, but paid minimal attention to other aspects e.g. mental health issues, learning difficulties, hidden impairments, unless this was associated with locking away "deviants" in "special" schools or even asylums;
- Associated with exclusion from the mainstream e.g. "special" education.

Medical model

- Motivated by the desire to "fix" disabled people and hence achieve "normality" – disabled people seen as the "other" and separated from society;
- Defined disabled people by their impairment rather than as valued equal citizens. E.g. an epileptic, the blind, the deaf;
- The blame for any difficulties experienced in society seen as that of the disabled person rather than a failure of society to accommodate all its citizens;
- Disabled people had little or no say in the way that aid (or treatment) was distributed and prescribed or how organisations run;
- Often associated with a technical fix approach e.g. devices to overcome the barriers to access rather than a desire to remove the barriers.

Social model

- Acceptance that society has created many of the barriers that affect the opportunity of disabled people to participate in mainstream community life – hence emphasises the responsibility of society to remove barriers;
- Recognises the equality of disabled people and their rights as citizens;
- Rejects the dichotomy that separates disabled people from non-disabled people and accepts the diversity of the human condition;
- Recognises the mantra; "Nothing about us without us "– that is the right of disabled people to be participants in decision making in all spheres, but particularly in relation to matters that affect their lives;
- Recognises the desire for self-determination and independent living including the right to play, to education, to employment, to sport and leisure and all aspects of mainstream community life.

Quotations

Union of Physically Impaired Against Segregation (UPIAS) (1976) defined the social model as:

> "Disability [is] the disadvantage or restriction in activity caused by a contemporary social organisation which takes no or little account of people who have physical impairments and thus excludes them from participation in the mainstream of social activities. Physical disability is therefore a particular form of social oppression".

The Framework for Action on Independent Living, produced by the Welsh Government in 2013 states:

> "The Framework for Action gives practical effect to the social model of disability which the National Assembly for Wales adopted in 2002. This recognises that people are disabled by the barriers created by society, and that the guiding principles of policy should be:
>
> — to remove these barriers and create an enabling society
> — to promote the rights and full inclusion of disabled people."

Where next?

The social model is not without its detractors and perhaps no system can be perfect. It has been pointed out that even with a perfect social and cultural climate disabled people will nevertheless experience profound problems that cannot be overcome. However, the social model represents the best way forward to overcome barriers and facilitate the greatest possible opportunity for disabled people, which is in the best interests of disabled people and the economic and social life of everyone in Wales. Nevertheless, within the social model it is important to recognise the identity of individuals and not deny the existence of disabled communities e.g. People who communicate by British Sign Language see themselves as a recognisable group in society with their own language and culture.

References

> Union of Physically Impaired Against Segregation (UPIAS) (1976) Fundamental Principles of Disability, London: UPIAS.

> Welsh Government (2013) Framework for Action on Independent Living.

2 Language can be Disabling

2 Language can be Disabling

The principle of politically correct language often causes people to raise their eyebrows in disbelief and relate their own favourite story about the nonsensical nature of some attempts to be politically correct. However, there are some important aspects to consider regarding language use.

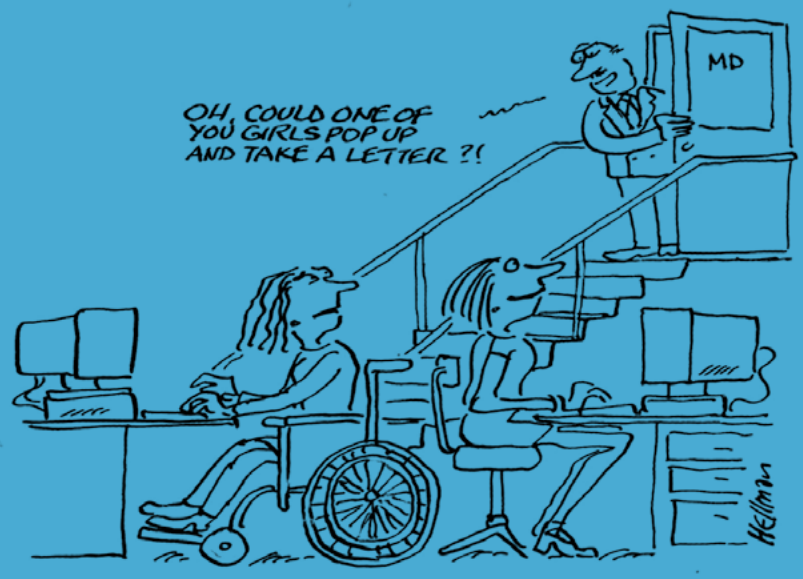
Use of inappropriate language can be disabling by reinforcing stereotypes about disabled people and implying that they have little or nothing to contribute to society. The general principle is to consider the person first and not the disability. It is worth noting that some disabled people have reverted to terminology that most people would regard as offensive. E.g. cripple or spastic. Similarly some people with a hearing impairment use the term "Deaf" (with a capital letter) to denote the fact that they are a member of the deaf community that has its own language and culture. Both these examples might be seen as part of an on-going political movement that aims to establish the rights of disabled people for equal treatment. If you work abroad different terms will be in use. However, as a general rule, the following language tends to be preferred by most disabled people, although in meeting individuals and different situations, you may find other language usage is preferred and you will need to adapt accordingly.

Throughout this course an attempt will be made to use positive language and to avoid giving offence to any person. However, if you find the language used in any way offensive, please accept an apology in advance.

Generally not recommended	Recommended
The disabled Less able	Disabled people
Able-bodied	Non-disabled
The elderly	Older people
Handicapped	Disabled person
Victim of ... (a named medical condition) or afflicted by...	Person with .... (medical condition) Or simply disabled person
He or she was "struck down with..." Is "stricken with", "is suffering from"	He/She has...
Mental, mad, insane	Person with a mental health problem or condition

Generally not recommended	Recommended
Retarded Educationally subnormal Mentally handicapped	Person with learning difficulties Person with a learning disability
Wheelchair bound Confined to a wheelchair	Wheelchair user
Epileptic	Person with epilepsy
Fits, spells	Seizures
Dwarf	Person of restricted growth or short stature
The blind	People with visual impairments Person who is blind or visually impaired Person who is partially sighted
The deaf	People with hearing impairments Person who is deaf, user of British Sign Language (BSL)
Deaf and dumb	Person who is deaf without speech
Disabled toilet	Accessible WC
Diabetic	Person with diabetes
Spastic	Person with cerebral palsy
Cripple	Person with mobility difficulties
Disabled access	Accessible entrance

3 The Equality Act 2010



An employer treats a disabled person less favourably than others

The Equality Act aims to tackle all forms of discrimination and encourage equality for people within the category of protected characteristics. For disabled people the built environment alone may limit even the chance of being discriminated in by an employer!

3 The Equality Act 2010

This Act replaced over 100 separate pieces of legislation that all dealt with aspects of fairness and equality including the Equal Pay Act 1970, The Race Relations Act, 1976 and the Disability Discrimination Act 1995. The Equality Act repealed and replaced previous acts.

The following is a summary of the Act:

Protected Characteristics

The Act protects people from discrimination on the grounds of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.

Disability

A person who has a physical or mental impairment that has a substantial and long-term adverse effect on his or her ability to carry out normal day-to-day activities is protected from discrimination by the legislation.

Discrimination is treating someone less favourably because of his or her protected characteristic e.g. age, disability etc.

Accessing services or public functions

Service providers have a duty to make "reasonable adjustments" to ensure that disabled people are not substantially disadvantaged when compared to non-disabled people.

What is a reasonable adjustment?

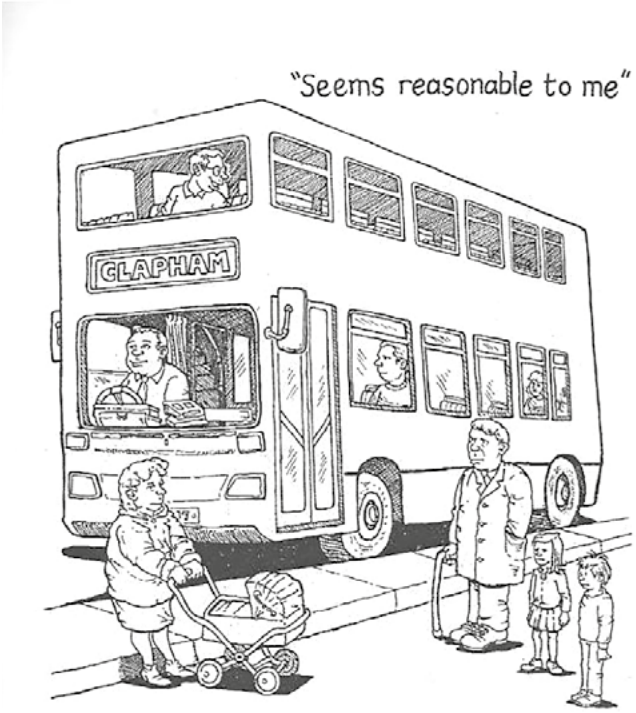
It is likely that the legislation left the definition of what is "reasonable" deliberately vague, so that over time a more rigorous approach could be taken without altering the primary legislation. This means that service providers have to make a judgement about what is reasonable. The courts, in interpreting the nature of reasonableness, are likely to take into account matters such as practicality and the extent of disruption involved in carrying out the work. The cost and the extent of the service provider's resources and expenditure to date plus the availability of grants will also be part of the assessment. The difficulty that disabled people face in accessing the services in question will obviously be pertinent. There is evidence that the courts are becoming more severe in their expectations of compliance than in the early years of the Disability Discrimination Act. The Act has been criticised because it places the responsibility for taking action against someone who discriminates (e.g. by failing to adapt a premises to enable access to the goods or service) on to the disabled person. This means that many disabled people feel unable to take action as they may be intimidated by the idea of taking legal action or be concerned about costs.

It makes sense for service providers who are making alterations to premises to achieve the best possible solution to meet the needs of disabled people, preferably through consultation with service users. In this way they can future proof their premises to the maximum extent possible.

Public sector equality duty

This duty obligates all public sector organisations to work to:

- eliminate unlawful discrimination, victimisation and harassment;
- promote equal opportunity for all; and
- foster good relations, promote understanding and challenge prejudice.



The legislation does not define what is 'reasonable'. In law, the 'man on the top of the Clapham omnibus, is often referenced as the ordinary person who can make a judgement about what is reasonable behaviour. Consequently in could be argued that the nature of reasonableness can change with changing public opinion. (Cartoon by Paul Revel).

4 A-Z Glossary – Differences in the human condition

The symbol that denotes accessible facilities for the use of disabled people has been adopted throughout the world and as an image could not have been more successful. However, it does not convey the huge diversity of the disabled population and may even be the reason why many people visualise a wheelchair user when referring to a disabled person. The reality is very different with wheelchair users making up a small proportion of disabled people.

4 A-Z Glossary – Differences in the human condition

It is impossible to list and explain the nature of the many different human conditions. This glossary does not attempt to be comprehensive in terms of providing a full list of conditions that might affect the way in which a person experiences the built environment, nor does it have any medical authority in describing the conditions listed, or have any intent to relate to the legal definition of disability. It does seek to demonstrate the diversity of the human condition. It is apparent that there is no standardised person for whom designers produce buildings and environments. Furthermore, there is no standardised or stereotypical disabled person, hence providing a list of categories is, in a sense, fatally flawed. However, the list seeks to provide some examples of differences that occur amongst the population and gives some ideas for the appropriate design response.

In many cases it is possible to see that a particular design response can facilitate use by many groups of people. Again the list of responses is not comprehensive and it is necessary to refer to appropriate publications to obtain full authoritative advice. A supplementary reading list and list of organisations where additional information can be obtained should be read in conjunction with this glossary.

Where relevant the percentage of people who have a particular condition is given in the appropriate column. It is important to warn against what has been described as the "sterile barriers of head counting". The important point here is that the designer should aim to design for the diverse human population.

Condition	Action
Ageing Many elderly people live full and active lives, but ageing can have effects such as: > reduced mobility, > physical agility, > reactions and stamina, > eyesight and hearing often diminished > tendency to feel the cold, > impaired vision, > hearing and smell > incontinence problems > difficulty with grip Diminishing height may cause difficulties with reach and tendency to giddiness. Trips and falls are more likely to occur. It is estimated that falls cost the NHS in the UK more than £2.3 billion per year (nhs://www.nice.org.uk/guidance/CG161) Cognitive disorders more likely - *see Alzheimer's*. 10 million people over 65 years old – 1 in 6 of UK population 3 million and rising are over 80 years old 800,000 people in Wales aged 50+,over 25% of population and rising to 1million in less than 20 years.	> Recognise the general need to enhance wellbeing and health. > Recognise the importance of reducing the number of trips and falls. > Consider need to enhance opportunities for contact for with people – loneliness is a significant problem that can lead to more significant health issues such as depression or other mental health problems. > Relationship of homes to facilities, such as shops and open spaces are especially important. > The walking range of an elderly person can be extended if adequate rest stops are incorporated into the built environment. This applies internally and externally. E.g. seating in public places. Resting places on stairs and handrails also helpful. > Clear signage and buildings and areas that are easy to "read" – legibility and good landmarks. > Considering effects of micro-climate and providing sunny, sheltered seating areas. > Contact and experience of the natural environment, seasonal change etc. Importance of view for standing or seated user. > Reduced grip and strength is often a characteristic of ageing – handrail design, fittings for sanitary ware, window openings etc. should take this into account. > En suite WC facilities and /or close relationship between living and sleeping areas and WCs can aid incontinence problems. Very important in care homes and sheltered accommodation. > WCs and furnishings should be designed to accommodate people who need a high level facility, but remember visitors to the building may be excluded if the design is completely focussed on the needs of older people.

Condition	Action
Alzheimer's Disease Alzheimer's is only one of over 100 different forms of dementia. A progressive, mainly irreversible, disease that gradually impairs cognitive intelligence and functional abilities eventually to the point where total care is needed from other people. Usually affects elderly people but some people in mid life also have Alzheimer's. Stress caused by confusion may be added to by environmental stresses e.g. coping with a confusing environment. Characterised by wandering away from home, which may cause fundamental conflict between the desire to promote the maintenance of the individual's dignity whilst ensuring his or her safety.	The designer's aim would be to increase the number of people that can operate effectively in the mainstream environment by reducing stresses caused by the built environment. In designing institutional environments consider the general principles that promote a healing environment. > Legibility – landmarks both within buildings and outside can help orientation > Safety – this should be at the level of people's perception of safety as well as promoting places that are actually safe. E.g. homely images rather than institutional images will promote a sense of security and make people feel safe. > Privacy and dignity – e.g. space to be alone. > Contact with nature – seasonal change is particularly appreciated. > Human contact and opportunity for social encounters. > In care homes safe routes for walking should be included both internally and externally.
AIDS Acquired immune deficiency syndrome. Causes severe loss of the body's immunity, greatly lowering resistance to disease. People experience exhaustion and lack of physical stamina.	See General mobility and principles of creating a healing environment.

Condition	Action
Walking / mobility problems There are many more people who have both temporary and permanent mobility problems than wheelchair users. Designing for this group maximises the number of people who can gain access to a building or place. In some historic buildings e.g. a castle it may not be possible to facilitate access by wheelchair but improving access for people with mobility problems will be useful. Interpretation of historic buildings by other means may be necessary for wheelchair users. Amputation of a limb may be the result of an accident or disease and causes particular problems. Younger people who have been fitted with an artificial limb usually fare well and are able to walk. Older people find adaptation difficult. Many other conditions affect walking (see General mobility).	> People who have had a leg amputated generally find steps easier than ramps as an entrance to a building. > Handrail design very critical for this group. > Handrails should be of warm materials e.g. timber and should be colour contrasted with background. Section of handrail should be easy to grip. > Rest places internally and externally – with arms to facilitate use are essential. *See also General mobility*
Autism A condition that is characterised by great difficulty in communicating and forming relationships with other people. Many people with this condition are fearful in noisy environments and have difficulties with orientation.	> Principles of creating a healing designed environment are relevant. > Design solutions that are helpful for people with hearing impairments are also useful as noisy environments are often stressful for people with autism. E.g. noisy hand driers may make it impossible for an autistic person to use WC facilities. > Providing quiet areas in schools, offices and other public buildings can be helpful to provide a place of retreat. > Legibility of the building, neighbourhood etc particularly important as disorientation increases stress.
Cerebral palsy A condition marked by impaired muscle co-ordination (spastic paralysis) typically caused by damage to the brain before or after birth or spinal cord injury. Many people with this condition have difficulty walking. Many have no intellectual impairment.	*See General mobility.*

Condition	Action
Chemical insensitivity The precise effects of toxic contaminants in homes and workplaces are unknown, but it is possible that some substances may affect everyone. It is known that some individuals are particularly intolerant of chemicals that are routinely used in buildings e.g. adhesives. Symptoms for the individual may vary. Respiratory conditions often involved.	> Avoid use of materials that may be harmful to people and /or the natural environment. > Consider the likely maintenance regime for surfaces e.g. polishes and treatments for certain flooring may contribute to chemical insensitivity. > Discourage the use of perfumed air fresheners or other highly perfumed chemical substances.
Childhood Characterised by limited height, reach, grip and strength making it difficult and sometimes dangerous to reach everyday items and use facilities safely. Sharp corners e.g. on reception desks are often at the eye height of small children. Inability to understand the location and extent of danger is a characteristic of early childhood. Desire for freedom of movement and exploration is a characteristic.	> Need for space and freedom to develop in environments outside as well as within parental/ carer's control. > Formal and informal play opportunities in outdoor and indoor environments. Children with disabilities need to be considered in the design and equipping of play spaces. > Easy and safe routes to facilities especially to schools to facilitate independence and personal development and reduce car traffic given tendency for "school run" by car to be main means of transport. > Internally considering size and strength limitations should be taken into account. In public buildings WCs and washbasins should be provided for children and people of limited stature. Handrails can be designed to facilitate use by children. > Safety in the home an important consideration as many accidents occur in the home environment. > Space to store equipment such as baby buggies important in both home and public buildings.

Condition	Action
Dyslexia A condition that affects an individual's ability to read or interpret letters, words and symbols. More common in males. Does not affect general intelligence. Estimates indicate that up to I in 10 people experience dyslexia.	> Clear, unambiguous signage is important. Use of lower case lettering and avoidance of vertical lettering for information signage. > Symbols can be helpful as addition to written text for signage. > Importance of clear unambiguous use of English in letters, web sites and at public events. > Models and other visual representation will assist communication of design ideas.
Epilepsy A medical condition that is characterised by sudden loss of consciousness. Seizures may be accompanied by jerking movement of the limbs. It is important to realise that cognitive ability may be completely unaffected by the condition.	> In cases where accommodation is being adapted for a person with severe epilepsy the need to avoid sharp corners to furniture and fittings is important. Carpets are preferred to harder flooring. Hazards should be minimised and protected. E.g. fires.
General mobility problems There is a huge range of different conditions that affect mobility to varying degrees 1 in 10 adults have some form of disability. 1 in 4 households in the UK have one member with some form of disability. About 4% of the disabled population use a wheelchair on a permanent basis.	> Entrances should be level if possible. Clear opening width of a minimum of 800mm.Consider exits as well as entrances especially fire doors. > Door furniture should be easy to grip and simple to manipulate. Internal doors should be kept to a minimum to comply with fire regs. Automatic doors may be necessary for heavily used areas. > Ramps at entrances to buildings if level change involved to facilitate wheelchair access. 1 in 20 is considered level. 1 in 15 adequate. 1 in 12 is the absolute minimum. Rest place at the top of the stairs is essential.

Condition	Action
General mobility problems (continued)	> Steps should also be provided to provide choice for all users. > Steps and ramps should have handrails which should be usable for the purpose as well as attractive e.g.: - – Of comfortable material and section to facilitate grip. – Adequately colour contrasted with background. – Extend to the end of the flight of steps. – Not made of a material that becomes icy cold in bad weather conditions. > Steps and ramps (and other flooring) should be of non-slip materials. E.g. timber decking is not good if likely to become wet, nor are highly polished surfaces, deep pile carpets or coconut doormats. > Steps should be of adequate width with standard rising and going. They should have: > Good lighting, clear colour contrast and tactile warnings at top and bottom. > Nosings should be integral and provided with distinguishable colour and tone. > Nosings should be integral and provided with distinguishable colour and tone. > Corridors and circulation space should be unobstructed and logically arranged. Consider siting of paraphernalia such as fire extinguishers integrally with design to avoid future obstructions. Specify non-slip surfaces for flooring. > Counters and reception desks should be set at a height to accommodate a range of different users. > Lifts should be large enough for wheelchair users to turn and reverse out of the lift. Time delay must be sufficient for wheelchair user or ambulant disabled person to negotiate without accident. (5 seconds minimum.) > WC provision should comply with minimum specification but note inadequacy of guidelines for provision of WCs generally. > In housing storage of wheelchair and or scooter needs to be considered in design and layout and arrangements for transfer. In public buildings scooter and wheelchair storage in entrance areas should be considered.

Condition	Action
Heart disease This can take the form of sudden heart failure or a heart attack caused by restriction of the blood supply to the heart. Other conditions cause pain and breathlessness. NB Large increase in numbers of people who have surgery that affects mobility and stamina for a considerable period of time.	Stamina is often affected. Fear of further incidents leads to tendency to remain in the home environment. > Safe, local routes to facilities with adequate resting places can reassure people who have had heart attacks and other types of heart disease. General advice on mobility also applicable.
Hearing impairments Huge range of different types of hearing loss. Some people use British Sign Language, which is increasingly recognised as a language and culture in its own right. Many elderly people experience gradual loss of hearing. 10 million people in the UK have some form of hearing loss, or one in six of the population. More than 800,000 people in the UK are severely or profoundly deaf. 530,000 people in Wales have hearing loss. Source: RNID www.actiononhearingloss.org	> Provide induction loops or infra red systems in public buildings. > Safety of people with hearing impairments in the event of fire must be considered to ensure that alarms alert people to dangers. > Consider need particularly at entrances/ reception areas, lifts, escalators, telephones, security phones, fire and smoke alarm systems. > Good acoustic design is essential. Consider the problem of reverberations caused by hard surfaces e.g. in cafes and restaurants, public buildings. > Ensure adequate lighting to facilitate lip-reading especially at points of communication e.g. reception areas, counters / checkouts in shops and supermarkets, banks and public offices. Need to consider privacy issues in situations where embarrassment may occur through public airing of a person's private business. > Avoid busy background textures, wallpapers/ graphics at points of communication that might conflict with ability to lip read.

Condition	Action
Learning difficulties There are many different types of learning difficulties. Some are congenital e.g. Down's Syndrome, some may be acquired difficulties e.g. through accident or illness.	> Healing design performance criteria are relevant. (See under Alzheimer's Disease.) > Promoting confidence and a sense of personal safety is crucial for independent living. > Legible environments, clear, concise, consistent signage that avoids ambiguity. Pictograms and symbols can be helpful, preferably accompanied by written word. Many people are taught a social vocabulary so departures from standard terminology may confuse people.
Ménières Disease This condition is associated with a disorder of the inner ear. It can cause spells of vertigo, nausea and vomiting and in many cases either short term or long term hearing loss. Visual disturbances, poor physical co-ordination, disorientation and in some cases complete collapse can prevent people with the disease from participating fully in mainstream activities.	> Many of the aspects relevant to both hearing loss and visual impairment are relevant. E.g. Need for soft surfaces to absorb sound and reduce background noise. > Extreme patterns on floors or walls may act as triggers for the disease. Extreme fatigue that often follows a severe incident mean that physical mobility issues are relevant.
Multiple sclerosis Usually involves a progressive deterioration in mobility and concentration. May involve numbness, reduced muscle co-ordination and fatigue. May affect speech, eyesight, continence.	See General mobility, but note that people may also have visual impairments.
ME (Myalgic Encephalitis) Chronic Fatigue Syndrome Condition characterised by exhaustion and flu like symptoms that may persist for many years or even become permanent.	*See General mobility*

Condition	Action
Osteoarthritis Causes painful inflammation and stiffness of the joints. Affects manual dexterity making it difficult to manipulate everyday features such as door handles, locks, taps, switches etc Reduces personal mobility and physical effort e.g. makes stair climbing difficult.	*See General mobility*
Parenting Early years parenting often associated in carrying of heavy bags and equipment. Need to wheel child or children in restricted areas can cause fatigue and frustration. Frequent visits to WCs characterised in early years parenting.	*See General mobility* > Internal space standards of homes should make provision for storage of buggies and other equipment. > Relationship of homes to schools and facilities especially important. > Considering effects of micro-climate and providing sunny, sheltered seating areas near play spaces and playgrounds. > Considering need for contact with people and other children. Needs of children with disabilities should be incorporated into play spaces etc. > Ground floor WC and baby changing area in homes. Baby changing space in WCs in public buildings. Should be unisex for fathers and other male carers. Provision of more WCs for women to take into account needs of children and longer time spent in WC by women.

Condition	Action
Pregnancy Fatigue is a characteristic of early and late pregnancy. Increased weight gain and medical complications of pregnancy may affect mobility and ability to bend, reach and withstand arduous physical activities. Sickness in early pregnancy and frequency of need to urinate in late pregnancy mean availability of WCs is crucial. Pregnant women often affected by excessively hot environments Strongly scented air fresheners etc may increase sickness	*See General mobility* > Provision of more WCs for women.
Respiratory complaints Difficulty in breathing associated with many illnesses including asthma, bronchitis, chemical insensitivity, heart disease, emphysema, tuberculosis etc.	> Cold and damp rooms may exacerbate respiratory disorders > Importance of seating both in external and internal environments to increase the range of individuals with breathing disorders. > Ensuring adequate airflow through buildings. Note that concerns about ventilation of deep plan buildings are associated with an increase in diseases such as tuberculosis, asthma etc. May be conflicts of interest in relation to energy efficiency > Use of chemicals for cleaning/ air fresheners/ perfumes can provoke asthma attacks. This should be strongly discouraged.
Rheumatoid arthritis A chronic progressive disorder that causes pain and loss of mobility caused by severe inflammation in the joints of the wrists, fingers, feet and ankles. NB not confined to elderly people.	> Particularly important to consider designing door, window furniture and other control systems to facilitate easy use. > Handrails on stairs, ramps etc must be easy to grip. Section of handrail important. Metal handrails very difficult.
Spinal injuries Affect mobility to varying degrees.	*See General mobility*

Condition	Action
Stroke A sudden disabling attack or loss of consciousness caused by an interruption to the flow of blood to the brain, usually through thrombosis. People who have had strokes may have difficulties caused by partial paralysis and speech problems.	*See General mobility and visual impairments*
Visual impairments Huge range of different types of impairment e.g. tunnel vision, blurred or misty vision, spots or dark patches restricting vision, difficulty in ability to discern detail. Inability to determine distances is a problem for many people with visual impairments e.g. loss of vision in one eye or loss of peripheral vision makes judgement difficult. Impaired colour discrimination affects a considerable number of people especially in the red green range. 2 million people in the UK are living with sight loss. Sight loss affects people of all ages - especially older people: 1 in 5 people aged 75 and 1 in 2 aged 90 and over are living with sight loss. Note that many people need glasses to overcome sight difficulties but may have to remove these in some situations e.g. swimming pools. Inclusive design in leisure centres and pools is particularly important	> Legibility important at scale of town, area and building. > Wayfinding needs are obviously a major issue. Logical layout is useful for wayfinding. In buildings and streets adopting a vocabulary of textures can be helpful. > Sounds and smells can facilitate orientation e.g. fountains, box hedges etc. > Avoid mixed messages and ambiguity. > Tactile models can aid wayfinding and provide interpretation e.g. of tourist attractions. > Need for clearly defined edges to paths and vehicular routes. > Avoid obstructions in streets or approaches to buildings e.g. bollards, street furniture, trip hazards. Low bollards can be particularly dangerous for people with sight impairments. > Crossings should be provided with tactile warnings. > Signage advice particularly important. > Steps contrasting colour and distinctive nosings- well lit and avoid people negotiating steps in their own shadow. Provide tactile warnings at top and bottom of stairs. Different textures e.g. of flooring type can give messages such as “this is a circulation area” to visually impaired people. > Lighting -avoid pools of light and dark and glare especially at entrances and note the problems associated with moving from dark to light by considering entrance lighting. Note that excessive amounts of white on white e.g. sanitary fittings plus white tiles, white flooring can create glare. > Revolving doors are difficult to negotiate for visually impaired.

Condition	Action
Visual impairments (continued)	> Doors should be colour contrasted to walls. Fully glazed entrance doors are difficult to "read" and often end up with stickers, notices etc to warn people of danger. The result is unsightly appearance. > Busy design details can distract people with poor vision. Simple colour schemes tend to work best. > Door furniture should be clearly contrasted to door also light switches, lift buttons etc. Provide tactile embossed information. > Avoid glossy floors, walls and surfaces -glare and reflection unhelpful > Audible announcements should be provided in lifts. > Space for guide dogs in auditoria and public buildings where seating involved. > Security systems e.g. swipe card systems, entry phones etc must be usable by people with sensory impairments.

5 Organisations and Useful Addresses

5 Organisations and Useful Addresses

There are literally hundreds of organisations that represent the interests of disabled people. The most useful addresses in respect of design and built environment issues are given below. Some organisations represent people with a particular type of disability only, but others take a more holistic view. If you need general information on design issues the Centre for Accessible Environments is a good starting point.

Part 1
UK based

Access Association
> www.accessassociation.co.uk

The Access Association aims is to improve access and facilities for disabled people and consequently for all people who would benefit from an accessible environment. The Access Association was formed in response to the need to network and support professionals.

Action on Hearing Loss
(formerly Royal National Institute for Deaf People RNID)
> http://www.actiononhearingloss.org.uk
> www.rnid.org.uk

Supports people with hearing impairments. Consultancy on environmental needs of people with hearing impairments.

The ADAPT Trust
Access for Disabled People to Arts Premises Today (ADAPT)
> http://www.thedispensary.org.uk/physical/health-directories/the-adapt-trust

Encourages arts and heritage venues to create better standards of access for disabled people.

ADAPT provides awareness training, awards for excellence and a consultancy service. No longer provides grant aid.

Age UK
> www.ageuk.org.uk/

Organisation that works with and for older people. Provider of local services and advice for older people. Campaigning organisation that attempts to influence public and political opinion to improve the quality of life for older people.

Business Disability Forum
> http://www.businessdisabilityforum.org.uk

Membership organisation that supports employers. They measure and improve performance for disabled customers, clients or service users, employees and stakeholders.

The British Dyslexia Association
> http://www.bdadyslexia.org.uk

The BDA aims to influence government and other institutions to promote a dyslexia friendly society, that enables dyslexic people of all ages to reach their full potential. It is estimated that 7 million people in the UK experience some form of dyslexia.

Tritish Standards Institution
> http://www.bsigroup.com

Publishes British Standards including BS Codes of practice such as BS 8300:2009 Design of buildings and their approaches to meet the needs of disabled people.

Cadw (Heritage in Wales)
> www.cadw.wales.gov.uk

Protect the built heritage in Wales and can advise on conflicts of interest in relation to accessibility and protection of listed buildings and monuments.

Changing Places
> http://www.changing-places.org

Advice on provision of adult changing areas.

Commission for Architecture and the Built Environment (CABE)
> https://www.gov.uk/government/organisations/commission-for-architecture-and-the-built-environment-cabe

CABE was a non-departmental public body responsible for advising government on architecture and urban design. It merged into the Design Council in 2011 under the Coalition Government – many of its publications are useful and can be accessed in the archive.

Centre for Accessible Environments

> http://cae.org.uk

Promotes accessible environments.
Provides information, training and advice.
Produces useful publications on access auditing and design advice.
Runs the National Register of Access Consultants.

Constructing Excellence in Wales

> http://www.cewales.org.uk/

Promote excellence in the built environment and help the industry to improve its performance to deliver better quality and value for money.

Design Commission for Wales

> dcfw.org

Aims to make Wales a better place for all by promoting the importance of good design for the built environment Attempts to connect the design disciplines.

Disabled Living Foundation

> http://www.dlf.org.uk/living-made-easy

Provides information on aids and equipment. Database of products to assist disabled people in public buildings.

Disabled Persons Transport Advisory Committee (DPTAC)

> https://www.gov.uk/government/organisations/disabled-persons-transport-advisory-committee

The Disabled Persons Transport Advisory Committee (DPTAC) advises the government on transport legislation, regulations and guidance and on the transport needs of disabled people, ensuring disabled people have the same access to transport as everyone else.

The Dog Rose Trust

> dogrose.trust.org.uk

Research and development to raise standards of provision for perceptually impaired especially those with sensory impairments. Advice on access to the countryside.

Interpretation of tourist venues.

Equality and Human Rights Commission

> www.equalityhumanrights.com/

Has a mandate to challenge discrimination and to protect and promote human rights. This includes disabled people but also other groups defined as people with protected characteristics, namely age, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.

The Fieldfare Trust
> www.fieldfare.org.uk/

Campaigns for better access to the countryside and provides advice.

The Guide Dogs for the Blind Association
> http://www.guidedogs.org.uk/

Guide Dogs Cymru
> https://www.guidedogs.org.uk/guide-dogs-cymru/#.Vs84pfmLTcs

Support people with visual impairments and work to make streets safe for all users. Sponsor research. Guide Dogs Cymru offer training in the use of tactile paving.

Habinteg Housing Association
> www.habinteg.org.uk/

Pioneer of the Lifetime Homes Principles. Innovation in housing design. Publications on many aspects including Wheelchair Housing and housing for people with sight loss.

Helen Hamlyn Foundation
The Helen Hamlyn Centre for Design at the Royal College of Art undertakes design research and projects that aim to contribute to improving people's lives – especially older people. The centre carries out research and works closely with industry to achieve better design for products and environments.

JMU Access Partnership
> http://www.jmuaccess.org.uk

Promote inclusive environments
Undertake research, audits, design appraisals.
Provide information, training and publications

Royal National Institute for the Blind (RNIB)
> www.rnib.org.uk

Very proactive in relation to promotion of more accessible environments. Support research and promote accessible design. Design advice available and Braille translation service.

RSAW
> https://www.architecture.com/RIBA/Contactus/OurUKoffices/Wales/Wales.aspx

Royal Society of Architects in Wales is voice of architects in Wales, promotes learning through provision of CPD and conferences.

RTPI Cymru

> http://www.rtpi.org.uk/the-rtpi-near-you/rtpi-cymru/

RTPI Cymru promotes planning as a profession and builds links with other built environment professions and organisations throughout Wales.

Scope (formerly the Spastics Society)

> www.scope.org.uk

Disability organisation that supports people with cerebral palsy. Organises campaign for equal rights for disabled people, assists with education of people with cerebral palsy, conducts research.

Part 2
International Organisations

Adaptive Environments

374 Congress Street
Suite 301
Boston
MA 02210

Boston based organisation that promotes the principles of a universal approach to design, undertakes research, organises international conferences. Currently responsible for the development of an e-mentoring scheme designed to support people with disabilities who wish to become designers. Contact Daniel if you would like to become an e-mentor.

Center for Universal Design

School of Design
NC State University
USA
> https://www.ncsu.edu/ncsu/design/cud/

Source of the principles of universal design.
Promotes universal design and spreads knowledge.
Produces documents on design and videos.
Collaborates with business and industry.

EDeAN European Institute for Design and Disability

> http://www.education.edean.org/index.php?row=2&filters=f31&cardIndex=1

Promotes design as a response to disability at the European scale
Undertakes studies and research.

Universal Design Newsletter

6, Grant Avenue
Takoma Park
MD 20912-4324
> www.UniversalDesign.com

Newsletter focused on American experience, but some useful articles on research, design tips, new products, books etc.

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6 The Principles of Universal Design

6 The Principles of Universal Design

Introduction

The Principles of Universal Design should be looked at in conjunction with the Principles of Inclusive Design (Section 7). Compiled, as is indicated by the long list of contributors shown below, by a mixed group of people that included academics, professional architects and planning practitioners, disability activists and disabled people, the principles led to the widespread use of the term Universal Design to denote the importance of adapting the built environment to meet the needs of disabled people. The principles have been criticised on the basis that the use of the word universal implies a one size fits all solution, whereas the reality is very different because of the diversity of different needs. The principles nevertheless provide a useful reminder of what needs to be taken into account.

The principles are given here in full for copyright reasons.

Version 2.0 - 4/1/97
Compiled by advocates of universal design, listed in alphabetical order: Bettye Rose Connell, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, and Gregg Vanderheiden. Major funding provided by: The National Institute on Disability and Rehabilitation Research, U.S. Department of Education. Copyright 1997 NC State University, The Center for Universal Design.

Universal Design

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

The authors, a working group of architects, product designers, engineers and environmental design researchers, collaborated to establish the following Principles of Universal Design to guide a wide range of design disciplines including environments, products, and communications. These seven principles may be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments. The Principles of Universal Design are presented here, in the following format: name of the principle, intended to be a concise and easily remembered statement of the key concept embodied in the principle; definition of the principle, a brief description of the principle's primary directive for design; and guidelines, a list of the key elements that should be present in a design which adheres to the principle. (Note: all guidelines may not be relevant to all designs.)

Principle 1: **Equitable Use**

The design is useful and marketable to people with diverse abilities.

Guidelines:

> 1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

> 1b. Avoid segregating or stigmatizing any users.

> 1c. Provisions for privacy, security, and safety should be equally available to all users.

> 1d. Make the design appealing to all users.

Principle 2: **Flexibility in Use**

The design accommodates a wide range of individual preferences and abilities.

Guidelines:

> 2a. Provide choice in methods of use.

> 2b. Accommodate right- or left-handed access and use.

> 2c. Facilitate the user's accuracy and precision.

> 2d. Provide adaptability to the user's pace.

Principle 3: **Simple and Intuitive Use**

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

> 3a. Eliminate unnecessary complexity.

> 3b. Be consistent with user expectations and intuition.

> 3c. Accommodate a wide range of literacy and language skills.

> 3d. Arrange information consistent with its importance.

> 3e. Provide effective prompting and feedback during and after task completion.

Principle 4: **Perceptible Information**

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

> **4a.** Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.

> **4b.** Provide adequate contrast between essential information and its surroundings.

> **4c.** Maximize "legibility" of essential information.

> **4d.** Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

> **4e.** Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Principle 5: **Tolerance for Error**

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

> **5a.** Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.

> **5b.** Provide warnings of hazards and errors.

> **5c.** Provide fail safe features.

> **5d.** Discourage unconscious action in tasks that require vigilance.

Principle 6: **Low Physical Effort**

The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

> **6a.** Allow user to maintain a neutral body position.

> **6b**. Use reasonable operating forces.

> **6c.** Minimize repetitive actions.

> **6d.** Minimize sustained physical effort.

Principle 7: **Size and Space for Approach and Use**

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

> 7a. Provide a clear line of sight to important elements for any seated or standing user.

> 7b. Make reach to all components comfortable for any seated or standing user.

> 7c. Accommodate variations in hand and grip size.

> 7d. Provide adequate space for the use of assistive devices or personal assistance.

Please note that the Principles of Universal Design address only universally usable design, while the practice of design involves more than consideration for usability. Designers must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their design processes. These Principles offer designers guidance to better integrate features that meet the needs of as many users as possible.

7 The Principles of Inclusive Design

City Hall, London, Designed by Foster and Partners, 2002 for Greater London Authority.

This venue is easily accessed by wheelchair users and anyone with a mobility problem, but for visually impaired people the lack of colour contraast between walls and floor and the relections would be confusing. For hearing impaired the number of hard surfaces would be likely to cause confusing reverberations.

7 The Principles of Inclusive Design

The Evolution of Inclusive Design

The UK was one of the first countries to accept that the built environment needed to adjust to facilitate greater equality and opportunity for disabled people. The Chronically Sick and Disabled Persons Act of 1970 was an early example of the move towards appreciation of the need for change and it encouraged the provision of some basic facilities for disabled people. However, the approach was voluntary and the legislation did not make great inroads to change the disabling nature of society as a whole and the disabling nature of the built environment in particular. Groundbreaking work by commentators such as Selwyn Goldsmith and the Centre for Accessible Environments did start to move things forward and the Building Regulations made a significant contribution to change, but it was not until the passing of the Disability Discrimination Act in 1995 that progress started to accelerate. Many different terms were used to convey the idea of creating more inclusive environment, such as *barrier free, accessible design, design for all, social sustainability* and many others.

Meanwhile in the USA the Americans with Disabilities Act of 1990 was passed and the Center for Adaptive Environments based in Boston worked with The Center for Universal Design at NC State University to produce the Principles of *Universal Design* (see Handout 6) which received recognition as the way forward by many countries in the world as far afield as India, Japan and Australia and closer to home in many of the European countries. UK organisations and commentators on inclusion were somewhat troubled by the principles – the name itself seemed to imply that a single design solution could be made to fit everyone's needs, whereas in reality the diversity of the human condition meant that there would be conflicts of interest between the needs of people with widely varying needs. In consequence the idea of inclusive design emerged as a preferred term in the UK. Increasingly, as Ostroff, one of the original team that devised the principles comments (Ostroff, 2011), 'many countries are adopting the term inclusive design and in the USA the terms *inclusive design* and *universal design* are often used interchangeably'.

CABE's Principles of Inclusive Design (ID)

There are many commentaries on what is meant by the principles of inclusive design. In 2006 the Commission for Architecture and the Built Environment (CABE), now part of the Design Council, produced a document that attempted to sum up the principles in a straightforward manner and this provides a useful starting point. However it is important to recognise that inclusive design must be integrated into other principles of good design. It cannot stand alone and ignore other legitimate concerns. An obvious matter that is sometimes neglected by campaigners on inclusive design is the need to design beautiful places. Ignoring this aspect could lead to poor design because of an over-concentration on maximizing accessibility. Crucially the designer must balance all interests and attempt to manage conflicts of interest to achieve the best possible solution. The table below is based on CABE's principles.

Principle	Information
Places people at the heart of the design process	Inclusive design seen as an essential component of sustainable communities.
Acknowledges diversity and difference	Recognises the wide diversity of different needs including wheelchair users, but also sensory impairments, learning difficulties, mental ill health, hidden impairments and the needs of children and parents.
Offers choice for users in acknowledgement that a single solution that fits all users is not possible.	Accommodating for all people regardless of their age, gender, mobility, ethnicity or circumstances.
Flexibility in use	Link to sustainable principles by acknowledgement of the need for adaptability in design to meet different needs at different stages.
Convenient and enjoyable places for everyone.	Well connected buildings and streets Understandable so that everyone knows where they are and can locate their destination.

The argument advanced by CABE is that the principles lead to a development that is:

> Inclusive
so everyone can use it safely, easily and with dignity

> Responsive
takes into account what people say they need and want

> Flexible
so different people can use the buildings and places in different ways

> Convenient
so everyone can use it without too much effort or separation

> Accommodating
for all people regardless of their age, gender, mobility, ethnicity or circumstances

> Welcoming
with no disabling barriers that might exclude some people

> Realistic
offering more than one solution to help balance everyone's needs and recognising that one solution may not work for all

> Understandable
everyone knows where they are and can locate their destination

Source: CABE (2006) *The principles of inclusive design (they include you)*.

8 Lifetime Homes

8 Lifetime Homes

The emergence of Lifetime Homes

In the late 1980s the Helen Hamlyn Foundation and Habinteg Housing Association were the pioneers of the concept of Lifetime Homes following discussions about the fact that many homes failed to accommodate the needs of older people, particularly when their mobility was restricted. Later the Joseph Rowntree Foundation brought together housing experts to develop the concept in more depth, to create 16 lifetime homes criteria which have been revised several times to take into account the practicalities of using the standards in both the public and private sectors.

The idea behind the lifetime homes philosophy is to ensure that the home can be adapted to meet the needs of a family over time. Wales acted early to calls to ensure that publically funded housing met lifetime homes criteria. The principles aim to achieve adequate space for ease of approach and use benefits everybody, but particularly families with young children. In later years the adaptability of a home to accommodate an older person can be crucial. Ideally most people want to remain in their own homes even if personal mobility declines or if illness occurs. A Lifetime home is much more likely to be usable for the end of life care for an older person and may result in successful ageing in place. According to Age UK only 3% of homes are designed to standards that can accommodate a person with reduced mobility. This results in cost to the community particularly if people have to wait in hospital until adaptations have been carried out; a situation inelegantly termed 'bed-blocking' which adds to NHS costs. However the cost to the individual in terms of stress and fear and the impact on the grieving family is a much higher cost.

Principles of Lifetime Homes

The criteria are based on an overarching set of principles that relate to:

> Inclusivity
A place usable by everyone regardless of age, gender, or disability

> Accessibility
Accommodating the widest range of people that is possible

> Adaptability
Building in the idea of future proofing dwellings so that adaptations can be more easily carried out

> Sustainability
Creating a strong and stable community

> Good value
Starting out to design with flexibility in mind from the beginning of the design process limits extra costs and reduces the cost of later adaptations.

Technical Design Considerations

These relate to six key sections, namely;

Approaching the home	> Making approaches to dwelling convenient and practical. > Parking provision to be close to home and of sufficient width to be useful for wheelchair users (3300mm). > Accessible routes (width 900mm) between dwellings with no gradient exceeding 1:60 and minimal crossfall and no trip hazards or obstructions. > Good lighting and adequate color contrast.
Entrances	> Accessible thresholds and entrances. > Weather protection at entrances. > Minimum level landing area of 1200mm x 1200mm clear of door swing.
Internal circulation within communal areas	> Sufficient space to enable wheelchairs and baby buggies to negotiate the route conveniently and safely. > Handrails essential and contrasting surfaces to risers and treads on internal staircases. > Lift controls to be large and of contrasting colours with audible as well as visual signs/ signals.
Entrance level facilities	> Scope for temporary bed space at entrance level. > Potential for through floor lift. > Accessible WC, basin and shower at entrance level. > Walls capable of supporting firm fixing for hand rails, grab rails etc.
Circulation and accessibility within the home	> Circulation to meet needs of maximum number of people possible. Not necessarily to wheelchair accessibility standards but enabling visitability.
Service and ventilation controls	> All controls to be positioned for use by a wide range of household members.

References

- Age UK, *Housing in Later Life*, Age UK
- Goodman,C (2011) *Lifetime Homes Design Guide*, Habinteg Housing Association, IHS BRE Press.

9 Signage and Wayfinding: some key considerations

9 Signage and Wayfinding: some key considerations

General

1. Logical layouts of sites and buildings with hierarchical organisation of spaces are easier to understand for all users - this also assists people with visual impairments and makes for easier escape in the event of an emergency;
2. Landmarks should be provided to help orientation;
3. Colour can be used as a useful signal for certain features in a building - e.g. highlighting facilities such as WCs by common colour code; research has been done to determine adequacy of colour contrasts needed;
4. Pictograms and symbols can help people to locate themselves – usually best when accompanied by written text. Minimum size of lettering or pictogram at 3m viewing distance is 100mm and maximum of 170mm;
5. Tactile maps and models at the entrance to a site or building can aid orientation and wayfinding;
6. Conventional maps can be used effectively to help wayfinding, identify accessible routes and main facilities.

Signage

1 Signage should be consistent and unbroken along main routes. The need to reassure people that they are on the right route should be taken into account.

2 Signs should be sited :-

- where they are well lit;
- where background does not have low level sunlight or artificial light which restricts visibility of the sign;
- where they do not cause obstruction or unnecessary clutter (unnecessary signage can cause confusion as well as being aesthetically displeasing);
- where they can be seen by all users, bearing in mind wheelchair users will be at a lower level;
- where there is sufficient contrast to the background to enable people to locate the sign. E.g. a white sign with black lettering may not be seen against a light wall;

3 The design of the sign should: -

- have light lettering against a dark background. E.g. white lettering on dark blue background;
- give consideration to background of the wall on which the sign is displayed to ensure appropriate contrast ;
- avoid colours that may be difficult for some users e.g. red and green not easy to distinguish for many people;
- always be in lower case- people with visual impairments find upper case lettering much more difficult to read;
- be kept simple – e.g. Information rather than Public Enquiries
- be well lit, but with no bright lights behind the sign;
- have sans serif lettering e.g. Arial or Helvetica;
- have a matt surface. Shiny or reflective surfaces or signs covered by glass, Perspex etc will cause glare and make reading the sign impossible for many users;
- have braille incorporated into the design - the sign can have a notch at the side to help visually impaired braille users locate the braille information - without this the incorporation of braille will not be helpful. Braille information should be easy to reach;

- have tactile embossed lettering and raised pictograms. Must be easily reached - important locations include lift buttons, door numbers, NB it is possible to obtain conversion kits for existing poorly considered lift buttons e.g. stainless steel on stainless steel is a common provision that is difficult for many users;
- consider including symbols as an additional aid to communication but they should not be esoteric - research indicates that the closer the symbol is to the real thing the more people will understand it. Very small, subtle symbols often confuse rather than clarify;
- lettering should be a minimum of 100mm at 3m viewing distance. Maximum of 170mm. 20mm minimum for signs that can are readable very close to the reader.

Signs may need to be supplemented by audible warnings e.g. lifts, fire warnings.

References

- Barker,P and Fraser,J (2000) *Sign Design Guide*, JMU Access Partnership, London
- BS 6034 British Standard for Public Information Systems
- Joint Mobility Unit and University of Reading (Bright, K)(1997)
- *A design guide for the use of colour and contrast*, ICI Paints.

This signage, by including pictograms does explain its intentions quite well. It is sad that a relatively new building, The Tate Gallery in St Ives resulted in separate entrances for disabled users and parents with children.

10 Key Messages on Design and Access Statements

10 Key Messages on Design and Access Statements

1 The Statement should commence early in the design process and should evolve as the scheme proceeds. It should not be a **POST-HOC** rationalisation.

2 The **DESIGN PROCESS** should be transparent and easy to understand by telling the story.

Assessment - Involvement - Evaluation - Design

3 **LOCAL CONTEXT** should be explained holistically to include the physical, social, economic and environmental situation.

4 The Statement should respond to **PUBLIC CONSULTATION** and **EXPLAIN** how the public have been involved including any changes made to meet local concerns.

5 The **DESIGN PHILOSOPHY** should be explained to demonstrate how the design ideas have emerged from an **ANALYSIS** of the **CONTEXT** and consideration of responses to **CONSULTATIONS.**

Consideration should be given to:-
Amount - Layout - Scale - Landscaping - Appearance

6 The way the scheme responds to **NATIONAL** and **LOCAL POLICY FRAMEWORK** and other statutory requirements or emerging concerns e.g. designing for a healthy population or reducing opportunities for crime, should be addressed.

7 **INTEGRATE** design and access to deliver **INCLUSIVE DESIGN** that takes into account all user needs irrespective of e.g. age, gender, disability, ethnicity etc and social grouping. Design and access should not be as two separate themes **ACCESS** should include consideration of vehicular access, plus access and use by cyclists and pedestrians, all other users and links to transport networks especially public transport. An inclusive approach to public consultation should be part of the overall process.

8 The DAS should be a means of **COMMUNICATION** and should take into account the needs of multiple audiences (avoiding jargon and technical language) and the different needs of recipients.

9 The Statement should address the long-term considerations of ongoing **MANAGEMENT** of the place to achieve a sustainable building or community.

10 The Statement should demonstrate how **QUALITY** will be achieved and what extra value will be added. It should **MARKET** the scheme to the local community and decision makers.

See also

> Design and Access Statements in Wales - What, Why and How
http://dcfw.org/design-and-access-statements-in-wales/

11 Listening and Communicating

11 Listening and Communicating

Written Information

The public often complain that professionals are not good listeners. It is very important to make sure that in communicating with the public, particularly with young people, disabled people or elderly people, that you take the trouble to really listen to concerns and communicate your ideas clearly. If you are explaining a design scheme for example, you may find it useful to consider the advice of the Plain English Campaign when composing the text. This will make the information accessible to a greater number of people than if you use terminology that people do not understand. Further information can be obtained from: - www.plainenglish.co.uk/

Some general guidelines: -

- Be careful about the use of professional jargon that may be difficult for many but completely incomprehensible to some people;
- Include a glossary if legal, technical or architectural terms must be used;
- Keep structure of document clear and provide headings and subheadings;
- Keep sentences short;
- Provide illustrations such as photographs, plans etc., but always include a caption to explain the illustration;
- Use a clear typeface. E.g. Arial. Avoid underlining and block capitals;
- Provide information in alternative formats, preferably tailored to the needs of the individual user. This may be for example on tape, computer disk, audiotape, large print or video.

Some advice on large print formats

Large print format should be at least 16 point bold with sans serif typeface. Do not use block capitals, underlining or italics, as these are more difficult to see for visually impaired readers. Headings should be reversed to white print on a dark background. Coloured paper can help many people with visual impairments - old gold is normally the preferred colour, but any light colour is normally acceptable. Avoid typing on busy backgrounds, vertical type, and dark backgrounds with black or dark coloured type, which does not give a good contrast.

Alternative formats

For information in Braille, audiotape and large print contact:
Royal National Institute for the Blind Transcription Service.

Organising meetings

If you are organising a public meeting e.g. to seek community views on a design scheme, publicise the scheme or consult with the local access group, you will need to provide an accessible venue for the meeting. There are many matters to consider such as the need to: -

- Publicise the meeting in an inclusive way and ensure that people with hearing impairments are not forgotten;
- Ensure you know who is attending so that you can fulfil their needs and ensure information is accessible;
- Provide an accessible venue, close to bus routes and or train station;
- Consider the need for parking spaces for use by disabled participants and check that the route from the space to the venue is not obstructed;
- Ensure signage is accessible and well placed;
- Ensure that accessible WCs are available and changing space for children;
- Ensure seating arrangements provide for wheelchair users, guide dogs hearing dogs for deaf people etc. Consider circulation space;
- Provide a loop system for hearing impaired people;
- Ensure acoustics are good or use PA system;
- Provide sign language interpreters if needed for people whose first language is BSL;
- Ensure catering arrangements consider a range of dietary needs and that caterers are aware of any allergies or intolerances. Food should be marked if it contains any ingredients likely to cause problems. Provide different types of cups and straws;
- Factor in breaks for WC usage.

See Disabilty Wales for further guidance http://www.disabilitywales.org/toolkit/practical-resources/accessible-meetings-and-events/

Designing websites

Websites should be accessible to everyone regardless of an individual's impairment but many organisations and service providers are unaware of the importance of designing accessible websites. Consult the Web Accessibility Guidelines (WCAG) at https://www.w3.org/standards/webdesign/accessibility for further advice.

You may need to draw the attention of your clients to the need for accessible information e.g. for a website explaining a design proposal, advertising a service or selling a product. Making services accessible by the web may be part of reasonable adjustment for some service providers who have major problems with physical access to their premises.

It is important for designers to remember the mantra – Nothing about us without us – and develop the ability to really listen to people and act to secure designs that will meet wants and needs.

The lady in the foreground is 101 and her daughter – pushing the wheelchair is 78, but both were articulate and able to express their dissatisfaction with aspects of both the external and internal built environment.

12 Designing for Specific Needs: Care Homes

12 Designing for Specific Needs: Care Homes

Homeliness

- Aim to create a sense of home to enhance well-being and avoid an institutional impression that tends to alienate residents.
- Divide larger homes into smaller domestic scale units to help to increase homeliness.
- Provide space for social interaction.
- Provide common spaces of different scale, size and type
    - Private space: private rooms to furnish and decorate with familiar personal objects, pictures etc.
    - Quiet zones to enable residents to get away from the noise and bustle of the community, and maintain their dignity.

Walking routes

- Provide inside and outside walking routes for exercise and to satisfy the desire to be on the move that is a characteristic of dementia.
- Routes should be safe, attractive and recognisable through the incorporation of landmarks.
- Seating of different types, designs, colours located in social groups along routes

Safety and security

- Necessary security e.g. to prevent dangerous wandering by dementia patients should be unobtrusive and/or disguised e.g. security fence disguised by planting.

Wayfinding and legibility

- Contrast in colour can assist wayfinding and distinguish doors and walls, especially to facilitate location of facilities such as dining room, WC etc.
- Doors not available to residents can be made more obscure.
- Clear signage with reinforcement of routes by repeated signage.
- Use of pictograms can help with wayfinding.

Daylight, sunlight and artificial lighting

- Maximising exposure to daylight and sunlight can help to establish circadian rhythms that encourage restful sleep.
- Patches of dark areas are to be avoided as they may induce fear and paranoid tendencies.
- Good lighting but not glare; avoid dark colours at ground level that may be perceived as voids.

Healing gardens

- Providing space for seasonal plants and opportunities to engage with nature tend to enhance wellbeing.
- Include sensory stimulation through planting, colour, perfume etc.
- Providing a range of views to outdoor space, gardens etc.
- Scope for gardening e.g. raised planting boxes or tending animals can enhance quality of life.

Choice and quality

- Providing choice for residents in every aspect, e.g. seating, spaces to relax, places to walk, places to socialize and places to be alone.
- Recognise dignity of residents and enhance scope for health and well-being.
- Design for beauty and quality as people with dementia are not immune to the appreciation of beautiful places.

References

- Greasley-Adams,C, Bowes, A, Dawson, A and McCabe, L, *Good Practice in the Design of Homes and Living Spaces for People with Dementia*, University of Stirling. Dementia Services Development Centre (DSDC)

To maximise the wellbeing of dementia patients care homes should include green space, space for sitting and routes for walking.

13 Summary of Welsh Government Framework for Action on Independent Living

This plaque was placed on a building by Southark Council in 1937. The original statement – attributed to Cicero fourteen centuries earlier - is 'Salus populi suprema est lex' in Latin. What could be more important to Wales than enabling citizens to live independent lives.

13 Summary of Welsh Government Framework for Action on Independent Living

General summary

- Reinforces the importance of the *Social Model of disability* adopted by the National Assembly for Wales in 2002.
- Recognises that people are disabled by the barriers created by society and accepts the responsibility to remove these barriers and create an enabling society that promotes the rights and full inclusion of disabled people.
- Recognises the business case for tackling barriers to inclusion.
- Provides a more detailed programme of action in relation to Objective 5 of the Welsh Government's Strategic Equality Plan and Objectives, first published in April 2012.
- Objective 5 aims to:

  > Tackle barriers and support disabled people so that they can live independently and exercise choice and control in their daily lives.

- In attempting to achieve Objective 5 the Welsh Government Framework for Action aims to ensure that the Public Sector Equality duty, set out in the Equality Act, is taken seriously by monitoring performance of the public sector.
- Reinforces the importance of sustainable development and the role of equality in achieving sustainable communities.

Core values

The core values stress the importance of self-determination and independent living for disabled people. These values are stated as:

1. **Confidence** – empowered disabled people working constructively with public, voluntary and private organisations to achieve better outcomes.

2. **Co-operation** – effective coalitions and organisations of disabled people, sharing good practice, collecting evidence of problems and giving individuals a stronger voice.

3. **Co-production** – disabled people working in partnership with public services and the private sector to identify problems and solutions, tackle delivery issues, and maximise opportunities for improvement. This approach can be applied in relation to provision of services to children as well as adults.

4. **Choice and control** – individuals having the same choice and control as other people in the way they live their lives and receive support from others."

Actions

To achieve independent living the government sets out a series of actions that should be taken. All these actions are relevant, but the actions indicated boldly in blue are particularly pertinent to built environment professionals. Some suggestions of what this might mean are also given as examples.

1. Having access to good quality and accessible information and advice.

2. Improved access to independent advocacy services.

3. **Improved access to adapted and accessible housing.**
   E.g. Increase in available lifetime homes and homes adapted for wheelchair users.

4. Having more control over their lives by being able to make choices in the care and support they receive

5. Having access to technology that supports independent living.

6. **Better access to public transport.**
   E.g. station improvements, improved access to trains via raised platforms at train stations, more accessible streets and pathways on key routes to bus and train stations.

7. **Improved access to buildings, streets and public places.**
   E.g. More effective use of Design and Access Statements where required using the principles of inclusive design as a guide for new development. Accessible streets and public spaces.

8. Increased employment rates for disabled people.

9. An increase in the number of disabled people having access to a Centre for Independent Living in Wales.

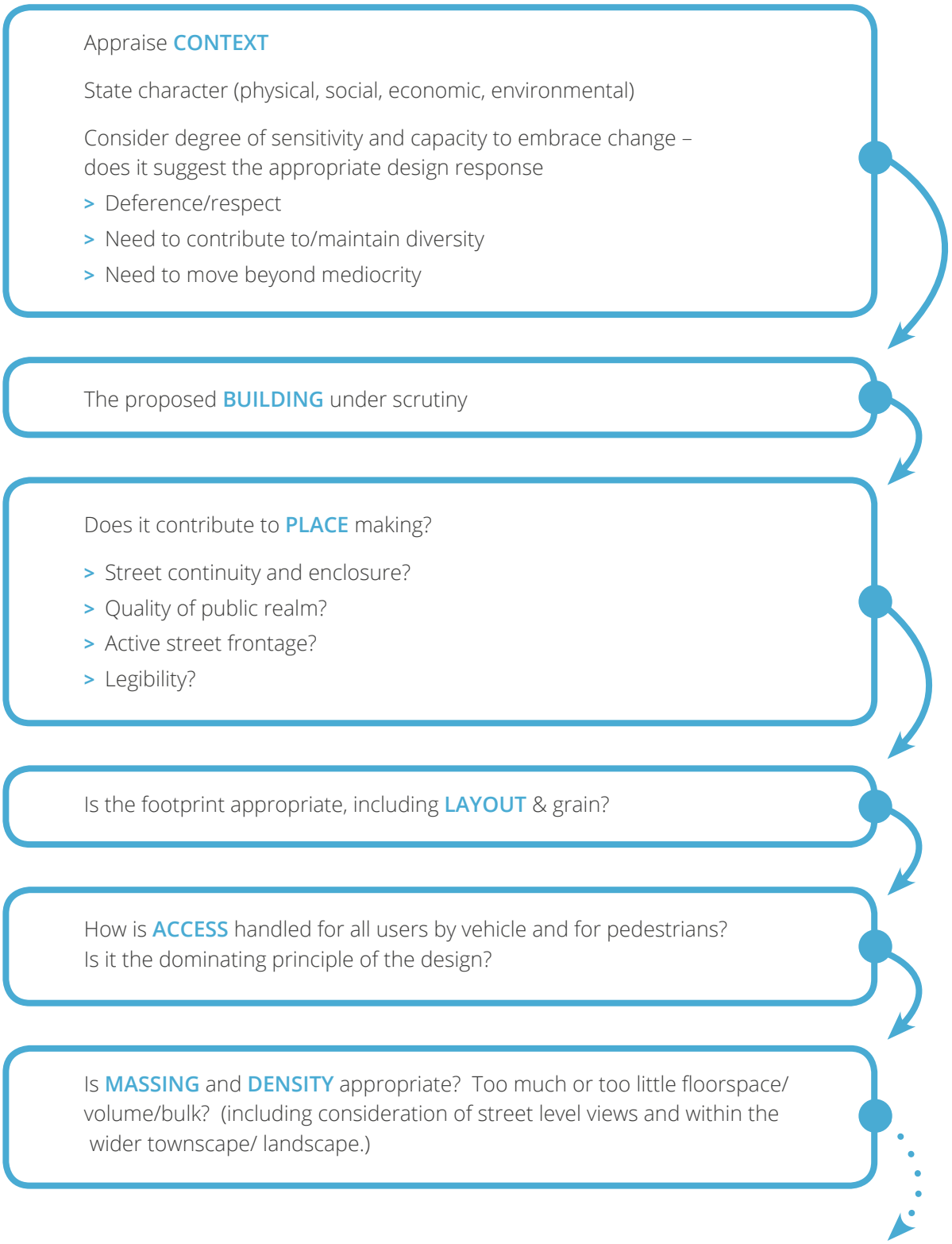
References

> Welsh Assembly (2014) Welsh Government Framework for Action on Independent Living.

> Ageing Well in Wales 2014-19.

14 Assessment of Building Design: a decision-making structure

14 Assessment of Building Design: a decision-making structure




Is the HEIGHT, at street level and in wider context, appropriate?
Is LANDSCAPE design (hard and soft) integrated into design? Are landscape traditions respected? Is bio-diversity enhanced and human health and well-being? Has SLOAP (space left over after planning) been avoided?
Is the SCALE appropriate? Is RHYTHM respected through solid/void relationships, elevational subdivision/fenestration pattern?
Does the design embrace the ENERGY agenda for sustainable development and reduction of carbon emissions?
Are MATERIALS and colours appropriate?
Is the design INCLUSIVE of all users and considerate of human health and well being?
Is there evidence of SCHOLARSHIP and CRAFTSMANSHIP?
Would the building cause no harm to existing heritage assets?
Would it be a positive asset/enhancement?
Is the building "special"? Evidence of DELIGHT?
Grant PLANNING PERMISSION

15 Inclusive Design Reading List

15 Inclusive Design Reading List

This reading list does not attempt to be comprehensive, but it provides some key references on specific topics that may help to lead you to other appropriate material. A brief commentary explains the nature of the text or other resource where this might be helpful. The items are grouped into categories for easy reference and some may appear in more than one category. A large print version of this list, or other appropriate format is available on request.

Access Audits

- Centre for Accessible Environments, Access by Design,
  Quarterly journal on inclusive design, includes useful examples.
- Grant, A (2012) Designing for Accessibility, Centre for Accessible Environments, London.
  Very useful guide with well illustrated practical examples of design problems and solutions. Can be read in conjunction with the Audit Checklist (also produced by CAE) to explain how to undertake an audit.
- Grant, A (2013) Access Audit Handbook, London: Centre for Accessible Environments
  A clear explanation of how to conduct access audits. Includes checklists. It is focused on auditing individual buildings rather than the public realm. See www.cae.org.uk

Background reading

- Barnes, C (1991) Disabled People and Discrimination in Britain, Hurst and Co
  A classic text about discrimination that has been influential in the campaign for equal rights for disabled people.
- Goldsmiths, S (1963; 1967; 1976) Designing for the Disabled, RIBA Publications, London.
  A landmark text. Still very relevant.
- Goldsmith, S (1997) Designing for the Disabled: The New Paradigm
  An authoritative book given the influence of Selwyn Goldsmith's 1963 Designing for the Disabled. A preferred title today might omit the term" the disabled" which is disliked by many disabled people.
- Manley, S (1998) Creating Accessible Environments. Chapter in Introducing Urban Design: Interventions and Responses. Greed, C and Roberts, M (ed.s), Longmans.
  Now somewhat out-dated by events, but still one of the relatively few texts that relates to access to the public realm as well as buildings.
- Silver Jubilee Committee (1979) Can disabled people go where you go? Silver Jubilee Access Committee, Department of Health and Social Security, Richmond House, 79 Whitehall, London SW1
  Early call for a more inclusive environment. Mainly of historic interest and indicative of the slow progress towards equality for disabled people.

> Welsh Assembly Government. 2009. Technical Advice Note 12: Design. Cardiff: Welsh Assembly Government. Available at: http://wales.gov.uk/topics/planning/policy/tans/tan12/?lang=en

British Standards Institution (BS Standards)

> BSI (2009,2010) BS 8300:2009 +A1:2010 Design of buildings and their approaches to meet the needs of disabled people. (See http://www.bsi-global.com/group.xalter)

> BS1 (2010) BS 6465-4:2010 Sanitary installations. Code of practice for the provision of public toilets

Building components

> Alderson, A (2010) Stairs, ramps and escalators: inclusive design guidance, CAE/RIBA Publishing, 2010, available to order at CAE website www.cae.org.uk

> Grant, A (2005) Specifiers' Handbooks for Inclusive Design – Architectural Ironmongery, CAE/RIBA Publishing, 2005, available to order from CAE website www.cae.org.uk

> Grant, A (2005) Specifiers' Handbooks for Inclusive Design – Automatic Door Systems, by Alison Grant, CAE/RIBA Publishing, 2005, available to order from CAE website www.cae.org.uk

> Grant, A (2005) Specifiers' Handbooks for Inclusive Design – Platform Lifts, CAE/RIBA Publishing available to order from CAE, website www.cae.org.uk

> Alderson, A (2006) Specifiers' Handbooks for Inclusive Design – Glass in Buildings, CAE/RIBA Publishing, available to order from CAE, website www.cae.org.uk

> Alderson, A (2006) Specifiers' Handbooks for Inclusive Design- Internal Floor Finishes, CAE/RIBA Publishing, 2006, available to order from CAE, website www.cae.org.uk

> Lacey, A (2004) Good Loo Design Guide CAE/RIBA Publishing, available to order from CAE, website www.cae.org.uk

Building types and uses

Art

> Cave, Adrian (2007). Making Existing Buildings Accessible: Museums and Art Galleries. London: RIBA

Sports and leisure

> Access for Disabled People, Sport England, 2010, can be downloaded from the Sport England website www.sportenglandpublications.org.uk

> BT Countryside for All: Accessibility Standards for Countryside Recreation, by the Fieldfare Trust, 1997, second edition, 2005, available from the Fieldfare Trust website www.fieldfare.org.uk

> British Disabled Angling Association (2015) Access to Angling Now Inclusive Angling – Access Guidelines for Fisheries, see www.bdaa.co.uk
This organisation campaigns for access to angling. Note that angling is probably the most popular leisure activity in the UK.

- Buhalis, D and Darcy, C (2010) Accessible Tourism: concepts and issues, Bristol, Buffalo and Toronto, Channel View Publications.
- Football Stadia Improvement Fund and Football Licensing Authority, (2003) Accessible Stadia.
- Football Stadia Improvement Fund and Football Licensing Authority (2015) Accessible Stadia – supplementary guidance
  Good practice guidance for the design of facilities to meet the needs of disabled spectators and other users.
- Wycliffe Noble, C (2004) Access for Disabled People to Arts Premises: The Journey Sequence, by C and Goffrey Lord, Architectural Press, 2004, can be ordered from the RIBA Bookshops website www.ribabookshops.com

Public realm

- Manual for Streets - Guidance for practitioners involved in the planning, provision and approval of new residential streets and modifications to existing ones. March 2007
- Manual for Streets 2 - Wider Application of the Principles, a companion guide to Manual for Streets, was published by the Chartered Institution of Highways and Transportation on 29 September 2010.
- English Heritage, Streets for all: A guide to the management of London's streets, English Heritage, 2000
- Manley, S (2001) Creating an Accessible Public Realm in Preiser, WFE & Ostroff, E (ed.s) (2001) 1st edition and 2nd edition updated 2011 edited by Preiser, WFE and Smith, K Universal Design Handbook, McGraw-Hill USA
- Sight Line: designing better streets for people with low vision, (2010), Helen Hamlyn Centre / CABE
- Sinnett, D, Smith, N and Burgess, S (ed.s) (2015) Handbook on Green Infrastructure, Cheltenham: Edward Elgar Publishing.
- Everything you need to know about green spaces includes chapters of direct relevance to accessible green infrastructure by Greed, C, Ensuring Green Infrastructure for all, and Manley, S, Towards Inclusive Green Infrastructure.
- Tower Hamlets Council (2012) Inclusive Design Advice: Public Realm
  A useful summary of advice. Quite well illustrated.

Rural

- British Telecom/Fieldfare Trust (1997) Countryside for All Standards and Guidelines
- The Countryside Agency (2000) Sense and Accessibility The Countryside Agency 2000
- The Countryside Agency (2001) Paths without prejudice

Legislation, Regulations and Codes of Practice

- The Building Regulations 2010, Approved Document M: Access to and use of buildings (2010 edition), The Stationery Office, 2010
- Equality and Human Rights Commission, Technical Guidance on the Public sector equality duty: Wales, available to download at http://www.equalityhumanrights.com/wales/public-sector-equality-duty-in-wales/
- BS 8300:2009 + A1: 2010 Design of buildings and their approaches to meet the needs of disabled people – Code of practice, British Standards Institution, 2010, can be ordered from the British Standards Institution's websitehttp://www.bsi-global.com/Building/Disability/bs8300.xalter Welsh Government (2013) Framework for Action on Independent Living, available at: http://gov.wales/topics/people-and-communities/equality-diversity/rightsequality/disability/framework-for-action/?lang=en

Design guidance

- Barker, P., Barrack and Wilson (1995) Building Sight, London, RNIB
  A useful book that should be read in conjunction with other texts. Concentrates on visual impairment, as the name would suggest.
- Barker, P and Fraser,J (2000) Sign Design Guide- a guide to inclusive signage, JMU Access Partnership, London, www.jmuaccess.org.uk
- Bright, K., Cook, G. and Harris, J., (1997) Colour, Contrast and Perception-Design Guidance for Internal Built Environments, Joint Mobility Unit and University of Reading
- Bright, K (et al) (2000) Colour and Contrast-Design Guidance for Internal Built Environments, ICI Dulux Ltd.
- Cook, G; Bright, K; Access Journal 18 - Spring 2005 - Colour and Luminance Contrast - What, Why, How and When?
- Grant, A (2012) Designing for Accessibility, London: Centre for Accessible Environment/s RIBA Publishing.
  Very useful general book of guidance that has evolved over a number of years.
- Harker, M & King, N, (2002) Designing for Special Needs – an Architect's Guide to briefing and designing options for living for people with learning disabilities, The Shirley Foundation
- Penton, J (1999) Widening the eye of the needle: access to church buildings for people with disabilities, Church House Publishing
  Concentrates on adaptations to make church buildings accessible. Some advice on new build.
- The Seven Principles of Universal Design at http://www.design.ncsu.edu/cud/
  An influential set of principles devised by the Center for Universal Design in the USA through the establishment of a working group pf architects, product designers, engineers and environmental design researchers as well as disabled people, including the well known (in the US) disabled campaigner, Ron Mace. The principles can be used to evaluate existing designs, guide the design process and educate designers and consumers about the characteristics of more usable products and environments. What we describe as inclusive design may be termed universal design in many European countries, the USA and eastern countries such as Japan and India.

- Accessible London: Achieving an Inclusive Environment, The London Plan Supplementary Planning Guidance 2014
- The Accessible Office: designing the inclusive workplace, JMU Access Partnership, 2005
- Designing for Special Needs – an Architect's Guide to briefing and designing options for living for people with learning disabilities, Maurice Harker and Nigel King, RIBA Enterprises, 2002, can be ordered from the RIBA Bookshops' website www.ribabookshops.com
- Tower Hamlets Council (2014) Inclusive Design Advice: Housing.
  A useful summary of design advice. Some of the examples chosen are rather pedestrian in relation to design quality, but overall this is a useful document.

Education

- Christopherson, J.,(Ed) (2002) Universal Design :17 ways of thinking and teaching, Husbanken.
- Global Universal Design Educators Network http://www.universaldesign.net
- Lifchez,R (1997) Rethinking Architecture:design students and physically disabled people, Berkely,California, University of California Press
- Manley,S.and Parnaby,R (2001) Putting People First: comparing vision and reality in the architecture and planning course at UWE.
- Ostroff, E., (2002) Strategies for Teaching and Recruiting Designers for an Inclusive World, Paper given at the Scientific Contact Forum, Brussels, Belgium, 17th May.

Fiction

- Haddon, M (2004) The Curious Case of the Dog in the Night time. Vintage

Housing

- Carroll, C, Cowans, J and Darton, (1999) Meeting Part M of the Building Regulations and Designing Lifetime Homes, Joseph Rowntree Foundation, York
- Heywood, F (2001) The effectiveness and value of housing adaptations The Policy Press and Joseph Rowntree Foundation 2001
- Habiteg GML Architects Lifetime Homes Living Well Together achieving sustainable flexible homes with in high density neighbourhoods", Joseph Rowntree Foundation and Greater London Authority 2003
- Pathways to Accessible Housing a model for local authorities to assess the housing and support needs of wheelchair users Habinteg Housing Association Ltd and The Papworth Trust. info@habinteg.org.uk *Website contains a set of criteria for accessible housing with illustrations*
- Bonnett, D and Marshall, R (2007) Wheelchair accessible housing, London: GLA. Historic buildings
- CADW: Welsh Historic Monuments (2002) Overcoming the Barriers Providing Physical Access to Historic Buildings

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  Provides a series of case studies of historic buildings and demonstrates good practice in achieving accessible historic buildings.
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- Penton, J (1999) Widening the eye of the needle: access to church buildings for people with disabilities, Church House Publishing
  Concentrates on adaptations to make church buildings accessible. Some advice on new build.
- Roome, H Access to Historic Buildings for People with Disabilities, In Bright, K (ed) Disability: Making Buildings Accessible – Special Report, Workplacelaw Network
- Foster,L (1997) Access to the Historic Environment, Donhead.
  Now rather old, but remains useful as it contains a good range of well illustrated examples of how to overcome problems of gaining access to historic buildings in a way that preserves the integrity of the building and provides a humane solution for users.

International perspectives

- Ostroff,E(ed.) Proceedings of "Designing for the 21st Century II, An International Conference on Universal Design" www.adaptenv.org/21century/.
- Imrie, R, (1996) Disability and the City: International Perspectives, London: Paul Chapman Publishing
  A scholarly account of the work of LPA's in achieving good access. Remains relevant in spite of its age.
- Preiser, WFE & Ostroff, W (ed.s) (2001) Universal Design Handbook McGraw-Hill USA
  Very comprehensive handbook on all aspects of universal design. Gives an international dimension. Includes discussion, advice and case studies on access to built environments as well as products e.g. web sites that impinge on the work of architectural and planning practice
- Wijk ,M(ed), (1996) European Concept for Accessibility Netherlands, CCPT,

Journals and newsletters

- Access by Design produced by the Centre for Accessible Environments
  Very useful. Many case studies and ideas for solving access problems.

Legislation

- Wadham, J (2010) Blackstone's Guide to the Equality Act 2010, Blackstones.

Research papers

- Imrie, R, Wells P, (1993) Disablism, planning, and the built environment, Environment and Planning C: Government and Policy,
  Considers the work of planning authorities in the move towards better access by drawing on a research project of LPA's in Wales
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  A scholarly account of the work of LPA's in achieving good access.
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Rights argument

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- Oliver,M (1990) The Politics of Disablement, Macmillan,London.
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Specific disability issues

- Joint Mobility Unit and University of Reading, Bright, K, (1997)
  A design guide for the use of colour and contrast, ICI Paints.
  See also website.www.construct.rdg.ac.uk

Transport and the external environment

- Inclusive Mobility: A guide to best practice on access to pedestrian and transport infrastructure, by Philip R Oxley, Mobility and Inclusion Unit, Department for Transport, 2002 - can be downloaded from the Department for Transport website www.dft.gov.uk
- BT Countryside for All: Accessibility Standards for Countryside Recreation, by the Fieldfare Trust, 1997, second edition, 2005, can be ordered from the Fieldfare Trust website www.fieldfare.org.uk
- Access for All design guide, Environment Agency, 2012 can be downloaded from the Environment Agency website http://www.environment-agency.gov.uk/research/library/publications/141756.aspx

- Landscape Design for Elderly and Disabled People, by Jane Stoneham and Peter Thoday, can be ordered from the Sensory Trust's website www.sensorytrust.org.uk
- By All Reasonable Means: Inclusive access to the outdoors for disabled people, The Countryside Agency, 2005 - Can be downloaded from the Countryside Agency website www.countryside.gov.uk/LAR/ByAllReasonableMeans.asp
- Easy Access to Historic Landscapes, English Heritage and Heritage Lottery Fund, 2005

Signage and wayfinding, visual contrast and lighting

- Sign Design Guide – a guide to inclusive signage, Peter Barker and June Fraser, JMU and the Sign Design Society, 2000, can be ordered from JMU Access Partnership's website www.jmuaccess.org.uk
- Building Sight, Peter Barker, Jon Barrick and Rod Wilson, RNIB/HMSO, 1995, can be ordered from the RNIB bookshop website http://onlineshop.rnib.org.uk
- Code for Interior Lighting, Chartered Institute of Building Service Engineers, CIBSE, 1997, can be ordered from CIBSE's website www.cibse.org
- The Colour, Light and Contrast Manual: Designing and Managing Inclusive Built Environments, Bright and Cook, Wiley-Blackwell, 2010
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- Good Signs – Improving signs for people with a learning disability, Disability Rights Commission, 2004, can be downloaded from the Equality and Human Rights Commission's website www.equalityhumanrights.com
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- Accessible train station design for disabled people: a code of practice, Department for Transport 2011
- Reducing mobility handicaps: towards a barrier-free environment, Institution of Highways and Transportation, 1991
- PAS 78:2006 Guide to good practice in commissioning accessible websites available to download on the Equality and Human Rights Commission's website www.equalityhumanrights.com

Website design

- RNIB, Sensory Disabilities Research Unit and Pacifica Films, Websites that work, video and Worldwide Web Accessibility Initiative website at http://www.w3.org/WAI
- Web Accessibility Initiative (WAI), more information on the website www.w3.org/WAI/

Wales

- Ageing Well in Wales 2014-19

Acknowledgements

Author:
Researched, written and compiled by Sandra Manley

DCFW project team:
Jen Heal, Urban Designer, DCFW Design Advisor;

Images:
Special thanks to Louis Hellman for agreeing to the inclusion of some of his cartoons that sum up so well many of the aspects that disadvantage disabled people in the built environment

Design:
Marc Jennings, Graphic Design: www.theundercard.co.uk