Housing for Varying Needs

A Design Guide

Part 1: Houses and Flats
Part 1: Houses and Flats

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ACKNOWLEDGEMENTS

The production of the guidance has been overseen by a small Steering Group. For Part 1 this was comprised of representatives from the following:

Age Concern
Convention of Scottish Local Authorities
Disability Scotland
Joint Mobility Unit of the RNIB and GDBA
Royal Incorporation of Architects in Scotland
Scottish Federation of Housing Associations
Scottish Federation of House Builders
Scottish Homes Regional Offices

Representatives from The Scottish Office attended Steering Group meetings as observers.

Scottish Homes wishes to thank the many individuals who have contributed to the development of this guidance as members of the Steering Group or in other ways and in particular:

Helen Carlin and Jess Barrow - Age Concern
Tom Lister - Joint Mobility Unit
Alison Smith - Royal Incorporation of Architects in Scotland
Archie Stoddart - Scottish Federation of Housing Associations
Michael Vipond - McCarthy and Stone
and all those who took part in the consultation process

Whilst every care has been taken in the preparation of this work, it is intended as general guidance, and Scottish Homes is not responsible for its application in a particular situation.
This guidance has been produced by Scottish Homes at the request of The Scottish Office. The request followed the publication of the Disability Scotland report of the Ewing Inquiry into housing in Scotland for people with a physical disability. One of the recommendations of this was that Scottish Housing Handbooks 5 and 6, *Housing for the Elderly* and *Housing for the Disabled*, produced by The Scottish Office in the late seventies, should be reviewed and updated to incorporate barrier free standards. In addition to this The Scottish Office requested that the review should cover further client groups with particular needs, including community care users and other vulnerable client groups, and the forms of accommodation included in Scottish Housing Handbook 7, *Housing for Single People, Shared Accommodation and Hostels*.

The review and the surrounding issues emphasised the fact that much had changed in the overall approach to housing provision for people with specific needs and that these needs should to a large extent be met by housing in general being designed to suit as wide a range of users as possible. During the course of the review and the development of guidance the brief therefore evolved. In its final form it required the guidance to cover the design of housing and associated facilities to suit the full range of people’s housing needs.

The guidance is published in two parts, of which this volume is Part 1, covering the design of self-contained houses and flats to suit people’s different and changing needs over their lifetime. Part 2 of the guidance will cover provision for various categories of users who need housing with integral support. This could either be in the form of communal facilities associated with self-contained houses or flats, or in grouped housing with some shared space and facilities, and with support from resident or peripatetic carers.

In addition to the input from the Steering Group, Scottish Homes consulted widely during the development of the guidance. A consultation document was produced in the autumn of 1996. The purpose of this consultation paper was to seek comment on the overall approach to the production of the design guidance and the initial proposals for the design criteria. A total of 1800 copies of this were issued to users, providers and designers of housing. More detailed guidance was then developed and in the summer of 1997 a draft of this was issued to respondents for further consultation.

The guidance is intended for use by designers, developers and providers in all sectors of Scottish housing. It is advisory and has no mandatory status, though Scottish Homes intends to use it as the basis of required standards in relation to funding. The standards the guidance advocates are intended to ensure that housing is accessible, fit for its purpose, adaptable for different needs and over its lifetime represents good value for money.
INTRODUCTION

THE AIMS AND OBJECTIVES

Housing in its design and form should provide for people's different needs and circumstances. People have various housing needs and these will almost certainly change through a lifetime. The built form of all housing should be flexible enough to accommodate a range of these needs. The purpose of this publication is to offer guidance on good practice in the design of all housing, so that newly-built, refurbished or adapted buildings achieve a degree of flexibility, suit people of different abilities, are convenient to use and fit for their purpose.

In general, people wish to live independently in self-contained houses or flats and the design of these is covered in this volume forming Part 1 of the guidance. However, there will still be instances where people will require additional care and support, which could have implications for the design of the accommodation required. Part 2 of the guidance will therefore cover the specific design features associated with the provision of communal facilities, shared and grouped accommodation.

THE BASIS OF THE GUIDANCE

For many years, houses and flats have been categorised, at least in the public sector, as either 'mainstream' housing for general use, or 'special needs' housing for older people, disabled people and others with particular needs. This approach takes little cognisance of the fact that although one-fifth of the population has traditionally been regarded as having 'special needs', in practice comparatively few require purpose built accommodation, the majority being able to live in 'ordinary' housing which tends to be their preference.

The Scottish House Condition Survey 1996 [1] indicates that approximately 124,000 households include a member who is ambulant disabled, and who walks with the help of a stick or frame, and around a further 20,000 a member who uses a wheelchair. And yet of the 2 million or so dwellings in Scotland, only 24,000 are suitable for use by ambulant disabled people and of these only 5000 are suited for use by a person permanently using a wheelchair. The Survey also shows that of the 24,000 dwellings, in some way suited to the needs of disabled people, only 5000 are actually occupied by people who use a wheelchair or walking stick or frame.

The serious shortfall in housing suited to people who are less able than the majority is illustrated by these figures, but it is also evident from the considerable demand for adaptations to existing housing that is unsuited to the needs of its older or less able occupiers.

To start to rectify this situation it is vital that the design of all new housing, and where possible, refurbished housing, recognises the needs of people as they grow older and less able and for those of all ages whose mobility, dexterity, cognitive function, hearing or sight is impaired. The design of a house or flat should not hinder a person's ability to live as independently as possible.

Over recent years the concept of designing all housing to accommodate the needs of less able people has become widely accepted as an essential part of the provision of housing for the majority of older and disabled people. In Scotland this has become known as 'barrier free' design.
THE BARRIER FREE CONCEPT

Barrier free is defined as housing and its environment that is designed to allow for the needs of almost everyone. This includes:

- people with temporary or permanent impaired mobility due to accident, illness or old age and who may use a wheelchair for some of the time;
- people who have difficulty with steps, bending down or reaching or who lack dexterity;
- people with impaired sight or hearing;
- people with impaired memory, learning or reasoning;
- people pushing and manoeuvring prams.

The key features of barrier free housing allow such people to reach the entrance from a road or parking area and enter the dwelling, move around the dwelling, and access essential rooms including the bathroom, operate all fittings, services and controls. Good practice in all housing design should give equal emphasis to the needs of less able members of society as it does to the comfort, convenience, safety and security of the occupants in general. This guidance starts from that premise.

Such design is more convenient for everyone, it prevents people having to move because their abilities have changed and it is more economically adapted to suit specific needs if this becomes necessary.

LINKS BETWEEN HOUSING AND SUPPORT SERVICES

The provision of suitable designed housing, whether barrier free for the majority or to other standards for people with specific needs, will allow an increasing number of people to live independently for most of their life. However, anybody may at some stage need additional support to maintain their independence, particularly people as they become older and other people with particular needs. Such support can be delivered through domiciliary care, assuming that the design of the person’s home can accommodate their physical needs and allows them to stay there. Good housing design, which incorporates barrier free features, may also reduce the need for support services by enabling people to do more for themselves.

Providers in the social rented sector who are designing self-contained houses and flats for people whose particular housing needs require additional care and support, should liaise with local health and social work services to ensure that appropriate support packages are put in place. More generally, in order to ensure that a range of needs can be catered for over time, for all housing sectors, it is important to ensure that housing is sufficiently flexible to accommodate client groups with different needs, including those requiring support.

In some cases it will be considered necessary to have such support associated with self-contained houses or flats in the form of staffed, on site communal facilities. These may range from a small common room to provide social support, to facilities that in addition provide meals, assisted bathing and other services, office space and various forms of staff accommodation, as currently provided in sheltered and very sheltered housing developments. The guidance set out in Part 1 is applicable to such provision, but will be complemented by Part 2 which will cover the specific design features associated with the provision of communal facilities, shared and grouped accommodation.
THE DISABILITY DISCRIMINATION ACT 1995

The Disability Discrimination Act 1995 [2] makes it unlawful for those providing goods, facilities or services to the public or those selling, letting or managing premises to discriminate against a disabled person. The implications of the Act therefore could affect the selling, letting and management of housing, but may not affect the design.
THE SCOPE AND FORM OF THE GUIDANCE

The guidance relates to the design of the accommodation and its fittings. It does not cover the performance of the building shell, which will at least be as required by the Technical Standards [3] that support the Building Standards Regulations.

This volume covers the design of self-contained houses and flats, i.e. ‘dwellings’ as defined by the Technical Standards. The core guidance given relates to the design of general housing incorporating barrier free features and thus making allowance for less able people. However, barrier free design is not intended to be a substitute for dwellings designed specifically for the use of older people where increasing frailty must be allowed for, or for wheelchair users who need the full benefits that specially designed and equipped houses can give. The guidance therefore gives additional or alternative features that should be included in houses or flats that are being built, or adapted, specifically to suit people with a particular need.

The features required to suit these needs fall into three broad groups. Within the guidance the features are indicated as follows:

- Features specifically for older people or for ambulant disabled people, or both of these, are boxed with a single line.
- Features specifically for older people and all disabled people, including wheelchair users, are on a light shaded background.
- Features specifically for wheelchair users are on a darker shaded background.

The guidance is based on activity spaces that are needed by people of different abilities to conveniently use and access fittings, furniture and services. It does not suggest areas for rooms or dwellings as such areas do not necessarily result in the desirable activity spaces being achieved.

Some of the illustrations show arrangements of rooms and other spaces that meet the given criteria. These are intended to demonstrate possible, not definitive, solutions and other arrangements may be equally appropriate.

Summaries of the design criteria, a glossary of terms, a list of documents referred to in the text and a list of suggested further reading are given as appendices.

CONVENTIONS USED IN THE GUIDANCE

Throughout the guidance certain conventions are adopted:

- The term ‘must’ is employed for matters that are covered by legislation or those that are a fundamental requirement for the users in question.
- Activity spaces are clear of any structure, fitting, heating appliance or notional furniture, but spaces for different activities may overlap each other.
- All dimensions are given in millimetres unless stated otherwise. Sizes are to finished surfaces and the centre line of fittings or controls unless stated otherwise.
- Documents referred to in the text are listed in an endnote.
RELATIONSHIP WITH THE BUILDING STANDARDS (SCOTLAND) REGULATIONS

The Technical Standards for compliance with the Building Standards (Scotland) Regulations [3] (currently 1990, amended 1995-1997) exempt ‘dwellings’ from the requirements of Part T ‘Access and facilities for disabled people’. Part T therefore does not apply to the type of accommodation covered in this guide. However, the possible extension of Part T to include dwellings is under review and any consequent amendment to the Technical Standards will of course override the advice given here.
1 PEOPLE'S NEEDS

1.1 GENERAL NEEDS

1.1.1 People's needs and abilities differ, but to live independently everyone needs a home that they can come and go from without difficulty, in which they can access and use the accommodation and fittings and operate the controls and services. Houses and flats should be designed to make this so for as many people as possible, including those whose mobility, dexterity, hearing or sight is impaired.

1.1.2 Many people have such impairment. *The Scottish House Condition Survey 1996* [1] indicates that 144,000 households include a member who walks with the help of a stick or a frame, or who uses a wheelchair. Older people constitute almost a sixth of the population of Scotland and this proportion will grow. These two groups overlap, but nevertheless they form a sizable part of the population and their needs must be recognised in the design of housing.

1.2 OLDER PEOPLE

1.2.1 Older people are generally defined as those over the age of 65. This gives a possible age range for the group of 25 years or more, during which time people's needs are likely to change.

1.2.2 Older people's main need in the design of their home is that it allows them to live independently and provides a safe and secure environment. Not all older people are significantly impaired, though obviously there is a likelihood of them becoming less mobile, less dexterous and less able to reach or bend and less able to see or hear well.

1.2.3 Most older people live in ‘ordinary’ housing and wish to remain there as long as possible; the design of their home should assist in this. Even when a move is necessary, usually to a smaller house or flat without the need to climb stairs, most people continue to lead relatively active lives. Their home should be of a size that allows them to entertain friends, pursue hobbies and retain favourite belongings. If they become less able to be out and about, such things become even more important.

1.2.4 It is known that there are around 61,000 people in Scotland with a diagnosis of dementia, 60% of whom live at home and the vast majority of whom are in the older age group. Their disabilities take the form of impaired memory, learning and reasoning and their need is for fittings and components that are easily recognised and for visual help in finding their way around.

1.2.5 It is not anticipated that self-contained housing will be designed specifically for people whose mental state is impaired, but that adaptations may be required to compensate for their disabilities. The needs of people with dementia can conflict with older peoples other needs; 'novel' fittings, such as lever taps and pad type switches, though easy to operate will be confusing. Guidance on the specific design needs is given at appropriate points in this text and summarised in Chapter 20 (20.3). However, it should be noted that knowledge on designing for people with dementia is at an early stage, though developing rapidly.

1.3 AMBULANT DISABLED PEOPLE

This description embraces a wide group of people with a range of mobility problems or lack of agility and strength, but whose physical disability permits them to walk with or without the use of walking aids and some may occasionally use a wheelchair. The
majority will be in the older age group but many people may have problems with mobility at other times in their life, due to accident or temporary illness. The design need is for a home that, is easy to move around with a walking frame or sticks or crutches, has a bathroom that can be adapted to their needs and fittings and service controls that are within reach and easy to use.

## 1.4 WHEELCHAIR USERS

1.4.1 People who use a wheelchair for most or all of the time, have this particular feature in common but otherwise their needs will vary considerably. They may or may not have upper body strength, which affects their reach, their dexterity and their possible need for additional technological aids and/or resident carers. Some people have multiple disabilities. Some will have a progressive illness.

1.4.2 A wheelchair user may live alone, or with a carer or partner or be part of a family unit. In family housing it can be an adult or a child that uses a wheelchair or in some instances there will be more than one member of the household who uses a wheelchair.

1.4.3 The design need is for a home that provides a completely step-free environment, space for a wheelchair to circulate and access all rooms, a kitchen and bathroom that suits the occupant’s particular needs and fittings and services that are within reach and easy to use.

## 1.5 OTHER SPECIFIC NEEDS

1.5.1 People with impaired sight need good levels of light and tactile indicators on controls. Those with impaired hearing need visual or tactile alternatives to bells or alarms.

1.5.2 Other factors such as mental health or the need for support needs will affect the form of housing that is most appropriate. In some instances this will be shared or group housing with integral support (see Part 2).

## 1.6 MEETING THESE NEEDS

1.6.1 Housing has to be adaptable to suit these different needs. One of the overall problems of meeting the housing requirements of people with a particular need is matching people to suitably designed housing. The more flexible and adaptable housing is the less this problem will be. It is possible to list precise impairments against specific design needs, but housing should be of a design that allows flexibility over its lifetime for the different needs of occupants with different abilities.

1.6.2 When design briefs are being prepared every opportunity should be taken to consult with likely occupants.
2 SIZES AND DIMENSIONS

2.1 ASSUMPTIONS

The design of buildings in general makes certain assumptions about the size and abilities of the people who use them - the height and width of door openings, the size of steps, etc, and these are integral with the requirements of the Building Standards Regulations and other standards. But people vary in height and in their ability to bend or reach. When the needs of all people are taken into account some assumptions have to be reconsidered.

2.2 ANTHROPOMETRICS

This design guidance assumes a reach within the following distances (mm) from floor level:

<table>
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<th>Upward</th>
<th>Upward Grip</th>
<th>Downward</th>
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<tbody>
<tr>
<td>general use</td>
<td>1800</td>
<td>1700</td>
<td>400</td>
</tr>
<tr>
<td>older and ambulant disabled people</td>
<td>1600</td>
<td>1500</td>
<td>500</td>
</tr>
<tr>
<td>wheelchair user</td>
<td>1350</td>
<td>1200</td>
<td>600</td>
</tr>
</tbody>
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2.3 WALKING AIDS

Walking aids may take the form of sticks, crutches or frames. Typical dimensions are a width of 550-600mm for a walking frame and a spread of up to 800mm for elbow crutches or walking sticks.

2.4 WHEELCHAIR SIZES

As there is no standard size for people, there is no standard wheelchair size. People with different forms of disability need wheelchairs of different forms and many users will have more than one chair. The design criteria presume dimensions of 1100 x 700mm for a chair that is used indoors.

2.5 WHEELCHAIR MANOEUVRES

2.5.1 The space needed by someone in a wheelchair, particularly to turn round, will vary. Obviously it will depend on the size and workings of the wheelchair, but also on the ability of the user. Where wheelchair turning is needed it is more likely to be through 180° rather than a full circle and the profile of this movement is usually elliptical rather than circular, with dimensions of 1400 x 1700mm. In certain configurations of space, especially between pieces of furniture users may use three point turns. But some flexibility in the choice of turning methods is desirable and therefore as a practical guideline the criteria for sufficient space to turn a wheelchair is taken as a clear circular space of 1500mm diameter. This will never be a completely confined area and the adjoining space will usually give some flexibility in use.
2.5.2 In refurbishment or adaptation situations it may be only be possible to allow for one turning method.

![Fig 2.1 wheelchair turning](image)

2.5.3 Another crucial action for a wheelchair user is that of opening a door, particularly reaching the handle. This involves a person bending or leaning forward in their wheelchair and people's ability to do this will vary. A clear space of 300mm is generally accepted as the required dimension and this suffices for the majority. However, people who are unable to lean forward will require to bring the side of their chair alongside the handle. To allow for this there needs to be a clear space of at least 550mm beyond the opening edge of the door.

![Fig 2.2 opening a door](image)

2.5.4 Formulas for the relationship of necessary dimensions for wheelchair manoeuvre are given in *European Concept for Accessibility* [4]. This advocates that the space to the side of the door plus the clear space in front of the door swing should equal or be greater than 1400mm. Also that to turn into a door at right angles to a passage the clear width of the door plus the width of the passage should equal or be greater than 2000mm.

![Fig 2.3 wheelchair manoeuvre](image)
2.5.5 Externally any surface on which a wheelchair may need to be stationary must be nominally level.

2.6 DOOR WIDTHS

2.6.1 In this guidance different widths are cited for doors that will allow wheelchair users to pass through. In any situation there is always the minimum width of what is physically possible and a more convenient width. Most able bodied people can pass through a space with a clear opening width of 600mm, or even less, but for convenience doors are usually wider than this. Similarly a person in a wheelchair can pass through a space 750mm wide, but this manoeuvre has to be done with care as the tolerances are very small. In a wheelchair user’s own home easier movement than this should be possible and a clear width of at least 800mm should be provided. The clear width of external doors must make allowance for a weather moulding at the foot of the door and the required widths of external doors are therefore greater by 50mm to allow for this.

2.6.2 Also in suggesting suitable dimensions for doors recognition has to be given to the ‘standard’ door sizes that are readily available, though this is not to say that manufacturers should not be encouraged, through demand, to add components to their standard ranges. While an ‘adequate’ width may be acceptable where this allows a standard component to be used, if a purpose made component is needed the most satisfactory width should be achieved.

2.6.3 The criteria given in this guidance to apply generally are the minimum to allow possible wheelchair use, but for regular use by someone in a wheelchair the more convenient size is given.
3 LOCATION OF HOUSING

3.1 THE NEEDS

3.1.1 Location is an important factor in the desirability and convenience of all housing, and it becomes critical for people as they get older and for people with any form of mobility problem.

3.1.2 It is very easy to be idealistic about where housing should be located, when in reality compromises may have to be made depending on what land, or existing housing, is available. However the suitability of a site or location for housing that is specifically for people with mobility problems should be considered and weighed in light of the need for convenient access, in terms of distance, gradient and available public transport, to reach the facilities needed for independent day-to-day living. Also part of the consideration is the need for a supportive social environment and a sense of integration within the community;

3.2 THE TOPOGRAPHY OF THE LAND

People with mobility problems cannot cope with more than a slight slope, either immediately surrounding the dwelling, or within its environs. All access routes should be in accordance with Chapter 4.

3.3 ACCESS TO FACILITIES

3.3.1 People leading independent lives must be able to reach various facilities:
- public transport;
- shops and other commercial facilities (food, chemist, day-to-day needs, post office, bank);
- health services;
- community and recreational facilities (place of worship, library, pub, cafe).

3.3.2 For people who have regular use of a car, either as a driver or a passenger, reaching facilities is unlikely to be a problem. For others, distances that can comfortably be travelled will vary considerably from person to person and will be affected by their ability to use public transport, the gradients of access routes and, for wheelchair users, the standard of surfacing encountered.

3.3.3 For a location to be considered ‘convenient’ for people who do not walk easily and who do not have the use of public transport or a car, the distance from a dwelling to the facility should be taken to be no more than 600 metres.

Dwellings specifically for older or disabled people:

3.3.4 Recommended walking distances that can be made without a rest, for people with various impairments are given in Revised Guidelines for: Reducing Mobility Handicaps [9] as:

<table>
<thead>
<tr>
<th>Impairment</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheelchair users</td>
<td>150m</td>
</tr>
<tr>
<td>Visually impaired</td>
<td>150m</td>
</tr>
<tr>
<td>Stick users</td>
<td>50m</td>
</tr>
<tr>
<td>Ambulatory without walking aid</td>
<td>100m</td>
</tr>
</tbody>
</table>
3.3.5 Consideration should be made for people who need to have facilities at a shorter distance, or public transport within 200 metres of a dwelling. Convenient public transport is also important to bring visitors to people who may themselves be unable to get out and about.

3.4 THE SOCIAL ENVIRONMENT

In areas of high social stress the provision of housing specifically for people with particular needs should be considered with care. Many such people are particularly vulnerable and unless they are well integrated in the community, living in such areas may present additional problems.

3.5 THE INTEGRATION OF HOUSING

Housing that is designed for specifically for people with particular needs should be integrated with housing in general and should not give the occupants a sense of isolation or cut them off from the activity of the neighbourhood. However, some people, especially as they grow older, may prefer to be separate from family housing and have control over their contact with children and young people, as they can find groups of children at play annoying and even threatening. A balance therefore has to be drawn and will vary depending on the social characteristics of the area.
4 THE DESIGN OF THE SURROUNDING ENVIRONMENT

4.1 THE NEEDS

4.1.1 The design of pavements, road crossings and footpaths should allow for the needs of older and ambulant disabled people, people who use wheelchairs, people with visual impairment and people manoeuvring a pram or pushchair. This requirement will be met by compliance with the criteria given below and is also covered in the following publications:

- British Standard 5810, Section 6 [5]
- Building Sight, Chapter 3 [7]
- Guidance on the use of tactile paving surfaces [8]
- Revised Guidelines for: Reducing Mobility Handicaps [9]

4.1.2 The local roads authority’s requirements and specification will have to be met for all roads, pavements and paths that are to be adopted by them. The guidance given here is intended to be used in conjunction with that. The local roads authority should ensure that as well all pavements and footpaths allowing access to everyone, these are properly reinstated after repair works, as the uneven surfaces that can then occur are a hazard to many users.

4.2 PUBLIC PAVEMENTS AND PATHS

4.2.1 Pavements and paths should provide a step-free route around the neighbourhood. It is helpful for people with mobility problems if there are places along a route at which they can rest briefly. Paths may have a continuous slope of unrestricted length provided that the gradient is no steeper than 1:30. For gradients steeper than 1:30 but less than 1:20 there should be rest areas at intervals no greater than 18 metres. Slopes of 1:20 or steeper are classified as ramps.

4.2.2 Pavements and paths should generally have a minimum width of 1800mm, but a minimum of 1200mm is acceptable for short lengths or in paths leading to no more than four dwellings.

4.2.3 Crossfalls in pavements or paths are awkward for wheelchair users, as they cause the chair to drift or slip, and they should be kept to a minimum consistent with good water run-off, with a gradient preferably no steeper than 1:100, but a maximum of 1:40.

Fig 4.1 public paths
4.2.4 The surface of paths must be hard, firm, even and slip resistant; cobbles and setts should be avoided. Manhole covers, gratings, etc, must be flush with the surrounding surface and any grille bars should be set at right angles to the direction of travel.

4.2.5 Paths should not have unprotected drops of any size at the edge, as these are a hazard to anyone. Where paths are not level with the adjoining ground they should have an upstand of at least 100mm at the edge, or a protective barrier that extends to within 100mm above the surface.

4.2.6 At road crossing points there should be a dropped kerb. Roads at crossing points should have a camber no steeper than 1:20 in the direction of pedestrian travel and a crossfall at right angles to this no greater than 1:40. The area in front of the dropped kerb should be free of any channel, gulley or grating.

4.2.7 The elimination of upstand kerbs on minor access roads and use of different surface treatments instead will assist disabled people, particularly those in wheelchairs, to move around more easily. However, a change of level at the kerb acts as guidance for visually impaired people and there is therefore a conflict of need in this regard. In the vicinity of housing specifically for wheelchair users the preference should be for no upstand, but tactile surfacing instead to indicate there is a road. Otherwise, for safety reasons an upstand should be retained except at specific road crossing points.

4.2.8 Ramps and steps in public paths should be at least to the same standard as given in the Technical Standards, Part T. Where ramps are provided steps should be provided as well to suit people who find sloping surfaces difficult.

4.3 STREET FURNITURE

Street furniture, such as lamp posts, signs and post boxes, should not cause an obstruction or be positioned where it is a hazard to people with impaired sight. All furniture should be out of the line of travel but adjacent to the path or pavement. Bollards should be at least 1000mm high and of a colour contrasting with their background. Further information on the choice and positioning of street furniture is given in Building Sight [7].
4.4 LIGHTING

All access routes should be well lit, both for reasons of safety and security. Requirements for this are given in BS 5489 [10] covering road lighting.

4.5 COMMUNAL CAR PARKING

4.5.1 Convenient parking is advantageous to everyone but can be crucial to anyone with a mobility problem. For them parking therefore needs to be a reasonable distance from their entrance door and also needs to be always available for residents.

4.5.2 The width of communal parking spaces should generally be 2400mm. To suit older and ambulant disabled people, the width should be 3000mm which allows them to get in and out of the car more easily. Spaces intended for use by wheelchair users should have a width of at least 3400mm and preferably 3600mm. The increased width may be achieved with paired standard bays of 2400mm sharing a centre space of 1000 to 1200mm.

4.5.3 A length of 4800mm is generally adequate. Some vehicles suited to wheelchair users have access from the rear and a clear space of 1200mm is therefore needed behind the parked vehicle in addition to the 4800mm length.

4.5.4 All kerbs alongside parking for wheelchair users must be dropped to allow access from the road to the pavement. It should be noted that wheelchair users prefer to get in and out of a car with the wheelchair on the road, as a pavement kerb prevents the chair from being close to the car, and that the wheelchair must not be on a sloping surface.

Fig 4.3 car parking
5 HOUSING LAYOUT AND BUILDING FORM

5.1 THE NEEDS

The layout and form of a development or group of dwellings plays a significant part in providing a pleasant, convenient and safe environment in which to live. Orientation and aspect are important and sunshine should reach the main living room, or a dining kitchen, at some time of the day for most of the year.

5.2 SECURITY

The layout should incorporate the recommendations of police guidance in relation to defensible space, landscaping and lighting. The removal of barriers for the benefit of people with impaired mobility can also have the effect of removing defensible space. It is therefore particularly important that this aspect is considered in the design of the layout. It may be necessary to introduce low walls or fences and marked changes in surface treatment between public and private external space.

Dwellings specifically for older or disabled people:

5.3 VEHICULAR ACCESS AND PARKING

5.3.1 The length of the access from the road to the entrance door of the dwelling, or block of flats is required by the Technical Standards [3], Part Q to be no greater than 45 metres, however, this may be excessive for some older and disabled people. A distance no greater than 30 metres is needed for older and ambulant disabled people and 15 metres is preferable for wheelchair users, if in-curtilage parking cannot be provided.

5.3.2 In urban situations the provision of off-street or in-curtilage parking is an important factor when considering the layout and the suitability of the site. Parking provision is a crucial factor for car owners with mobility problems as competing for on-street parking is too unreliable. (See Section 7.13)

5.4 THE APPEARANCE OF THE DWELLING

Though people may have particular needs in the design of their home, they want it as far as is possible to appear the same as other housing. This helps the occupants to feel integrated in the community and in security terms does not advertise that a more vulnerable person lives there. In general housing specifically for older or disabled people should be intermixed with other housing.

5.5 OUTLOOK

5.5.1 The aspect from the dwelling is particularly important when the occupants may spend a great deal of time at home. The view from the living room window should provide some interest which may be activity in the street or a view of a garden or other landscaping.

5.5.2 The outlook from a bedroom window may also be important if the occupant has to spend long periods in bed.
5.6 GARDEN AREAS

5.6.1 Private gardens will usually be provided where dwellings take the form of houses, rather than flats. Where these are attached to houses, or ground floor flats for one or two people, they should be small as older or disabled occupants are unlikely to be able to tend a larger garden. However, some occupants will gain great pleasure from gardening as an activity and most will appreciate some outside space for sitting out and for clothes drying. (See Chapter 19)

5.6.2 In flatted developments communal ‘sitting out’ areas which catch the sun should be provided when circumstances allow. They are a pleasant facility for people with impaired mobility and act as a point of informal social contact, but, particularly in urban areas, they should be enclosed and accessible only to residents.

5.7 BUILDING FORM

5.7.1 For older people in general, dwellings should be at ground level or at first floor level with access by suitable stairs or a lift (see Chapter 8).

5.7.2 For ambulant disabled people and frail older people, dwellings should be at ground level or have lift access (see Chapter 8).

5.7.3 For people using a wheelchair all accommodation should in general be at ground level. In larger family houses it is possible to have an arrangement with the essential accommodation at ground level and additional bedrooms on an upper storey, but careful consideration should be given to the implications of a disabled member of the family, adult or child, not having access to all parts of their home.

5.7.4 There may be circumstances when it is thought desirable to provide upper storey flats with lift access for occupation by people who are unable to use stairs. In such a situation there should be suitable means of escape in case of fire in accordance with BS 5588: Part 8 [11].
6 THE OVERALL PLAN OF THE DWELLING

6.1 THE NEEDS

6.1.1 All dwellings *within themselves* should be free of ‘barriers’, or potentially so. Even a house on a steeply sloping site or an upper floor flat that internally is designed to be barrier free can be of benefit to an occupant who is temporarily impaired, to those who can manage steps but are otherwise disabled, or a disabled visitor who may need assistance up steps or stairs, but once inside is able to move around.

6.1.2 The plan of a dwelling should provide convenient accommodation with circulation areas kept to a minimum.

6.1.3 Adequate space is the feature above all others that provides a home that is flexible and able to accommodate people who have problems with mobility. It is also the feature that is most difficult and costly to add at a later date. It is essential that the best use is made of available space through careful planning and that very restricted areas are avoided.

6.2 DESIGNING FOR FURTHER ADAPTABILITY

The more flexible a dwelling is the greater potential it has for accommodating different needs during its lifetime and the less costly any adaptations to suit these needs will be. Certain features help provide flexibility and less costly adaptation:

- load bearing partitions should be kept to a minimum as they can make adaptations difficult and expensive;
- stairs should be able to take a stair lift and allowance should be made for the possible installation of a through floor lift;
- in two storey houses an area at ground level that could accommodate a bed also adds to flexibility of use;
- lack of a WC at ground floor level can makes a house unusable, and even ‘unvisitable’, by a person who cannot climb stairs;
- bathrooms at ground level that allow for a floor gulley are less costly to adapt for a walk-in shower.

6.3 THE PLAN OF THE DWELLING

6.3.1 For the convenience of the occupiers the arrangement of the space provided is important:

- the main entrance door should always open into a hall or lobby, never directly into a room;
- stairs should preferably not be open to the main living area;
- the kitchen and the eating space should be adjacent;
- access to any garden should not be only through a living room;
- complex plan arrangements will exacerbate confusion.
Dwellings specifically for older or disabled people:

6.3.2 ‘Open plan’ arrangements in which different activity spaces, (e.g. living room and kitchen), are screened from each other rather than fully segregated, can be of benefit. For people with mobility problems it reduces the number of doors and partitions, which can make moving around easier, and for people with dementia or cognitive impairment it allows them to see where they need to go. This is particularly relevant in dwellings for one or two people where individual privacy is less critical.

6.3.3 The relationship and circulation between the bathroom and bedroom(s) is particularly important. The route should be as direct as possible. This will help people with mobility problems to move more easily between the two. The WC being visible from the bedroom is of benefit to people with dementia. Some wheelchair users may need a ceiling mounted hoist to travel between the bedroom and bathroom necessitating that these two rooms are adjacent.

6.3.4 For a family member who has to spend much time in bed, the relationship of their bedroom and the living room is important if they are not to feel isolated.

6.3.5 In flats it will usually be necessary to have self closing fire doors to comply with the Technical Standards [3], Part E, though on a day-to-day basis such doors are inconvenient for anyone, but particularly people with mobility problems. The number of fire doors should be kept to a minimum while complying with the Technical Standards.

6.4 THE ACCOMMODATION PROVIDED

6.4.1 The accommodation that is to be provided will be decided by the client or developer to suit the customers needs, but it is important that the needs of different forms of households are considered, particularly in relation to bedrooms (see also Section 11.4).

6.4.2 There may also be need for some dwellings with a special form, such as shared accommodation for single residents, or for two or more disabled people, where there is a need for bedrooms, designed for full wheelchair use, and perhaps more than one bathroom. The overall design criteria for these or other special arrangements will be the same as for other dwellings.

Dwellings specifically for older or disabled people:

6.4.3 Households of two people may not wish to share a bedroom and people, particularly those living alone, may need to have an overnight carer, either from time to time or on a regular basis. For both these reasons there is a need for some dwellings designed to suit people in small households, but with two bedrooms.


**7 ACCESS TO DWELLINGS AND PROVISION FOR VEHICLES**

**7.1 THE NEEDS**

7.1.1 To be fully barrier free a dwelling must have step free access from a road. This should be the aim in all but exceptional circumstances. It is particularly important that single storey houses, ground floor flats and flats with lift access have step free access as these can provide the most suitable accommodation for anyone with impaired mobility. In all housing the difference in level between the outside ground and floor should be as small as the overall situation allows, so that steps can be avoided and ramps kept to a minimum. However, it is recognised that on steeply sloping sites step free access may be considered unviable.

7.1.2 While the absence of steps is of benefit to many people, pronounced sloping surfaces are difficult for others who use walking sticks, or have balancing problems and who will prefer shallow steps.

**7.2 SURROUNDING PUBLIC FOOTPATHS**

Public access routes and parking provision should be as Chapter 4.

**7.3 ACCESS PATHS TO HOUSES AND BLOCKS OF FLATS**

7.3.1 Access paths from the road pavement and parking space to the entrance of all dwellings should be step free. Paths should preferably have a gradient shallower than 1:20. Slopes of 1:20 or steeper are classified as ramps (see 7.7).

7.3.2 The *Technical Standards* [3], Part Q require access paths serving one or two dwellings to be at least 900mm wide, but a width of 1000mm is preferable. It is recognised that this width is more difficult to achieve with standard size concrete slabs, but the extra width is of great benefit to people with walking aids, wheelchair users and to accommodate prams. Paths that serve more than two dwellings are required by the *Technical Standards*, Part Q, to be at least 1200mm wide.

7.3.3 Paths providing access to refuse stores and external areas should also be step free and be at least 900mm wide.

**Dwellings for wheelchair users:**

7.3.4 Paths from the road pavement and parking space to the entrance door must be at least 1200mm wide. Paths to the refuse store and external area may be 900mm wide provided there is a widening to 1200mm at any sharp turn.

7.3.5 All required widths are to be clear of any upstands, balustrading or handrails. Surfaces and edgings should be as Section 7.9.

7.3.6 Wheelchair movement can be hampered by excessive crossfalls on access routes and the surface at the entrance door must be nominally level so that the wheelchair is stable while the user operates the lock or entry system. Cross-falls should be kept to a minimum consistent with good water run-off, with a gradient preferably no steeper than 1:100, but a maximum of 1:40.
7.4 GATES

7.4.1 Gates should have a clear opening width of at least 850mm to allow wheelchairs and disabled people's scooters to pass through easily. A width of 1000mm is needed for twin-child buggies. The gate should open beyond 90° so that it does not restrict the width of the path. The gate latch should be reachable and operable from a wheelchair from either side of the gate. This is best achieved by incorporating a hand hole beside the latch.

7.4.2 Where gates giving access to back gardens are lockable, the lock should be at a height of 900-1050mm from the ground, so that it is reachable from a wheelchair.

7.5 ENTRANCES TO INDIVIDUAL DWELLINGS

7.5.1 Entrances to dwellings should preferably be step free and it is always best if this is achieved by the use of sloping surfaces of a gradient shallower than 1:20 but with a nominally level area of at least 1200 x 1200mm at the entrance door.

7.5.2 Where a step free entrance is only possible by provision of a ramp this should have a minimum width of 1000mm and have a level area at least 1200 x 1200mm at the top of the ramp. Ramps in other respects must be as Section 7.7. However, some ambulant people will find a ramp more difficult than steps or may find steeper ramps disconcerting. Where possible steps should be provided in addition to a ramp, especially if the ramp rises more than 400mm or is steeper than 1:15.
7.5.3 Any steps at an entrance must have a minimum width of 900mm, but preferably 1000mm, and have a landing at least 900mm long at the door. The going and design of the steps must be as Section 7.8. Where there are steps but no ramp because of ground levels, it is beneficial if space is allowed for a ramp to be provided in future if needed by an occupant.

7.5.4 Where the entrance is step free it is preferable that the door is positioned so that there is a return of at least 300mm at the handle edge, to allow a wheelchair user to reach this.

**Dwellings specifically for ambulant disabled people:**

7.5.5 The entrance must be step free as described above.

**Dwellings for wheelchair users**

7.5.6 For wheelchair dwellings the entrance must be step free with a level platform of at least 1500 x 1500mm at the entrance door, clear of any door swing. This area should allow for a person in a wheelchair accompanied by an ambulant adult or child and for the wheelchair user to move alongside the door to operate the lock and handle. For inward opening doors there should be a space of at least 300mm adjacent to the lock edge of the door and 550mm if the door opens outwards (see 2.5.3).

7.5.7 Ramps should have a minimum width of 1200mm and be as Section 7.7.
**ENTRANCE TO COMMUNAL ACCESS AREAS**

7.6.1 Entrance to communal access areas leading to ground floor flats or flats with lift access should be step free, but it is preferable that all blocks of flats have a step free entrance. It is also preferable, as for individual dwellings, that this is achieved by the use of a sloping surface with a gradient less than 1:20. Where a ramp is required it should be as Section 7.7. The width of the ramp will be affected by the type and size of the building it serves, but must have a minimum width of 1200mm.

7.6.2 Where there is a ramp it is preferable to have steps as well to better suit some users and in all cases where a ramp rises more than 400mm or is steeper than 1:15. These must be as Section 7.8.

7.6.3 There should be a nominally level platform on the outside of the entrance door of at least 1200 x 1200mm. Where the door opens outwards space should be allowed for a wheelchair clear of the door swing by increasing the appropriate area to at least 1200 x 1800mm.

7.6.4 A wheelchair user should be able to reach the door handle and therefore there should be a clear space beyond the opening edge of the door of at least 300mm (see 2.5.3).

**Buildings containing accommodation suitable for wheelchair users:**

7.6.5 The level platform at the door should have dimensions of 1500 x 1500mm or 1500 x 1800mm where the door opens outwards.

7.6.6 The clear space beyond the opening edge of the door should be 550mm (see 2.5.3).

7.6.7 Where the communal access serves only upper floor flats by way of a staircase it is desirable that a wheelchair user can reach the door bell and enter the downstairs lobby.
7.7 RAMPS

7.7.1 All ramps that are part of the access to a dwelling or are within its curtilage must have the following features:

- a gradient preferably of 1:20 but no steeper than 1:12;
- a maximum length of 10 metres between landings with slopes of 1:20 to 1:15 gradient and 5 metres with slopes steeper than 1:15;
- a level landing at least 1200mm long at the top of each flight with a ‘corduroy’ tactile surface (see DETR Guidance on the use of tactile paving surfaces [8]).

The appearance of any ramp needs to be carefully designed so that it blends into the surroundings.

7.7.2 The provision of handrails to ramps will be at least as required by the Technical Standards, Part S. However, it is preferable that all ramps have a handrail that is:

- on both sides of the ramp, to allow for people who have to use a particular arm or hand;
- continuous for the length of the ramp and extends at least 300mm at each end;
- at a height 900mm above the ramp’s surface to suit ambulant people (see also 7.10).

Dwellings specifically for older or disabled people:

7.7.3 All ramps must have a handrail on both sides that is as described in 7.7.2.

![Fig 7.5 ramp](image)

7.7.4 In adaptations for wheelchair users to existing dwellings, if step-free access is to be provided, it may only be possible with a ramp steeper than 1:12, but in this case it must be established, in advance, that the particular user is capable of negotiating such a slope.

7.8 STEPS

7.8.1 If there are steps at an entrance they must be designed to be easy to use by people with mobility problems and people manoeuvring prams. They should therefore have a maximum rise of 150mm and a minimum going of 320mm. To allow for the needs of people with walking aids it is preferable that these dimensions should be 140mm and 380mm respectively. It is beneficial if the edge of the treads is highlighted in some way so that they are easily seen.
7.8.2 Steps must not have protruding nosings as this hampers the manoeuvring of prams and may cause people to trip, but risers should have a 25mm splay.

7.8.3 All entrance steps must have a handrail, at least on one side and preferably on both. It should be at a height of 850-900mm above the pitch line and 1000mm above the landing. See also 7.10 and Fig 7.6.

Dwellings specifically for older people:

7.8.4 The steps must have a maximum rise of 140mm and a minimum going of 380mm but it is beneficial for people with walking frames if the tread is as great as 600mm. The edge of the treads should be highlighted and there must be a handrail on both sides of the steps to allow for people who have to use a particular arm or hand.

Fig 7.6 stepped entrance specifically for older people and ambulant disabled people

7.9 SURFACES AND EDGINGS TO PATHS, RAMPS AND STEPS

7.9.1 The surface of paths, steps and ramps must be slip resistant. Jointless surfacing, while preferable for wheelchair users, can be more hazardous to ambulant people in icy conditions. It is important that paving is laid with flush joints and is not subject to settlement. Loose gravel, cobbles and setts should be avoided. Manhole covers, gratings, etc, must be flush with the surrounding surface and any grille bars should be set at right angles to the direction of travel.

7.9.2 Any unprotected drop at the edge of paths and ramps can be a hazard to anyone. The surface should therefore be level with the adjoining ground, or have an upstand of at least 100mm at the edge, or a protective barrier that extends to within 100mm of the surface.

7.10 HANDRAILS

7.10.1 Handrails provide support for older and disabled people and also act as a guide for people with impaired sight. They must in general comply with the Technical Standards, Part S. It should be noted that some handrails will be attached to protective barriers required by Part S to be at a height of 1100mm and it will be necessary to have a handrail below the top of the barrier.
7.10.2 Handrails should be of a design that is easy to grasp and therefore be of 45-50mm diameter or width, with a clear space of 50mm at the back of the rail. The surface finish should be smooth and comfortable to touch with no sharp edges or corners. Handrails should be firmly fixed to provide good support and with the fixing clear of the part of the rail that is grasped.

7.11 FITTINGS AT THE ENTRANCE AREA

7.11.1 Door bells should be positioned between 1000-1050mm above the entrance platt, 200mm from any return wall or balustrade for the benefit of visitors with limited reach or who may use a wheelchair. Bells should be clearly visible against their background to assist people who are visually impaired. Some occupants may need entry phones (see 18.5.4).

7.11.2 Door entry system control panels should be within an area 900-1200mm from the ground. All control buttons should also be at least 300mm clear of any return wall. Provision should be made for visitors with impaired sight by the use of tactile labelling and for visitors with impaired hearing by visual as well as audible signals where entry phones are installed.

![Fig 7.7 position of door bells and entry control panels](image)

Dwellings specifically for older and disabled people

7.11.3 For reasons of convenience as well as security, it is of benefit if the entrance can be seen from a bay or corner window. This is in addition to the need for a door viewer, see 9.4. In flats, where it will generally not be possible to see the area beside the entrance, it may be thought desirable to install closed circuit television.

7.11.4 Signage should allow for the needs of people with visual impairment. All house numbers and other signage should be in a clear typeface, set against a background of contrasting tone. House numbers should also be in relief. (See also Building Sight [7])

7.11.5 All main entrance doors should be well lit for safety, security and general convenience. It may be necessary to have individual lights at entrance doors where the door is out of the range of public lighting. Lighting activated by PIR detectors will be of benefit to many people.
7.12 CANOPIES AND PORCHES

7.12.1 The protection of a canopy or porch is of benefit to everyone, but particularly those who are less agile and may take time in opening the door.

Dwellings specifically for older or disabled people:

7.12.2 All main entrance doors should have a canopy or porch to give protection to someone unlocking and opening the door. The canopy should also give protection to visitors using the door bell or entry phone system and should extend at least 900mm from the face of the door.

7.12.3 Where there is a level threshold the protection of a canopy or porch also helps avoid water penetration from wind driven rain. Consideration should be given to providing additional protection from the prevailing wind through the orientation of the door or possible return walls.

7.12.4 For wheelchair users the covered area should be of a size to protect the whole chair and extend at least 1200mm from the face of the door. This is usually best achieved by the canopy being part of the roof of a carport (see also 7.13.8).

7.13 PROVISION FOR CARS

7.13.1 It is always preferable for car owners to be able to park their car within their own curtilage and this is particularly so if someone has impaired mobility. In-curtilage parking space should be at least 4800mm long and 3000mm wide to allow for people with impaired mobility. A potential to increase the width to 3600mm would allow for a wheelchair user. There should be level access between the parking space and the entrance door.

Fig 7.8 in-curtilage parking space
7.13.2 Communal off-street parking will be needed in flatted developments or for houses on restricted sites where in-curtilage parking is not possible. The requirements for communal parking are given in Section 4.5. Spaces in communal areas should be individually allocated to residents.

Developments specifically for older or ambulant disabled people:

7.13.3 Car ownership is likely to be below average, but is also likely to increase in future. In curtilage parking provision may be inappropriate in some forms of developments for older people, but it is important that communal parking areas are well dispersed so that all residents can park a car within a maximum of 30 metres of the entrance door.

Dwellings for wheelchair users:

7.13.4 The space for a car should be as close as possible to the entrance door and at a maximum distance of 15 metres. In urban areas competing for on-street parking may be too unreliable for disabled people and in areas where there is a very high demand for parking, even off-street communal parking intended for residents may be difficult to police.

7.13.5 Dwellings should where possible have their own covered car space in the form of a garage or carport. This must be designed for full and independent use by someone in a wheelchair and have good protection from the weather for transferring between the car and a wheelchair.

7.13.6 Car ports and garages should be at least 3600mm wide and 5700mm long. Some vehicles suited to wheelchair users have access from the rear and this should be allowed for in the design of the car space and its surrounding area. Car ports and garages should have a clear height of 2200mm to the underside of the roof or up-and-over door.

7.13.7 Covered access from a carport or garage to the entrance door is of benefit and is best achieved when the roof of the carport or garage also forms a canopy to the door. Canopied pathways between a separate garage or carport and the entrance door to the house afford little protection in severe weather.

7.13.8 If the site does not allow space for covered parking spaces, the dwelling will be unsuitable for a wheelchair user who owns a car.

Fig 7.9 covered parking for wheelchair use
Dwellings for wheelchair users:

7.14 PROVISION FOR ELECTRICALLY-POWERED CHAIRS AND SCOOTERS

7.14.1 There should be well protected and secure storage for electrically powered scooters or outdoor chairs, equipped with the necessary charging point. This may be external as part of a garage, carport or extended porch, or it may be internal as part of a utility area or store (see 13.13.2).

7.14.2 Areas used for battery recharging must allow space for the larger outdoor chairs which will be of a size at least 1200 x 800mm. For older models of chairs not using gel batteries the area must be well ventilated.
<table>
<thead>
<tr>
<th><strong>SUMMARY OF DESIGN CRITERIA - Individual dwellings</strong></th>
<th><strong>ref.</strong></th>
<th><strong>B</strong></th>
<th><strong>D</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Step-free access from road pavement and parking space to dwelling entrance</td>
<td>7.3</td>
<td>✔</td>
<td></td>
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<tr>
<td>Paths of sufficient width</td>
<td>7.3</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Gates</td>
<td>7.4</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Step-free entrance where possible</td>
<td>7.5</td>
<td>✔</td>
<td></td>
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<tr>
<td>Space allowed for possible future ramp where the entrance is stepped</td>
<td>7.5</td>
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</tr>
<tr>
<td>Steps in addition to ramp where steeper than 1:15 or rising more than 400mm</td>
<td>7.5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Platform of suitable size at the door</td>
<td>7.5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Clear space beyond the handle edge of the door where the entrance is step free</td>
<td>7.5</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Ramp and/or steps of suitable design</td>
<td>7.7/7.8</td>
<td>✔</td>
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</tr>
<tr>
<td>Door bell/entry system at suitable height and position</td>
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<tr>
<td>External light at entrance</td>
<td>7.11</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Canopy or porch at entrance</td>
<td>7.12</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>In-curtilage parking of suitable size</td>
<td>7.13</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td><strong>Older and ambulant disabled people</strong></td>
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<tr>
<td>In-curtilage parking of suitable size, or parking within 30 metres of the entrance</td>
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<tr>
<td><strong>Wheelchair users</strong></td>
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<td>Paths to individual dwellings 1200mm wide</td>
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<td>All other paths within curtilage 1200mm wide</td>
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<tr>
<td>All other paths within curtilage 900mm wide with widening to 1200mm at turns</td>
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<tr>
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<tr>
<td>Step-free entrance</td>
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<tr>
<td>Platform of suitable size at the door</td>
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<tr>
<td>Clear space beyond the handle edge of the door</td>
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<tr>
<td>Door bell/entry phone at suitable height</td>
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<tr>
<td>External light at entrance</td>
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<tr>
<td>Canopy or porch</td>
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<tr>
<td>Covered car space in-curtilage or within 15 metres of entrance</td>
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<tr>
<td>Charging space for electric wheelchair</td>
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## SUMMARY OF DESIGN CRITERIA - Blocks of flats

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<th>D</th>
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</thead>
<tbody>
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<td>• Step-free access from road pavement and parking space to communal entrance</td>
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<td>• All paths of sufficient width</td>
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<td>• Step-free entrance leading to flats at ground floor or with lift access</td>
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<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm</td>
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<tr>
<td>• Platform of suitable size at the door</td>
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<tr>
<td>• Clear space beyond the handle edge of the door</td>
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<tr>
<td>• Ramp and/or steps of suitable design</td>
<td>7.7/7.8</td>
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<tr>
<td>• Door bell/phone are at suitable height and position</td>
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<td>• External light at entrance</td>
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<td></td>
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<tr>
<td>• Canopy or porch at entrance</td>
<td>7.12</td>
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</tbody>
</table>

| Older and ambulant disabled people   | As above but with canopy or porch at entrance |

<table>
<thead>
<tr>
<th>Wheelchair users</th>
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<th>B</th>
<th>D</th>
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</thead>
<tbody>
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<td>• Step-free access from road pavement and parking space to dwelling entrance</td>
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<tr>
<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm</td>
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<td></td>
<td></td>
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<tr>
<td>• Platform of suitable size at the door</td>
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<tr>
<td>• Clear space of at least 550mm beyond the handle edge of the door</td>
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<tr>
<td>• Ramp and/or steps of suitable design</td>
<td>7.7/7.8</td>
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<tr>
<td>• Door bell/entry phone at suitable height and position</td>
<td>7.11</td>
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<tr>
<td>• External light at entrance</td>
<td>7.11</td>
<td></td>
<td></td>
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<tr>
<td>• Canopy or porch at entrance</td>
<td>7.12</td>
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<td></td>
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<tr>
<td>• Car space within 15 metres of entrance</td>
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</tr>
<tr>
<td>• Covered car space within 15 metres of entrance</td>
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</tr>
</tbody>
</table>
8 COMMUNAL ACCESS AREAS, STAIRS AND LIFTS TO FLATS

8.1 THE NEEDS

All internal communal access areas must allow for the needs of older and ambulant disabled people, people with visual, hearing or cognitive impairment, and on ground floors and where there is lift access, wheelchair users and people manoeuvring a pram or pushchair.

8.2 ENTRANCE DOORS TO COMMUNAL ACCESS AREAS

8.2.1 Entrance doors, including those giving access to external facilities such as drying areas, gardens and refuse stores, must have a clear opening width that allows a wheelchair to pass through. They should therefore have a minimum clear width of 800mm between the door face on one side and the door stop, or second door, on the other and it is preferable that this dimension should be at least 840mm wherever possible. Any weather moulding at the base of the door may intrude into this opening width. (See 2.6) Where communal entrance doors are part of an escape route their width will also be dictated by the requirements of the Technical Standards [3], Part E.

Buildings containing accommodation suitable for wheelchair users:

8.2.2 The entrance door should have a minimum clear opening width of 840mm.

8.2.3 The threshold must be negotiable in a wheelchair. Any upstand must be no greater than 15mm but thresholds should preferably have threshold plates with no vertical surface.

8.2.4 Doors must be partially glazed so they can be seen through. The glazing should reach to within 900mm from the floor for the benefit of wheelchair users and children.

8.3 DOOR IRONMONGERY FOR COMMUNAL ENTRANCE DOORS

8.3.1 All ironmongery must be robust and easy to grasp and operate. Handles should be lever type at least 100mm in length with a return at their end to give hand support and prevent them catching in clothing. Alternatively pull handles and push plates can be provided. All handles should have a thickness or diameter of at least 25mm and have a clearance of at least 45mm from the face of the door. A colour to contrast with the door finish helps people with visual impairment. Handles should be set at a height of 900-1050mm from the ground or floor level.

8.3.2 Lock turns and keys should be easy to grasp and positioned well clear of the door jamb to allow space for less dextrous fingers.

8.3.3 Door closers will usually be needed on common entrance doors to ensure they are secure when not in use, however they are an added inconvenience for people with mobility problems. The closers should be of the delayed action type with a minimum delay of 5 seconds, but this should be adjustable. The closing force should also be adjustable and be set at the minimum effective force, which preferably should be no greater than 12N/m².
8.3.4 It may be considered necessary to install electro-magnetic door closers if users are otherwise unable to negotiate doors.

8.4 CIRCULATION IN COMMUNAL ACCESS AREAS

8.4.1 There must be a clear space inside the door of at least 1200 x 1800mm to allow for wheelchair manoeuvre. Where the door opens outwards this space may be reduced to 1200 x 1200mm.

8.4.2 A wheelchair user should be able to reach the door handle and therefore there should be a clear space beyond the opening edge of the door of at least 300mm (see also 2.5.3 and Section 7.6).

8.4.3 Circulation routes must be free of steps and have a width of at least 1200mm clear of all obstructions. Routes to any facilities, e.g. refuse store, rear door, should be step free and should have a minimum width of 900mm. People with impaired mobility or who are visually impaired will be helped by handrails along circulation routes at a height of 900mm.

Buildings containing accommodation specifically for older or ambulant disabled people:

8.4.4 Circulation routes should allow for people who use walking sticks or frames and be at least 1400mm wide, clear of obstructions, to allow two people to pass.

Buildings containing accommodation suitable for wheelchair users:

8.4.5 The clear area inside the door should have dimensions of 1500 x 1800mm or 1500 x 1500mm where the door opens outwards.

8.4.6 The clear space beyond the opening edge of the door should be 550mm (see also 2.5.3 and Section 7.6).

8.4.7 Circulation routes must allow for full wheelchair use and be at least 1800mm to allow two wheelchairs to pass. Routes to any facilities, e.g. refuse store, rear door, must be step free and should have a minimum width of 1200mm.
Buildings containing accommodation specifically for older or disabled people:

8.4.8 Handrails should be provided on both sides of circulation areas to allow for people who have to use a particular arm or hand. Rails should be as continuous as the arrangement of doors allows (see also 8.6).
8.5 ACCESS STAIRS

8.5.1 Access stairs to upper floor flats should be designed to be easy and safe to use by people with impaired mobility or visual impairment. Steps should have a rise no greater than 170mm and a going no less than 250mm. Nosings should be highlighted.

8.5.2 Flights should rise no more than 1.8 metres so that there is a resting place between floors. This arrangement as well as being more convenient is safer should someone fall. Landings and half landings should allow space for a seat.

8.5.3 Handrails should be provided on both sides of a stair to help those who may have to use a particular arm or hand. Handrails against a wall should extend 300mm horizontally above the top and bottom nosings.

Buildings containing accommodation specifically for older people:

8.5.4 The criteria given in 8.5.1 - 3 must be provided.

8.5.5 It is not anticipated that stair lifts will be fitted to common stairs except in exceptional circumstances. If this is necessary and the stair acts also as a fire escape stair, the lift must not reduce the clear width to below the minimum prescribed by the Technical Standards, Part E.

8.6 HANDRAILS FOR COMMUNAL ACCESS AREAS

8.6.1 Handrails must in general comply with the Technical Standards, Part S. It should be noted that some handrails will be attached to protective barriers required by Part S to be at a height of 1100mm and it will be necessary to have a handrail below the top of the barrier.

8.6.2 Handrails should be of a design that is easy to grasp and therefore be of 45-50mm diameter or width with a clear space of 50mm at the back of the rail. The surface finish should be smooth and comfortable to touch with no sharp edges or corners. Handrails should be firmly fixed to provide good support and with the fixing clear of the part of the rail that is grasped.

Fig 8.3 example of handrail
8.7 LIFTS

8.7.1 Lift access allows flats at any floor level to have a step-free entrance and where lifts are provided they should be fully usable by disabled people, including people using wheelchairs and those with visual impairment. Lifts should incorporate the following features (see also Disability Scotland Access Guide [6]):

- doors with a minimum clear opening width of 800mm;
- internal dimensions of at least 1400mm deep and 1100mm wide;
- controls, both inside and outside the lift, reachable from a wheelchair and at a convenient height for ambulant people, within 900-1200mm from the floor;
- controls inside the lift at least 400mm from the front wall;
- controls with tactile indication so that they are usable by people with impaired sight;
- the lift door remaining open for at least 5 seconds;
- a continuous handrail fixed at 900mm from the floor;
- a landing in front of the lift with a clear space at least 1500 x 1500mm on all floors, to allow for wheelchair manoeuvre;
- audible and visual response to an emergency call;
- in multi-storey blocks, an audible indication of the operating system and location.

8.7.2 However, it should be noted that these features are primarily for the benefit of disabled visitors, as people who are unable to use stairs should not occupy dwellings on upper floors unless suitable means of escape in case of fire are provided in accordance with BS 5588: Part 8 [11].

Buildings containing accommodation specifically for older or disabled people:

8.7.3 In such buildings it is preferable that the internal dimensions of the lift are 1400 x 1600mm to allow for numbers of people with walking aids or in wheelchairs.

Fig 8.4 lift
8.8 DESIGN CONSIDERATIONS FOR PEOPLE WITH VISUAL IMPAIRMENT (See also Building Sight [7])

8.8.1 Communal areas should allow for the needs of people with visual impairment and should therefore have the following features:
- be free of obstructions with any necessary fittings recessed;
- decals to highlight large areas of glass in doors and side panels;
- lighting throughout with a minimum level of 100lux;
- good colour contrast between floor, walls and doors with preferably light coloured walls to maximise available light;
- wall and floor covering with a matt finish to avoid glare from windows and lights and not heavily patterned as this can cause visual confusion;
- stair nosings highlighted with non-reflective, non-slip strips;
- landing at the top of a flight of stairs with a corduroy tactile surface;
- door mats recessed and level with the rest of the floor;
- space under stairs boxed in to avoid areas that are less than head height.

8.8.2 Signage should be in a clear typeface, set against a background of contrasting tone. House numbers should also be in relief.

8.9 CLEANING OF COMMUNAL ACCESS AREAS

Buildings containing accommodation specifically for older or disabled people:

8.9.1 Occupants may not be able to clean communal access areas themselves. Where dwellings have communal access, but have no on-site support, this situation should be allowed for. It may be necessary to provide a small cleaners’ cupboard with a water supply and sink.
### SUMMARY OF DESIGN CRITERIA

<table>
<thead>
<tr>
<th>Category</th>
<th>Design Criteria</th>
<th>Reference</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>All doors with clear opening width at least 800mm</td>
<td>8.2</td>
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<tr>
<td></td>
<td>All doors with clear opening width at least 840mm</td>
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<td></td>
<td>Level threshold</td>
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</tr>
<tr>
<td></td>
<td>Door ironmongery of suitable design</td>
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<td></td>
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<tr>
<td></td>
<td>Area inside the door and circulation areas of adequate size for people with impaired mobility</td>
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</tr>
<tr>
<td></td>
<td>Access stairs suited to use by people with impaired mobility or sight</td>
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<tr>
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<td>All handrails are of suitable design</td>
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<tr>
<td></td>
<td>Any lift is fully usable by disabled people</td>
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<td>Circulation areas at least 1400mm wide</td>
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<td>Handrails on both sides of circulation area</td>
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<td>Lift has internal dimensions of 1400 x 1600</td>
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<td>Door closers of the adjustable delayed action type</td>
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<td>Handrails on both sides of circulation area</td>
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<td>Handrails of suitable design</td>
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<td></td>
<td>Any lift is fully usable by disabled people</td>
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<td></td>
<td>Lift with internal dimensions of 1400 x 1600mm</td>
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<td>Communal areas with features to help those with visual impairment</td>
<td>8.8</td>
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<td></td>
<td>Signage suited to people with visual impairment</td>
<td>8.8</td>
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</table>
9 ENTRANCE DOORS TO INDIVIDUAL HOUSES OR FLATS

(This includes entrance doors opening off communal areas. External public doors to communal areas are covered in Sections 8.2 and 8.3.)

9.1 THE NEEDS

Entrance doors must allow easy and convenient passage to and from the dwelling and provide good security.

9.2 THE DOOR AND FRAME

9.2.1 Entrance doors must have a clear opening width that allows a wheelchair to pass through. They should therefore have a minimum clear width of 800mm between the door face on one side and the door stop, or second door, on the other. Any weather moulding at the base of the door may intrude into this clear width. (See also 2.6)

9.2.2 For external doors a standard 900mm overall door frame with a 807mm wide, 44mm thick door will not give a 800mm clear opening. Even with a door of the readily available width of 838mm this will not be possible. Any standard door meeting this requirement is likely to be a door leaf of 907mm, made by some manufacturers for use with a 1000mm overall frame, giving a clear opening width of approximately 840mm.

Dwellings specifically for older or ambulant disabled people:

9.2.3 Entrance doors to dwellings should preferably have a minimum clear opening width of 840mm.

Dwellings for wheelchair users:

9.2.4 Entrance doors to dwellings for wheelchair users must have a minimum clear opening width of 840mm.

9.2.5 All entrance doors should be of robust construction with a minimum thickness of 44mm.

Fig 9.1 external door frame
9.3 ENTRANCE DOOR THRESHOLDS

9.3.1 Doors with step-free access must have a threshold that can be negotiated by someone in a wheelchair. Any upstand must be no greater than 15mm but thresholds should preferably use threshold plates with no vertical surface.

9.3.2 Thresholds without a step or upstand need very careful designing if there is to be no water penetration. A drainage channel covered with a grating on the outside helps to divert water. An extensive canopy will assist in avoiding water penetration but in exposed locations full protection from a porch will be needed.

9.3.3 At entrances where the access includes steps the threshold should not incorporate weather bars with an upstand of more than 25mm to prevent tripping. A high upstand is particularly dangerous at the top of a step, as this involves negotiating the step and the upstand simultaneously which is difficult for less agile people.

Dwellings for older or disabled people:

9.3.4 There will be a need for a doormat or other floor covering on the inside to take dirt from shoes and wheels. Allowance should be made in the detailing of the threshold for a recessed doormat to avoid the likelihood of tripping and the mat obstructing a wheelchair. The thickness of a doormat may be as great as 30mm.

Dwellings for wheelchair users:

9.3.5 Mats will need to extend 2 metres to catch the full circumference of most chair wheels and should have a dense pile to prevent wheels sinking into it.

Fig 9.2 level threshold

9.4 IRONMONGERY FOR EXTERNAL DOORS

9.4.1 The lock specification should comply with BS 3621 [12]. The main entrance door should be fitted with an opening limitation device and a door viewer or other viewing facility. However, though good security is important, it should always be remembered that the occupants' escape in case of fire is of overriding importance and also that there may be a need for someone to gain entry to assist a lone occupant in an emergency. Entrance doors should therefore always be readily openable from the inside and the use of internally operated bolts should be discouraged when people live alone.
9.4.2 Handles should be lever type, robust and easy to grasp and operate. They should be at least 100mm in length and with a thickness or diameter of at least 25mm. They should have a return at their end to give hand support and prevent them catching in clothing and have a clearance of at least 45mm from the face of the door. A colour to contrast with the door finish helps people with impaired sight. Handles should be set level with light switches at a height of 900-1050mm from the floor.

Dwellings specifically for older people:

9.4.3 Door handles should be of a design that is recognisable as such to a person with dementia or other cognitive impairment.

9.4.4 Lock turns and keys should be easy to grasp and positioned well clear of the door jamb to allow space for less dextrous fingers.

9.4.5 Door viewers should be set at a height of 1500-1550mm to suit the eye level of the majority of people.

Dwellings for wheelchair users:

9.4.6 A wide pull handle may also be needed on the inside of the door. This is more easily reached than the latch handle to pull the door shut. The pull handle should be approximately 200mm long and fixed 100mm in from the hinged edge and level with the other handle or at the height best suited to the user.

9.4.7 Door viewers should be set at a height of 1200mm for use from a wheelchair.

9.5 DOOR OPERATION

Dwellings specifically for older or disabled people:

9.5.1 Some occupants may need the addition of electrically operated door opening devices, either because they lack the dexterity to operate the door handle and lock and/or because it is more convenient for them to deal with callers without travelling to the door (see 18.5).

9.5.2 Entrance doors to dwellings that open off communal areas will require to be self closing. Door closer should be of a type that give the minimum acceptable closing force which preferably should be a resistance of no more than 8N/m². This aspect should be discussed with the Building Control Department of the local authority.

9.6 THE AREA INSIDE THE DOOR

9.6.1 All main entrance doors should open into a circulation area and not a room. This area must have a width of at least 900mm and preferably of at least 1200mm. If it is a small space it should meet the requirements given for draught lobbies (see 9.7).

9.6.2 Where the entrance is step free it is beneficial if the door is positioned so that there is a return of at least 300mm at the handle edge to allow a wheelchair user to reach this.
9.6.3 In family houses it is important that there is adequate space to store a pram so that it does not cause an obstruction in circulation areas.

**Dwellings specifically for older and ambulant disabled people:**

9.6.4 The door should open into a space at least 1200 x 1200mm to allow room for manoeuvre with a walking aid. There should be space for a wheelchair beyond the door swing and the area should extend for at least a further 600mm with a minimum width of 900mm.

9.6.5 There should be a 300mm return on the handle edge of the door to allow for possible wheelchair use and this will also allow space for the possible provision of a shelf, see 9.6.10. However with 1000mm wide door frame, see 9.2.2, this will result in the entrance area with a width slightly in excess of 1200mm.

**Fig 9.3 entrance area for older and ambulant disabled people**

9.6.6 The circulation space immediately inside the door should allow for a person in a wheelchair to turn through 180°. It must therefore have a minimum width of 1500mm extending at least 1500mm back from the face of the door. There should be space for a wheelchair beyond the door swing and the area should either extend for at least a further 500mm with a minimum width of 1200mm, or have the dimensions required for draught lobbies (see Section 9.7).

9.6.7 There should be a return of at least 300mm, and preferably 550mm, on the handle edge of the door to allow access to the lock and handle.

9.6.8 There should be storage space for an outdoor wheelchair and space alongside this for transferring to and from an indoor chair. This will require an area 1100 x 1700mm, with adjacent circulation space (see also Section 13.13).
Dwellings specifically for older or disabled people:

9.6.9 There should be a box or bag behind the letter plate to prevent mail falling to the floor. Where there is a box at the back of a door, space must be allowed for this when the door opens against an adjacent wall; for this reason it may be preferable for the letter plate to be in a panel at the side of the door. The letter plate should be 650-750mm from the floor.

9.6.10 A shelf adjacent to the door at the opening edge, both inside and out, where items can be laid while opening and closing the door should be incorporated where possible. Each shelf should be at least 300mm in depth and width but any exposed corner should be splayed or rounded. The shelf should be at a height 750-800mm from the floor and have clear space below.

9.6.11 In dwellings for wheelchair users a shelf, as describe above, should always be provided.

9.7 DRAUGHT LOBBIES

9.7.1 Lobbies at external doors are of benefit in preventing heat loss. However, doors in close proximity to each other can be difficult for a person with impaired mobility unless there is space within the lobby, clear of the swing of the door that is being passed through, for them to stand before opening the second door. Lobbies should preferably also allow for wheelchair use.
9.7.2 Any lobby must allow space for wheelchair manoeuvre between the doors.

9.7.3 It can be beneficial to provide an entrance lobby that also serves as a storage/charging space for an electric chair and possibly also a utility area (see 13.13).

9.8 SECONDARY ENTRANCES

9.8.1 Entrance doors giving access to gardens or service areas should also meet the requirements of Sections 9.2 - 9.4.

9.8.2 The design of ‘patio’ doors is important. Sliding doors are often used in this situation with a large upstand at the threshold, often immediately adjacent to a step or steps, see 9.3.3 above. This configuration is hazardous for anyone and should be avoided, particularly in housing specifically for older or disabled people. Doors from living areas to a garden should meet the same criteria as other entrances.
<table>
<thead>
<tr>
<th><strong>SUMMARY OF DESIGN CRITERIA</strong></th>
<th><strong>ref.</strong></th>
<th><strong>B</strong></th>
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<td>• All entrance doors with clear opening width of at least 800mm</td>
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<td>• Level thresholds where access is step free</td>
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<td>• Other thresholds have minimum upstand</td>
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<tr>
<td>• Door ironmongery is robust and easy to grasp and operate</td>
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<td>• Area inside all entrance doors is at least 900mm wide</td>
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<tr>
<td>• Door position with clear space beyond the handle edge</td>
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<tr>
<td>• Any lobby is of sufficient size</td>
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<td><strong>Older and ambulant disabled people</strong></td>
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<td>As above with all criteria ‘basic’ plus:</td>
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<tr>
<td>• Allowance is made for recessed doormat</td>
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<tr>
<td>• Area inside the main entrance door is at least 1200 x 1200mm</td>
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<tr>
<td>• Shelf beside the door</td>
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<td><strong>Wheelchair users</strong></td>
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<td>• All entrance doors with clear opening width of at least 840mm</td>
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<tr>
<td>• Level threshold</td>
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<tr>
<td>• Allowance for recessed doormat</td>
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<td>• Door ironmongery is robust and easy to grasp and operate</td>
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<td>• Any door closer is the adjustable delayed action type</td>
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<td>• Area inside the entrance door allows for wheelchair turning and manoeuvre</td>
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<tr>
<td>• Entrance door positioned with a return of at least 300mm beyond the handle edge</td>
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<tr>
<td>• Entrance door positioned with a return of at least 550mm beyond the handle edge</td>
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<tr>
<td>• Letter box or bag behind the letter plate</td>
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<tr>
<td>• Shelf beside the door</td>
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<tr>
<td>• Any draught lobby is of sufficient size</td>
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10 CIRCULATION SPACES AND INTERNAL DOORS

10.1 THE NEEDS

Circulation areas must allow the occupants easy movement around the dwelling. Square halls are best and long passages should be avoided. Passages and pass doors at all floor levels should be designed to allow for possible use by a person in a wheelchair. For people who are easily confused, such as those with dementia, it may be necessary for doors to be visually differentiated.

10.2 PASSAGES

10.2.1 Passages must be at least 900mm wide and preferably wider. If a passage has a right angle turn a splay of 200-300mm at the corner will allow easier circulation.

10.2.2 Radiators or heaters should preferably not be positioned in passages unless they are recessed. If there has to be a radiator or heater in a passageway it should be positioned where it does not hamper wheelchair turning into a doorway nor reduce the clear width of a passage to less than 750mm and then for a distance of no more than 900mm.

Dwellings for wheelchair users:

10.2.3 Passages and pass doors must be designed to allow a wheelchair user to have access to all parts of the dwelling. Passages should generally be at least 1200mm wide, but a width of 1000mm is adequate for lengths of up to 900mm, provided there is no door opening at a right angle to the direction of the passage. External corners in circulation areas should generally be splayed. (See also 2.5.4)

10.3 CIRCULATION WITHIN TWO-STOREY HOUSES

10.3.1 Stairs in two storey houses should allow the addition of a stair lift if needed. A stair lift is most economically installed on a straight flight staircase, but dog-leg stairs have the benefit of providing a resting space on a half landing for a person who finds climbing stairs difficult. Also they are safer if someone should fall.

10.3.2 Tapered treads must be avoided in the design of stairs, particularly at the top of a flight, as these are an added hazard to people who have impaired mobility, or are visually impaired, or carrying young children, as well as to young children themselves.

10.3.3 Handrails should provide firm support, be easy to grasp and be 45-50mm wide.

10.3.4 If a house has to be adapted for a disabled person who cannot use a stair lift, a through floor lift may be required. This needs a corresponding area of approximately 1200mm x 800mm on each floor, preferably in the corner of a room.

10.4 DOOR POSITIONS

10.4.1 Doors must be positioned to assist easy circulation. Doors should be hung with hinges adjacent to the corner of the room into which they open, or with a clear space of at least 300mm between the opening edge of the door and the return wall. The former of these arrangements also help people who are easily confused to see where the door leads.
10.4.2 Doors opening off opposite sides of a passage should be directly opposite each other. Where this is not possible it is beneficial to have the doors hung so that distance between the handle edges is as short as possible.

10.4.3 Doors opening at right angles to a 900mm wide corridor are difficult when a wheelchair is being used. Therefore if the entrance to rooms involves a sharp turn, the corridor width at that point should be at least 1200mm wide. This may be achieved by the use of space under a stair provided the clear height is at least 1500mm.

**Dwellings for wheelchair users:**

10.4.4 All pass doors must be positioned with a clear space of at least 300mm adjacent to the handle edge on the pull side of the door and preferably on the push side as well. When housing is being provided to suit the needs of severely disabled people who have very limited movement, the clear space should be 550mm, particularly on the pull side, to allow access alongside the handle (see 2.5.3). In some cases automatic door controls may be necessary (see 18.5.4).

10.4.5 Pass doors at right angles to each other should both be at least 400mm from the corner to the opening.

10.4.6 Turning into a door which involves a right angled turn at the end of a corridor is awkward but is helped if there is a space of 200mm beyond the door whether or not this is at the opening edge.
10.5 INTERNAL DOORS AND FRAMES

10.5.1 Pass doors, including doors to walk-in cupboards, must have a clear opening width of at least 750mm. Door frames should not have threshold plates as these hamper the use of walking aids, trollies and wheelchairs.

10.5.2 For internal doors a 900mm overall door frame with a standard door leaf of 826mm gives a clear opening of about 770mm for doors in general and 755mm for fire doors. Such doors are therefore adequate for general use. (See also Section 2.6)

10.5.3 Bathroom doors that do not open outwards should have easily removable stops in case someone collapses against the inside of the door.

Dwellings specifically for older or disabled people:

10.5.4 Bathroom doors should open outwards to allow access if someone collapses against the inside of the door and to provide more clear space in the bathroom.
10.5.5 For people who are easily confused, such as those with dementia, it is important that the bathroom door in particular is visually differentiated. This may be done by bold symbols or colours of different tones.

10.5.6 For some people it may be necessary to provide automatic door controls (see 18.5.4).

Dwellings for wheelchair users:

10.5.7 The clear opening width of pass doors must be at least 800mm, though there is obviously some benefit in having doors even wider to enable easier circulation. A 900mm door frame as described in 10.5.2 is therefore inadequate. A 926mm wide door leaf, now included in the range of most door manufacturers, for use with a 1000mm overall frame, gives a clear width of 870mm or so, but the space taken up by the door swing within the room may then become obtrusive. A door of 950mm overall width and an 876mm wide door leaf giving a clear opening width of about 820mm is a good compromise and manufacturers should be encouraged to add this to their range.

10.5.8 Door frames should have bevelled arises to minimise damage and must not have threshold plates. Doors should open to an angle greater than 90° to give maximum clearance from the handle as a person passes through.

10.5.9 Doors should preferably be of solid core construction but if not must at least be blocked to allow the fixing of pull handles at any height between 750mm and 1050mm from the floor.

10.5.10 Sliding doors or sliding-folding doors may be of benefit in some instances, particularly for shallow storage space where hinged doors can obstruct wheelchair access. As pass doors they are liked by some and strongly disliked by others. Though they eliminate the problems of manoeuvring round a hinged door they have the disadvantage of using wall space and interfering with the positioning of light switches, power sockets, etc. and their mechanism is often found to fail. Where sliding doors are used good quality gear is essential to avoid problems in use and high maintenance costs.

10.6 FIRE DOORS

10.6.1 Fire doors, which require to be self closing, are a considerable inconvenience to older and disabled people on a day to day basis, but in most flats they will be a mandatory requirement (see 6.3.5).

Dwellings specifically for older or disabled people:

10.6.2 The closer should be of a type that gives the minimum acceptable closing force which preferably should be a resistance of no more than 8N/m. This aspect should be discussed with the Building Control Department of the local authority.

Dwellings for wheelchair users:

10.6.3 If a flat is occupied by a person in a wheelchair delayed action closers should be used.
10.7 INTERNAL DOOR IRONMONGERY

10.7.1 Handles should be lever type, robust and easy to grasp and operate. They should be at least 100mm in length and with a thickness or diameter of at least 25mm. They should have a return at their end to give hand support and prevent them catching in clothing and have a clearance of at least 45mm from the face of the door. A colour to contrast with the door finish helps people with impaired sight. Handles should be set level with light switches at a height of 900-1050mm from the floor.

Dwellings specifically for older people:

10.7.2 Door handles should be of a design that is recognisable as such to a person with dementia or other or cognitive impairment.

10.7.3 Lock turns on bathroom or other doors should be at least 50mm long and well clear of the door jamb so that they are easy to manipulate. Locks on bathroom doors should be capable of being released from the outside in case of emergency.

Dwellings for wheelchair users:

10.7.4 Doors may also need to be fitted with a wide pull handle on the trailing face. This is more easily reached than the lever handle to pull the door shut. The pull handle should be approximately 200mm long and fixed 100mm in from the hinged edge level with the other handle, or at the height best suited to the user.

10.7.5 Some wheelchair users may find doors with roller catches easier to operate than those with latches. This will require an adjustable ball catch with pull handles on both sides of the door.

10.7.6 Doors used by people in wheelchairs can become damaged and it may be thought desirable to fit kicking plates. These should be 300mm high and blend with the door finish to be as unobtrusive as possible. However, some occupants may consider any plates to be unsightly and unsuited to a domestic environment. Kicking plates should therefore only be fitted when the occupier or landlord considers them necessary.

Fig 10.5 door ironmongery for wheelchair user
### SUMMARY OF DESIGN CRITERIA

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<th>General</th>
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<td>• Space for future thro’ floor lift in two-storey houses</td>
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<td>• Doors positioned and hinged to assist circulation</td>
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<td>• Doors with clear opening width of at least 750mm</td>
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<td>• Pass doors without threshold plates</td>
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<tr>
<td>• Door ironmongery of suitable design</td>
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| Older and ambulant disabled people | | |
|-----------------------------------|--|
| As above, though it is anticipated that all accommodation will be on one floor | |

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<tr>
<th>Wheelchair users</th>
<th>ref.</th>
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<th>D</th>
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<td>• Passages of sufficient width</td>
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<tr>
<td>• Doors positioned and hinged to assist circulation</td>
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<td>• Pass doors without threshold plates</td>
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<td>• Door construction allows pull handles to be fixed at different heights</td>
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<td>• Door ironmongery of suitable design</td>
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11 LIVING AND SLEEPING AREAS

11.1 THE NEEDS

11.1.1 Rooms must be of a size and shape that when furnished they allow space for circulation and access to each item of furniture and windows, heating appliances, etc. To assess compliance with these criteria nominal furniture and associated activity spaces of the sizes shown in Figs 1.1, 1.3 and 1.4 should be assumed. A 600mm wide ‘path’ must be allowed for the necessary circulation. The ‘path’ may overlap activity spaces.

Dwellings for wheelchair users:

11.1.2 The ‘path’ must be 800mm wide and there must be space for a wheelchair to turn through 180°, i.e. a circular area of 1500mm diameter (see 2.5.1), in living rooms and bedrooms designed for wheelchair use.

11.2 LIVING ROOMS

11.2.1 Notional furniture must be allowed for as follows:

- easy seating for the number of bedspaces plus two;
- bookcase/storage fitment(s) with a total length of 2000mm and height of 1500mm;
- television;
- occasional table;
- a desk or work space with chair in dwellings for three or more people (which may be located elsewhere in the dwelling).

Fig 11.1 living room furniture and activity spaces, minimum dimensions
11.2.2 Circulation routes through the living room to the kitchen or garden should be as short and unobtrusive as possible.

Dwellings for wheelchair users:

11.2.3 Wheelchair users may require space in the living area for bulky items of equipment such as portable hoists and standing frames. They may also wish to transfer to an easy chair and therefore there needs to be space for a wheelchair in addition to the furniture listed above.

Fig 11.2 examples of seating layouts
11.3 DINING SPACE

11.3.1 Notional furniture must be allowed for as follows:
- dining table and chairs, or space for a wheelchair, for the number of bedspaces plus occasional visitors;
- sideboard/dresser if this area is in a separate dining room.

11.3.2 The dining space should be within easy reach of the kitchen.

Dwellings specifically for older or disabled people:

11.3.3 For convenience there is much to commend the eating area being in the kitchen. Where it is not in the kitchen there should be no more than one door between it and the kitchen.

Fig 11.3 dining area furniture and activity spaces, minimum dimensions
11.4 BEDROOMS

11.4.1 Notional furniture must be allowed for as follows:

- bed or beds;
- for each bed space;
- 600mm minimum run of hanging space;
- drawer units 1000mm high and totalling 1200mm in length;
- bedside table.

Where built-in shelved storage is provided in conjunction with built-in hanging space, this may replace some, but not all, of the drawer unit requirement.

Fig 11.4 bedroom furniture and activity spaces, minimum dimensions
Fig 11.5(a) examples of typical bedroom layouts

SINGLE BEDROOM
with access from both sides of the bed

DOUBLE BEDROOM
with twin beds
11.4.2 Double bedrooms should be able to accommodate two single beds to allow for different types of households. This is particularly so in dwellings intended to accommodate two people but with only one bedroom. All bedrooms in this situation should allow for two single beds. In other dwellings all but one double bedroom should allow for two single beds.

11.4.3 At least one bedroom in all dwellings must allow for wheelchair access from the door to alongside a bed with a ‘path’ from the door and a clear space beside the bed at least 800mm wide.
Dwellings specifically for older or disabled people:

11.4.4 People with any form of mobility problem have difficulty making a bed that is positioned close to a wall. Also if a person needs nursing attention, access from both sides of the bed can be helpful. Therefore bedrooms for the use of older or disabled people must be able to accommodate a bed with access space on three sides.

11.4.5 Some frail or disabled people may be confined to bed over long periods. For such a situation the location of the bedroom in relation to the living areas of family dwellings and the aspect from the window are important. Also the need for outlets and controls that can be operated from the bed should be allowed for. This may include telephone, radio, TV, alarm system, entry phone, etc. as well as the usual lighting (see Sections 18.2 and 18.5).

Dwellings for wheelchair users:

11.4.6 In family houses there should be a double bedroom with space for a double or two single beds, whichever best suits the occupants, and a single bedroom, both suitable for a wheelchair user.

11.4.7 Other bedrooms should be accessible in a wheelchair and allow for wheelchair access alongside a bed so that, for instance, a disabled parent could attend to a child in bed.

11.4.8 A bedroom for wheelchair use should have built-in clothes hanging space and shelved clothes storage which is purpose built to be used by someone in a wheelchair. The space should have a minimum clear depth of 600mm and a hanging rail that can be set at a height of 1400-1500mm from the floor. In other respects the space should be as the requirements for general storage (see 12.2.3). The bedroom should also have storage for a wheelchair and other pieces of special equipment (see 12.2.4).

11.4.9 Some people will require a hoist to transport them between their bed and the bathroom and the layout of the bedroom should allow for this. (See Section 14.10).

Fig 11.6(a) examples of bedroom layouts for wheelchair users
Fig 11.6(b) examples of layouts for wheelchair users
### SUMMARY OF DESIGN CRITERIA

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12 STORAGE

12.1 THE NEEDS

12.1.1 In all dwellings there should be adequate and easily accessible storage for:

- outdoor clothes (beside entrance door);
- cleaning and other household equipment (vacuum cleaner, mop, ironing board, etc.);
- linen;
- general storage (suitcases, equipment for hobbies, DIY, gardening, garden chairs. etc.);
- in family houses a pram;
- special items such as baby equipment, sports gear or aids for older and disabled people.

12.1.2 Any cupboard providing space for water cylinders or tanks, or bedroom wardrobe space, is additional to these storage needs.

12.2 PROVISION

12.2.1 All storage should be easily accessible to someone with impaired mobility and should partly be in shallow cupboards 500-600mm deep, that could be shelved, and partly in walk-in cupboards to take larger items.

12.2.2 Where meters are located in storage space they must not be on rear walls but should be immediately adjacent to the door so that they can be easily read and the storage space can be fully utilised.

Dwellings for wheelchair users:

12.2.3 Cupboards should have full width doors. These should be hinged and open through 180° or be sliding-folding so that the doors, when open, do not hamper access. There must be a clear space in front of the doors of 1200mm to allow wheelchair access and manoeuvre. The floor of the storage area must be continuous with the main floor, without a base plate.

12.2.4 In addition to the usual storage requirements provision must be made for the storage of more than one wheelchair and other equipment. A disabled person may have two wheelchairs for a variety of reasons. There should be provision for storage for one of these in or adjacent to the hall or lobby, and for the other in or adjacent to the bedroom. Also a disabled person is likely to have other bulky special equipment, e.g. a portable hoist, standing frame, medical supplies, and therefore there should be adequate and convenient storage provision for these.
### SUMMARY OF DESIGN CRITERIA

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13 KITCHENS

13.1 THE NEEDS

13.1.1 All kitchens must be designed to be convenient and safe to use by the occupants, to accommodate the appliances and equipment that users are likely to need and to have adequate and accessible storage for food and utensils.

13.1.2 The needs of wheelchair users in relation to kitchens are very specific and are given separately in Sections 13.5 - 13.12.

13.2 LAYOUT

13.2.1 The layout of the fittings and appliances should give a continuous sequence of worktop-sink-worktop-cooker/hob-worktop.

13.2.2 A simple way to assess the convenience of a kitchen layout is the ‘work triangle’, formed by lines joining the centre front of the sink, cooker/hob and fridge. For a kitchen to have adequate working space and yet be reasonably compact the route from sink to cooker should be between 1.2 and 1.9 metres long and the total length of the sides of the work triangle should be between 3.6 and 6.6 metres. Through circulation routes should not cut across the work triangle, particularly in family houses where children may run across the working area.

13.2.3 There must be a clear space of at least 1200mm in front of all fittings and appliances to allow easy access and circulation space. A clear floor space which includes an area 1500 x 1500mm will allow the kitchen to be adapted for use by someone using a wheelchair.

13.2.4 Appliances should be allowed for as follows:

- floor space for a cooker or space for a worktop hob and built-in oven, a fridge-freezer 1700mm high and a washing machine;
- worktop space for a microwave oven;
- space for at least one other appliance (tumble drier with vent, dishwasher).

All floor mounted appliances should be taken to have a width and depth of 600mm. It can be presumed that, where the location allows and ventilation can be provided, tumble driers can be stacked on washing machines.

13.2.5 The space for a cooker or hob must never be in front of a window or where window curtains could be over the hob. The side of wall units must be at least 100mm clear of the space over a cooker or hob.

Dwellings specifically for older people:

13.2.6 People with dementia may be able to use a conventional cooker but will find a split hob and oven very confusing.
Dwellings specifically for older or disabled people:

13.2.7 The controls for kitchen window ventilation must not be obstructed by kitchen units or appliances, or there should be remote or automatic control of ventilation (see also Section 16.3).

Fig 13.1 examples of worktop-sink-worktop-cooker-worktop arrangements
13.3 KITCHEN UNITS AND STORAGE

13.3.1 Adequate storage is essential to the convenience of a kitchen. The Technical Standards [3], Part Q, require all dwellings to have at least 1m³ of storage in the kitchen, but this is a very minimal amount even for small households and inadequate in family housing. Kitchen storage, excluding storage for cleaning equipment, etc (see Section 12.1), should be between 1.5 m³ and 2.0 m³, depending on the size of the dwelling.

13.3.2 All worktops should be 600mm deep to accommodate standard sized appliances below them and be at the standard height of 900mm from the floor. Storage units that fully occupy the space below worktops will increase the volume of storage provided, but the rear and lower part of this will be out of sight and difficult to reach unless it is fitted with pull-out shelves or baskets. Units that are 500mm deep are preferable and also have the benefit of providing a 100mm space for service pipes below the back of the worktop.

13.3.3 Shelves more than 1700mm from the floor will be difficult for many people to reach. Users who have difficulty in bending and/or stretching will benefit from some shelved storage between 400mm and 1500mm from floor level. This can be provided either in a walk-in cupboard, or a shelved, tall kitchen unit, or proprietary wall units fixed at the appropriate height.

13.3.4 Where kitchens may be used by people with visual impairment, worktop colours should be neither very dark nor very light and should not be heavily patterned. A slightly raised front edge to the worktop will help contain spills and help prevent items falling to the floor. This is best achieved by being incorporated in a post-formed worktop.

Dwellings specifically for older or ambulant disabled people:

13.3.5 The kitchen fittings need not be of special design, though they should have doors that open through 170-180° to allow easier access to the storage space. It is also important that the fixing of hinges to base unit doors is strong enough to withstand the doors being used as a support by someone rising from a bending position. Handles should be of the ‘D’ type and at least 100mm long and at least 25mm from the unit face.

13.3.6 The standard worktop height of 900mm will be satisfactory for most people but it is desirable to have some work surface at a height of 750-800mm that can be used while sitting down and which has knee space below it. This can either be a section of worktop or a kitchen or dining table.

13.3.7 Wall units should be positioned as low as compatible with providing a clear view of the worktop. Shelves should be at maximum height of 1500mm from the floor. Wall unit doors should preferably be no more than 400mm wide so that when open they do not form a dangerous obstruction.

13.3.8 The floor finish should be slip resistant.

13.3.9 A few people who are ambulant but otherwise seriously impaired will need a kitchen adapted to their particular needs, incorporating the appropriate features described for wheelchair users in Sections 13.5, et seq.

13.3.10 People with dementia may require doors to be removed from kitchen units so that they can see where things are stored.
### 13.4 CONTROLS AND SERVICES

13.4.1 Taps should be as described in Section 17.5.

13.4.2 Sockets should be provided as described in 18.2.3 and these, switches and other controls positioned as shown in the table in 18.2.11.

#### SUMMARY OF DESIGN CRITERIA

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Fig 13.2 kitchen fittings for older or ambulant disabled people
13.5 GENERAL CONSIDERATIONS FOR KITCHENS IN DWELLINGS FOR WHEELCHAIR USERS

13.5.1 Kitchens should whenever possible be fitted to suit the needs of the specific occupier or household. This in particular involves the height of the worktop and the position of controls. The overall layout of the kitchen will usually be the same for any user.

13.5.2 It is first necessary to assess what the needs of the household are. These will fall into three broad categories of kitchen use:

- Solely or primarily for use by someone in a wheelchair:
  This will need fittings at a height to suit the wheelchair user. The need for the worktop to be adjustable should be assessed against the expected life of the fittings and the likelihood of adjustment being necessary before the fittings need replacing.

- For use to a significant extent by both someone in a wheelchair and an ambulant person:
  This will need a combination of worktop heights and the sink will need to be of the type that can readily be adjusted in height.

- Primarily for use by ambulant people, but with limited use by someone in a wheelchair:
  In this situation, such as a family with a child who uses a wheelchair, there is likely to be a preference for standard kitchen storage units, certainly for worktops at a standard height, with a section of worktop at a height suited to the wheelchair user.

13.5.3 The layout of the fittings and appliances should give a continuous sequence of worktop-sink-worktop-cooker/hob-worktop.

13.5.4 In all situations the kitchen must be of a size that allows a clear space of 1500mm in front of fittings and appliances to allow a wheelchair user space to manoeuvre and turn through 180°, i.e. a circular area of 1500mm diameter (see 2.5.1).

13.5.5 The controls for window ventilation must not be obstructed by kitchen units or appliances or there should be remote or automatic control of ventilation (see also 16.3).

13.6 WORK SURFACES

13.6.1 Worktops, the sink and the hob must be set at a height that best suits the user. For a person in a wheelchair this is likely to range between 700 and 850mm from the floor.

13.6.2 Worktops should have rounded post-formed edges as people may have to lean against them. The edge may include an upstand, see 13.3.4.
13.6.3 Proprietary kitchen units for people in wheelchairs allow for different worktop heights, though the method of adjustment varies. Some units are designed on the basis of an ability to adjust the height of the plinth or supports to the needs of a particular occupant at the time of fitting, and change this when the occupant changes or needs become different. Other, more specialised, and more costly, units have adjustable brackets and slotted wall channels. These are more easily adjusted and may therefore be more cost effective if frequent change is likely. Units are generally 600mm deep.

13.6.4 Wheelchair users will require knee space under the main work surface, the sink and the hob. It is therefore of great benefit if these are adjacent and the knee space beneath them is uninterrupted. Such a layout is usually best achieved by an L shaped arrangement. Any knee space should be at least 750mm wide, and 500mm deep.

13.6.5 Where work surfaces turn a corner a splayed front edge for a length of at least 600mm is more convenient than a right angle. In either case a wheelchair user will have difficulty reaching into the corner and it is therefore beneficial if the wall at that point is blocked out to form a matching splay and the worktop retains a 600mm depth.

13.7 KITCHEN UNITS AND STORAGE

13.7.1 The provision of sufficient storage space is a usual problem in a kitchen, but this is particularly so in kitchens designed for wheelchair users, where reach is limited and knee space rather than storage is provided under worktops. It is therefore essential that in addition to the storage that can be obtained in units under the worktop or wall units, there is shelved storage space reaching between 400mm and 1350mm from the floor and adjacent to the main work area.

13.7.2 Wall units should be no more that 300mm deep and be set at a height of about 300mm above the worktop. It may be preferable to have at least some wall units as open shelving without doors. Wall unit doors should be no more than 400mm wide so that they do not form a dangerous obstruction when open. In family housing the upper shelves of taller wall units, though not reachable from a wheelchair, can be useful for items that are used infrequently.

13.7.3 The kitchen units should have doors that open through 170-180°. Handles should be of the ‘D’ type, at least 150mm long, with a diameter of 20-25mm and with a clearance of at least 25mm from the unit face.

13.7.4 The units should also incorporate pull-out worktops, below the oven and elsewhere, which can be used to extend the main work area. A mobile trolley should be provided as part of the kitchen storage. Full use should be made in storage units of fittings such as carousels, pull out baskets, etc. to make the storage as convenient and accessible as possible.
13.8 SINKS

13.8.1 The height of sinks should be adjustable along with the worktop and all pipe connections should be flexible to allow for this. It will generally suffice if the adjustment can be done in the same manner as the worktop height, however, for some households it may be thought desirable to have a special sink that can be adjusted on a day-to-day basis.

13.8.2 The depth of the sink bowl should be 150-175mm to be convenient for use and yet be shallow enough not to interfere with the knee space below it. For the same reason the waste outlet and trap must be at the back of the sink. The sink bowl and all exposed hot water pipes in the knee space under the sink, must be insulated to avoid burns to the legs of people with sensory impairment (see also 17.4).

13.8.3 A mixer tap should be provided and positioned so that a kettle or pan can be filled from it while resting on the drainer or work surface and then, if necessary, be slid along the work surface to the hob. The tap should therefore be on the hob side of the sink. It is generally preferable to have the tap at the back corner of the bowl, though some users will prefer taps in the usual position behind the bowl. Users with limited reach will need special tap controls to be positioned on the fascia of the sink. Taps should be as 17.5.2, et seq.
13.9 COOKING FACILITIES

13.9.1 Cooking facilities will generally be a separate hob with knee space below and an oven fitted within a housing unit. The height at which the oven is set will be dictated by the height of the oven shelves that best suits the users and their ability to reach the controls, which on most ovens are at the top of the unit. In general the base of the oven should be set at 750mm from the floor.

13.9.2 Most wheelchair users will prefer the oven door to be side hinged as a bottom hinged door impedes their ability to reach into the oven and may burn their knees. There should be a pull-out shelf below the oven and a laying space on a worktop, adjacent to the oven on the opposite side to the door hinge and with knee space below.

13.9.3 There should also be worktop space for a microwave oven on a worktop unless a microwave is preferred as the main oven, which may be the case for severely disabled people living on their own. Again there should be a laying space on a worktop, adjacent to the oven on the opposite side to the door hinge and with knee space below.

13.9.4 A hob with staggered hot plates may be preferred to a square one as some users may have difficulty reaching over pans on the front hobs to those at the back. The controls should preferably be positioned towards the front of the hob, however many hobs are manufactured with the controls at the side of the plates or rings. If these cannot be reached special controls should be positioned on the worktop fascia. The underside of the hob must be well insulated to prevent it burning the user's knees.

13.10 OTHER APPLIANCES

13.10.1 In kitchens for wheelchair use there should be space for:

- a fridge;
- a freezer, separate from the fridge*;
- a washing machine;
- a tumble drier, with vent;
- a dishwasher, in dwellings designed for four or more people.

(*A combined fridge-freezer will only be appropriate if the top shelf is no higher than 1050mm and models of this size are unlikely to be adequate for a family.)

Fig 13.6 cooking facilities for wheelchair users
13.10.2 Stacking of appliances will generally not be an option as the higher one would be out of reach from a wheelchair. Nor will it be possible to fit appliances under worktops that are set at a height to suit wheelchair users. Space for appliances therefore must be positioned clear of the worktop-sink-worktop-hob-worktop sequence and allowance made for the change in height where this occurs. One continuous run of space to take all floor mounted appliances will allow maximum flexibility for different permutations of equipment. Fridges may be fitted in a housing unit at a convenient height for the user; otherwise it is helpful if appliances are on a 300-400mm high plinth to bring them to a position that is more easily reached.

Fig 13.6 appliances on plinth

Fig 13.7 example of worktop-sink-worktop-cooker-worktop arrangements for wheelchair users
13.11 FINISHES

13.11.1 It is desirable that a splash back at least 300mm high is provided behind all worktops and sinks.

13.11.2 Where the height of worktops and/or sinks is readily adjustable and there is therefore no seal at the junction with the wall, the wall will need to have an impermeable surface of tiles or suitable sheet material from approximately 650mm to 1200mm from the floor, which will form a splashback.

13.11.3 The floor finish should be slip resistant as described in Section 15.2.

13.12 ELECTRICAL SERVICES

13.12.1 Sockets should be provided as described in 18.2.3 and these, switches and other controls positioned as described in 18.2.11.

13.12.2 Power sockets in relation to worktops should be as 18.2.7.

13.13 LAUNDRY/UTILITY AREAS

13.13.1 Laundry facilities outwith the kitchen are particularly desirable in dwellings shared by unrelated people and in family houses when the main dining area is in the kitchen.

Dwellings for wheelchair users:

13.13.2 When an internal space is needed for the storage and recharging of electric scooters, this can be combined with the accommodation of a washing machine and possibly a tumble drier to form a utility area.

Fig 13.8 utility area
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14 BATHROOMS AND WC COMPARTMENTS

14.1 THE NEEDS

14.1.1 Bathrooms must be of a design and size that allows for different and changing needs.

14.1.2 Space in a bathroom allows for flexibility in its use and layout. The majority of adaptations needed on medical grounds to existing housing are because bathrooms are unsuitable or inadequate. Many bathrooms are designed to minimum dimensions dictated by the length of the bath and the combined width of the fittings. Such bathrooms can be awkward for anyone, with the door swing taking up a large part of the clear floor area and lack of space for a chair or stool or for bathing and drying young children.

14.1.3 The needs of wheelchair users in relation to bathrooms are very specific and are given separately in Sections 14.9 - 14.17.

14.2 GENERAL REQUIREMENTS FOR BATHROOMS

14.2.1 The layout and dimensions of all bathrooms must accommodate different needs and allow for:
- a bath or a shower so that the occupant can have which ever best suits their needs;
- space for someone in a wheelchair to enter and close the door - this may be achieved by the door opening outwards, provided this does not cause an obstruction in the hall or landing (see also 14.2.7);
- space for a stool or small chair;
- fittings with the necessary activity spaces as given below;
- access to window and/or ventilation control, see 16.3.

14.2.2 Walls adjacent to the WC and around the bath should be of a construction that allows for the secure fixing of grab and support rails should these be needed. The walls should either be of solid construction or framed partitions with plywood sheathing. Consideration needs to be given on the means of fixing where supports are to be fixed to dry lined external walls.

14.2.3 All taps should be as Section 17.5.

Dwellings specifically for older or ambulant disabled people:

14.2.4 The baths versus showers debate cannot easily be resolved. It has two elements, peoples’ needs and their preferences. A person’s particular disablement or mobility problem may result in them being unable to use a bath, and others unable to use a shower, or needing the use of a bath for therapeutic reasons. The incidence of each of these situations is difficult to predict. People will also have a preference for a bath or for a shower and though in recent years the number of dwellings with showers has increased, a bath is what many people are accustomed to and enjoy. Showers on the other hand are more economical in use and save both energy and water.

14.2.5 It is advisable to provide a bath with a shower over it in some dwellings and walk-in showers in others, to cater for different needs within any development. The proportion of each will depend on the propensity of needs and preference among the likely user group.
14.2.6 The provision of a floor gulley in bathrooms at ground floor level allows for adaptation to a ‘wet’ bathroom for a disabled person.

14.2.7 The bathroom door must open outwards to allow access if a person should collapse against it.

14.2.8 The bathroom should be positioned so that it is convenient to the bedroom(s).

14.2.9 All walls adjacent to the WC and to the bath or shower must be designed to take grab rails and supports and to allow these to be securely fixed in whatever position best suits the occupant. It may also be necessary to fix floor to ceiling support poles. (See also 14.2.2)

14.2.10 The floor finish should be slip-resistant (see 15.2).

14.2.11 While careful design and the provision of special fittings and equipment can help achieve a convenient and safe bathroom, in general it should be remembered that people may not wish a bathroom that has a clinical appearance unless this is essential to their needs.

14.3 WCs

14.3.1 WCs should be positioned with their centre line 450mm from a wall capable of taking support rails.

**Fig 14.1 WC position and activity space**

**Dwellings specifically for older or ambulant disabled people:**

14.3.2 The height of the rim should be 420-450mm.

**Dwellings specifically for older people:**

14.3.3 For people with dementia the WC seat should be a dark colour so that it is recognisable to them.
14.4 WASH BASINS

14.4.1 Wash basins in bathrooms should have minimum dimensions of 550 x 425mm and be fixed in such a way as they can be leaned on safely.

14.4.2 The centre line of the wash basin should be at least 500mm from any adjacent wall to allow space for arms while hair washing.

![Diagram of wash basin dimensions](image)

**Fig 14.2 wash basin activity area**

14.4.3 Wash basins in WC compartments may be of the small hand rinsing type.

Dwellings specifically for older or ambulant disabled people:

14.4.4 People may have difficulty in bending over a basin, particularly for hair washing; the front rim of the basin should therefore be at a height of 800-850mm.

14.5 BATHS

14.5.1 The bath position must not be hard against a wall at both ends nor below a window. There should be some flexibility in the positioning of the bath - a space of at least 400mm at the head of the bath can accommodate a shelf and provides space for the use of bathing aids if required. A shelf at the tap end gives easier access to the taps and the full length of bath if other fittings are adjacent.

14.5.2 When a bath is provided it should have a wall-mounted shower over it (or at very least the necessary service connections), as an energy saving convenience and to allow for the needs of some people who are unable to use a bath. This also has the advantage that the situation is more easily and economically adapted to provide a shower tray/cabinet should this be needed. The shower position should be as described in 14.6.2.

Dwellings specifically for older or ambulant disabled people:

14.5.3 The bath specification should include the following requirements:

- a flat bottom and a slip resistant surface;
- standard length of 1700mm and with a depth of 370-400mm;
- the rim to be at a maximum height of 500mm from the floor;
- strong construction to take the weight when bathing aids are used;
- any integral handles recessed to be flush with the bath profile so that they do not interfere with the use of bathing aids.
14.5.4 The bath should be fitted so that the rim against a wall is exposed for at least 50mm of its width to provide support for bath seats, etc.

14.5.5 Shorter length, shallower baths are manufactured specifically for use by older or disabled people. These are of dimensions that prevent someone becoming completely immersed, but are found to be too small by many people and are very unsuited to bathing aids. A standard size bath is therefore generally preferred.

14.5.6 The shower over the bath should be positioned so that a person using a bath seat can reach the controls and at the same time be below the spray. This is best achieved with the shower head mounted on the wall at the back of the bath, rather than over the taps. The shower controls should be as described in 14.6.7.

14.6 SHOWERS

14.6.1 There is a wide range of proprietary shower trays and units and an equally wide range of sizes, therefore space allowed for future provision of a shower should be as flexible as possible.

14.6.2 All showers should have heads that are adjustable in height and have a flexible hose that is demountable and can be hand held. The hot water supply must have an integral anti-scald device.

14.6.3 In general the head height should be 1500-2000mm from the shower tray or bottom of the bath. The controls should be at a maximum height of 1200-1350mm from the shower tray, or the bottom of the bath so that they can be reached from a seated position.

14.6.4 The shower area should be enclosed with full height screens or curtains and adjacent walls should have an impermeable surface.

Fig 14.3 bath position and activity space
Dwellings specifically for older or ambulant disabled people:

14.6.5 Showers provided instead of baths should generally have a level access shower tray, without a kerb or upstand. In some instances it may be considered necessary to have a shower area with floor gulley; the design requirements will then be as those for wheelchair users given in 14.14.

14.6.6 Walk-in showers on upper floors will require fully effective waterproofing. The cost involved may make this an unviable option and it will usually be necessary to have an integral shower cubicle.

14.6.7 The shower should accommodate either a stool or a drop-down seat and it is therefore preferable that it is oblong in shape with approximate dimensions of 900 x 1050mm.

14.6.8 The shower head should be 1300-1800mm from the shower tray or bottom of the bath and be positioned so that it is suited to a person using a seat. The controls should be at a maximum height of 1050mm from the shower tray, or the bottom of the bath, so that they can be reached from a seated position.
14.7 RAILS AND SUPPORTS

14.7.1 All rails should have a finish that is easy to grip and comfortable to touch. They should have a diameter of approximately 33mm and a space of 45mm between them and the wall.

14.7.2 Some users will need grab rails and supports from the outset but these should preferably not be provided as a matter of course. Their presence may be resented if they are not needed, but also it is essential that their form and position are suited to, and safe for, a particular user. Grab rails and supports should whenever possible be fitted only after the needs of the occupant have been assessed. Rails that are at an incorrect height for a particular user can be dangerous. If it is considered necessary to provide these on a standard basis they should be as Fig 14.6 and 14.7 or as BS 5810 [5]
Fig 14.8 typical bathroom layouts
14.8 ADDITIONAL WCs

14.8.1 The provision of a WC compartment at ground floor level, in houses where the bathroom is upstairs, is a desirable feature in any two-storey house and should be provided. However, there may be instances where this is not considered viable in two storey houses for small households.

14.8.2 Where a WC compartment is provided at entrance level it should be designed to be usable by someone with impaired mobility with an area of clear floor space at least 800 x 800mm, as in one possible arrangement shown in Fig 14.9A. It may be of benefit to have a storage area adjacent to the WC compartment so that the two areas could be combined to form a larger space for wheelchair use as shown in 14.9B or to accommodate a shower if needed.
14.9 GENERAL PROVISION FOR WHEELCHAIR USERS

14.9.1 The layout and dimensions of the bathroom must allow for a bath, a shower area with floor gulley, a wash-hand basin and WC and their associated activity areas. The room should be designed to be ‘wet’ with a sealed impermeable floor (see 15.2). All fittings must be of a design to suit wheelchair use. It is beneficial if a development contains bathrooms with handed layouts to allow for different abilities.

14.9.2 The space in the bathroom must allow for someone in a wheelchair to turn through 180°, i.e. a circular area of 1500mm diameter (see 2.5.1), without being impeded by the door. Except in very large bathrooms this is helped by the door opening outwards, which in any case is preferable to allow access if a person should collapse against it. The plan of the dwelling should ensure that this does not cause a hazard in the hall, particularly in family houses. There should also be space for a helper alongside a wheelchair in the bathroom.

14.9.3 The location of any window needs careful consideration as the user should be able to reach and operate it and it should not interfere with the shower area.

14.10 THE USE OF HOISTS

14.10.1 Some people will need to use a ceiling mounted hoist to transfer them to the bath and/or WC from a bed. To allow for this it should be possible to install a track between the bed position and the bath and WC. The plan of the dwelling, the probable position of a bed and layout of the bathroom should be arranged to allow for this.

14.10.2 With a hoist double doors will be required between the bedroom and the bathroom, with a cut-out at the head of the door to suit the particular track. It is not anticipated that such doors will be installed unless they are needed by an occupant, but they should be allowed for in the initial design. A ‘knock out’ section in the partition is useful. This should be 1200mm in width and 400mm in from the back wall. The track should preferably be straight, though a curved track with a minimum radius of approximately 1000mm is possible.

14.10.3 The installation of a hoist will require a structure designed to take the weight and the roof or upper floor structure above this area should allow for this. The normal ceiling and roof construction in new build housing will usually be of adequate strength, though this must be checked and strengthening added if necessary. Where strengthening is needed it should be extensive enough to accommodate different hoist arrangements as the precise location of the track will depend on the individual needs of the occupant.

14.11 WCs FOR WHEELCHAIR USERS

14.11.1 The position of the WC should allow frontal or side transfer with a clear space of at least 750mm on one side. On the other side there should be a wall, capable of taking support rails, at a distance of 450mm from the centre line of the WC or a clear space of 450mm in which a hinged support could be fitted. The distance of the pan from the back wall should be such that it allows the seat of the wheelchair to be positioned adjacent to the seat of the WC to assist transfer. The front of the pan should therefore be at least 750mm from the wall, or from any pipes or ducting less than 500mm above the floor.

14.11.2 The WC should have a rim height of 420-450mm, any necessary height adjustment to this will usually be by means of different thicknesses of seat. WCs designed with a rim height of 500mm or so are available and may be preferred, particularly where a wheelchair user lives alone or there is a second WC of standard height for use by other members of the family (see also Section 14.17).
14.11.3 The WC should be floor fixed and of robust design, but with a minimum sized base to permit wheelchair users close access. Close coupled designs prevent the use of commode or shower chairs and should be avoided.

14.11.4 The cistern should be of robust material, preferably vitreous china, with a generous sized lever flushing handle positioned on the transfer side.

14.11.5 It may be necessary to adjust the position of the WC in relation to the back wall to bring it to the position needed for use with a hoist, and/or it may be necessary to provide a special WC with a washing and drying function which is needed by some severely disabled people. To facilitate both these situations the soil connection should be kept as simple as possible.

14.11.6 It should be noted that WCs with washing and drying facilities will need an electricity supply.

14.12.1 The wash basin should be positioned with its centre line at least 500mm from any wall. There should be knee space below the basin of a depth of at least 350mm clear of the waste trap and pipework, to allow a wheelchair user to be close to the basin. Any exposed hot water pipes around the underside of the wash basin must be insulated to avoid burns to people with sensory impairment.

14.12.2 The wash basin should be approximately 600mm wide and provide good laying space. It should not have a pedestal but should be securely fixed as it may be used for support. The wash basin profile should have a maximum depth at the rear of 200mm and be shallower at the front. Special wash basins are manufactured to meet these requirements.

14.12.3 The wash basin may require to be adjustable in height to suit different wheelchair users and ambulant people. This can be achieved with either a special cantilever basin fixed to the wall with proprietary adjustment mechanisms, or with a vanity basin set in a worktop on adjustable wall brackets, as used for kitchen worktops and fittings. This alternative allows tap controls to be fitted to the fascia if the user cannot reach conventional taps. The exposed corners of the worktop should be splayed. The required height of the basin rim will range between 700-850mm. All pipe connections will need to be flexible.

14.12.4 Taps should be as Section 17.5.
14.13 BATHS FOR WHEELCHAIR USERS

14.13.1 The bath position should not be hard against a wall at both ends. There should be some flexibility in the positioning of the bath - a space of least 400mm at the head of the bath can accommodate a shelf and provides space for the use of bathing aids such as a swivel seat if required. A shelf at the tap end gives easier access to the taps and the full length of bath if other fittings are adjacent.
14.13.2 The bath specification should include the following features:

- a flat bottom and a slip-resistant surface;
- standard length of 1700mm and a depth of 370-400mm;
- the rim be at a maximum height of 500mm from the floor;
- strong construction to take the weight when bathing aids are used;
- taps in a position where they can be reached by someone in a wheelchair, preferably at the outer corner;
- no integral handles as these can interfere with bathing aids.

The bath should be fitted so that the rim against a wall is exposed for at least 50mm of its width to provide support for bath seats, etc.

14.13.3 A toe recess the full length of the bath panel allows helpers to come close to the bath. It should be at least 100mm high and 70mm deep. There may be need for a deeper recess for part of the length of the bath to accommodate the feet of a mobile hoist.

14.13.4 Taps should be as Section 17.5.

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**Fig 14.13 baths for wheelchair users**

14.14 SHOWERS FOR WHEELCHAIR USERS

14.14.1 Bathrooms for wheelchair use should incorporate a shower area at least 1000 x 1000mm draining to a floor gulley. This area should preferably be sunk and covered by a grating. Alternatively the floor can be laid to fall to the gulley, though sloping surfaces can be inconvenient for wheelchair use. To minimalise the effect the gulley should be at the rear of the shower area and crossfalls should be kept to a minimum.
14.14.2 Water should be contained within the shower area as much as possible and allowance should be made for the area to be enclosed with curtains or full or half height screens. Some users may need help with showering and a screened arrangement makes this very difficult, therefore curtains are preferable.

14.14.3 On upper floors the necessary fully effective waterproofing of walk-in showers may be considered inappropriate due to cost and this fact should be considered when assessing the desirability of upper floor dwellings for wheelchair users.

14.14.4 The shower head should be adjustable in height 1300-1800mm from the tray or floor and be positioned so that it is suited to a person using a drop down seat fixed to the wall. There should be a flexible hose that is demountable and can be hand held and for many people a shower flexible enough to be used at the WC and basin will be helpful. The controls should be at a height of 800-1000mm from the floor. The hot water supply must have an integral anti-scald device.
14.15 RAILS AND SUPPORTS FOR WHEELCHAIR USERS

14.15.1 It is essential that all walls adjacent to the WC and the bath or shower are designed from the outset to take grab rails and supports and to allow these to be securely fixed in whatever position best suits the occupant. The walls should either be of solid construction or framed partitions with plywood sheathing. Consideration needs to be given to the means of fixing where supports may need to be fixed to dry-lined external walls. It may also be necessary to fix floor to ceiling support poles.

14.15.2 All rails and supports should be fitted to suit the user’s particular needs and have a finish that is easy to grip and comfortable to touch. They should have a diameter of approximately 33mm and a space of 45mm between them and the wall.

14.16 HEATING AND VENTILATION

See Chapter 17.

14.17 ADDITIONAL WC IN DWELLING FOR WHEELCHAIR USERS

An additional WC should be provided in dwellings designed for four or more people. Disabled people may take longer in the bathroom than others and therefore the WC compartment should provide alternative facilities for other members of the household with a wash basin and WC of standard size and height (see 14.3 and 14.4). The compartment should be fully accessible to a wheelchair user.

Fig 14.15 typical layouts for wheelchair users

Fig 14.16 WC compartment
### SUMMARY OF DESIGN CRITERIA

<table>
<thead>
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<th>Wheelchair users</th>
<th>ref.</th>
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<td>Taps as 17.5</td>
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15 INTERIOR FINISHES

15.1 WALL FINISHES

Dwellings for wheelchair users:

15.1.1 External corners of walls with a plastered or plasterboard finish may be vulnerable to damage. Such corners should be avoided if possible, particularly in circulation areas. Where there are external corners a small splay within the thickness of the partition helps prevent damage and a larger splay of 300mm, or so, also makes negotiating the corner easier. Where external corners are unavoidable within a dwelling, the plaster should be reinforced, or unobtrusive protection, such as clear plastic sections, should be applied to the finished surface.

15.1.2 Where an impermeable wall finish is required this will usually be of ceramic tiles or alternatively sheet metal. The location of impermeable finishes is described in Sections 13.11, 14.6 and 14.16.

15.2 FLOOR COVERINGS AND FINISHES

Dwellings specifically for older and disabled people:

15.2.1 A slip-resistant floor finish or covering should be provided in any area that may have water spillage on the floor. However, responsibility for the provision of floor coverings will vary. In some cases they will be the responsibility of the occupant and be of their choice, while in others the landlord will provide coverings, at least in the bathroom and kitchen. Where a bathroom is designed to be ‘wet’, to give a fully sealed floor the floor finish will be part of the building work.

15.2.2 The form of slip-resistant finishes ranges from proprietary slip-resistant vinyl sheet with welded joints through other sheet or tiled materials such as cork and various forms of matting, to carpeting suited to kitchen or bathroom use. Impervious slip-resistant finishes with sealed joints serve an essential purpose in ‘wet’ bathrooms, but in selecting such finishes for other areas it should be remembered that their appearance tends to be ‘institutional’ and not what people would otherwise choose. The preference should be for more domestic type covering, though it may be thought preferable and more hygienic that this is a hard covering that is easily cleaned.

15.2.3 For the benefit of people with visual impairment floor surfaces should not be heavily patterned or of a gloss finish as this causes glare.

15.3 INTERIOR DECORATION

In dwellings that are to be occupied by people with visual impairment reference should be made to Building Sight [7].
<table>
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16 WINDOWS

16.1 THE NEEDS

Many people have difficulty opening and closing windows. Windows should be positioned and designed to allow for people of various heights and different physical abilities. The design must also comply with the Technical Standards [3], Parts E, P and Q and, in regard to ventilation, Part K.

16.2 WINDOW DESIGN

16.2.1 Living room windows, and bedroom windows where privacy is not affected, should have a sill height no greater than 600mm from the floor, which allows a seated person to see the view outside. Glazing bars or transoms should preferably not be positioned between 600mm and 1500mm from floor level to give an unobstructed view. However, the Technical Standards, Part P, require any glazing below 800mm from the floor to be safety glazing. To avoid the expense of this it may be preferred to keep the glazing above this height with a sill at approximately 750mm from the floor. Also in some localities residents may feel insecure with areas of low glazing and will prefer a sill height of 800-900mm.

16.2.2 On upper floors further safety requirements will take precedence. Part P also requires window above 4 metres from the ground to be safely cleanable from inside (by reference to BS 8213: Part I [13]), with a transom no less than 1100mm from floor level and with no opening part below. In this situation it will be necessary to have a sill or transom at or near this level. The window will also have to provide the means of escape required by the Technical Standards, Part E.

Fig 16.1 considerations in the design of windows
16.3 OPERATING THE WINDOW

16.3.1 Opening and closing the window should be as simple an operation as possible and should not involve people having to stand on chairs, or the like, to reach controls. There should be access to the room area in front of windows, from where controls should be operable from floor level. All handles and catches should therefore be at a height of no more than 1700mm above the floor or 1550mm if they have to be reached across a worktop or sink. However, on upper floors the position of safety catches may need to be above these heights in order to prevent them being reached by young children. (See also 11.1.1, 13.2.6 and 14.2.1 or 13.5.5 and 14.9.3 for wheelchair users.)

16.3.2 In bathrooms the bath should not be positioned below the window and the position of the wash basin and WC should allow access to the window controls.

16.3.3 All handles and controls should be of a design that is easily grasped and adjusted.

Dwellings specifically for older or ambulant disabled people:

16.3.4 The controls should be operable with one hand and be at a maximum height of 1500mm or 1350mm if over a worktop or sink.

Dwellings for wheelchair users:

16.3.5 The controls should be operable with one hand and be at a maximum height of 1200mm.

16.3.6 In kitchens there should preferably be window controls that are not reached over a worktop or sink, though some users will be able to reach controls if they are at a height of no more than 1050mm and there is knee space below.

16.3.7 Where these conditions cannot be met, or if the user is unable to reach the controls or manually operate a window, some form of remote control will be needed. Information on such controls is given in the BRE publication *Domestic automatic doors and windows for use by elderly and disabled people* [14].

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<td>• Controls are easily and safely accessed, reached and operated</td>
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17 HEATING, VENTILATING AND WATER SERVICES

17.1 HEATING

17.1.1 General standards for heating are those given in BS 5449 [15] or as set by the National House Builders Council [16].

17.1.2 The lower running costs of energy efficient housing are of benefit to everyone and particularly to people who spend a great deal of time at home. Guidance on designing energy efficient buildings can be obtained from the Energy Design Advice Scheme (EDAS) [17].

17.1.3 Radiators must be carefully positioned so that they do not prevent a sensible furniture arrangement and do not obstruct circulation in passages or rooms. They should have individual thermostatic controls. The controls should have clear, bold markings, be of a type that can be easily grasped and positioned at the top of the radiator at a height of 600-800mm from the floor.

17.1.4 A radiant heat source in the living area, additional to the main heating system, is liked by many people and can provide alternative heating should the main heating system fail.

17.1.5 The main heating programmer must be easily read and set and should therefore be positioned at a height 900-1050mm from the floor. Access to this should be unobstructed as users may need to be close to it when adjusting it.

Dwellings specifically for older and disabled people:

17.1.6 The heating system should be capable of giving a temperature throughout the whole dwelling, of 21°C when the outside temperature is -3°C.

17.1.7 Low surface temperature radiators may be considered necessary when occupants are likely to have sensory impairment and be in danger of unknowingly coming into contact with the radiator surface. However, such radiators require to be larger than standard radiators and take up valuable wall space. Radiators in bathrooms must have a low surface temperature unless they can be positioned where a person cannot accidentally come into contact with them. Alternatively guards can be fixed to radiators as and when needed.

17.1.8 Radiators should preferably have rounded tops for safety.

17.2 VENTILATION

17.2.1 Consideration should be given to the occupant's ability to control the opening and closing of windows and trickle ventilation, which is usually located in the window head. A person of below average height will have difficulty reaching beyond 1800mm from the floor and it should be possible for all adult occupants to control ventilation while standing on the floor. (See also 16.3)

Dwellings specifically for older and disabled people:

17.2.2 Trickle ventilators are required by the Technical Standards [3], Part K, to be at a height above 1750mm. Additional trickle ventilators positioned at a height where they are more easily reached and controlled may be of benefit.
17.2.3 Particular attention should be given to the ventilation of the bathroom. This is likely to be of ‘wet’ design and in use for comparatively long periods of time. It can therefore be a considerable source of moisture. Mechanical ventilation with a extraction rate in excess of that required by the Technical Standards, Part K, may be desirable. Passive stack ventilation should only be used where the designer is confident that it will give sufficient air change (see BRE Information Paper IP 13/94 [18]).

17.3 WATER SUPPLY

Dwellings specifically for older and disabled people:

17.3.1 The provision of an electrically operated stopcock on the mains water supply will allow this to be operated by all occupants.

17.4 HOT WATER

17.4.1 All showers must be fitted with anti-scald devices.

Dwellings specifically for older and disabled people:

17.4.2 People with impaired mobility or who use a wheelchair may also have sensory impairment and therefore all exposed hot water pipes which could be touched accidentally should be lagged to prevent scalding. This notably applies where knee space is provided below the wash basin and kitchen sink. The sink bowl should also be insulated.

17.4.3 Hot water emitting from a tap at a scalding temperature is a danger to sensory impaired people and frail and confused older people. All showers should have a thermostatic control, but thermostatic mixing valves should also be fitted to bath taps when needed for the safety of a particular occupant.

17.5 TAPS

17.5.1 All taps, and shower controls should be of a type that can be easily grasped, even with wet soapy hands. The heads therefore should be of crosshead or lever design and not cylindrical. It is beneficial if tap heads are interchangeable and can be selected to best suit a particular user.

Dwellings specifically for older or disabled people:

17.5.2 Lever operated quarter turn taps will best suit people who lack dexterity. A short lever, approximately 75mm, will usually suffice, but some people’s particular needs may require a lever of 150mm or so. On the other hand large crossheads may be preferred and are more easily recognised as taps by people with dementia or other cognitive impairment.

17.5.3 Kitchen taps for wheelchair users or ambulant people who have difficulty lifting should be of a swivel spout mixer type to allow pans and kettles to be filled while resting on the drainer or work surface. In such cases the tap should be positioned at the back corner of the sink. The design of the spout should give a minimum clearance of 150mm between the nozzle and the laying surface.
17.5.4 Single action lever taps may be of benefit to some people, particularly those who do not have full use of both hands. Others, particularly those with dementia or other cognitive impairment will find them very confusing.

17.5.5 Users with very limited reach will need tap controls to be positioned on a fascia at the front of sinks and wash basins.

<table>
<thead>
<tr>
<th>SUMMARY OF DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Heating and ventilating controls are easily accessed, reached and operated</td>
<td>17.1 &amp; 17.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Taps are crosshead or lever type</td>
<td>17.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Older and ambulant disabled people</strong></td>
<td>As above plus:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Suitable heating system</td>
<td>17.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Exposed hot water pipes are lagged</td>
<td>17.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wheelchair users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Suitable heating system</td>
<td>17.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Heating and ventilating controls are easily accessed, reached and operated</td>
<td>17.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Exposed hot water pipes are lagged</td>
<td>17.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Taps of lever type</td>
<td>17.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18 POWER AND COMMUNICATIONS

18.1 THE NEEDS

18.1.1 All switches, sockets and controls must be easily reached and operated by the occupants.

18.1.2 The use of technology within the home is likely to increase in future and allowance should be made for future wiring, for example by allowing space behind skirting boards.

18.2 ELECTRIC POWER

18.2.1 Light switches should be of the large rocker type as these are generally more convenient and assist people with dexterity problems. Multi-gang switch plates should have no more than two switches for the benefit of people with poor dexterity.

Dwellings for wheelchair users:

18.2.2 Light switches should be pad type rockers.

18.2.3 Power sockets will be provided at least as required by the Technical Standards [3], Part N, i.e. six in the kitchen, four in each apartment and four elsewhere in the dwelling. The arrangement of these or the provision of additional sockets should provide at least six sockets in the main living room and a socket adjacent to both the telephone and television outlets.

Dwellings specifically for older or disabled people:

18.2.4 As some people may spend long periods of time in bed and use the bedroom as a living room, one bedroom (in family houses the one intended for use by a disabled person) should have sockets as required for a living room.

18.2.5 Switches on double sockets should be positioned on the outside of the plugs or above them so that they are more easily used by those with dexterity problems.

18.2.6 Kitchen appliances under worktops should have flex outlets behind the appliance with isolating switches on the wall above the worktop. Power sockets for kitchen appliances not under worktops should be positioned on the wall above the appliance. In either circumstance switches for fridge freezers or stacked appliances should be clear of the space allowed for the appliance.

Dwellings for wheelchair users:

18.2.7 Power sockets above kitchen worktops should preferably be in tilted laboratory bench type fittings, generally on the back of the worktop, or further forward to suit a particular user. Sockets on the back wall 100mm above the work surface will be reachable by some people but others will need additional control switches on the worktop fascia.

18.2.8 Where appliances are mounted on plinths the isolating switches must be in a position that can be easily reached and not on the back wall above the appliance. See Fig 13.6.
18.2.9 Mains switches and consumer units should be easily accessible. If positioned in storage space they should be adjacent to the door and not on the back wall.

18.2.10 Labelling of switches should be clear and easily read and preferably have tactile markings to aid people with visual impairment.

18.2.11 Switches, sockets and controls should be set at heights as shown in the Table below. They should also be at least 400mm from the corner of the room. In selecting the position and exact height of sockets consideration should be given to the likely position and height of furniture.

**Table of mounting heights for controls:**
(mm from floor level to centre line of fitting unless stated otherwise)

<table>
<thead>
<tr>
<th>CONTROL</th>
<th>GENERAL</th>
<th>WHEELCHAIR USERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>light switch</td>
<td>900-1050 and level with door handle</td>
<td></td>
</tr>
<tr>
<td>base of pull switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>power sockets generally</td>
<td>at least 450</td>
<td>700-1000</td>
</tr>
<tr>
<td>TV socket</td>
<td>500-1000 for older and ambulant disabled people</td>
<td></td>
</tr>
<tr>
<td>telephone socket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>power sockets at kitchen worktop</td>
<td>150 above worktop</td>
<td>see 18.2.7</td>
</tr>
<tr>
<td>flex outlets for kitchen appliances under worktops</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>isolating switches for appliances</td>
<td>1050</td>
<td>950</td>
</tr>
<tr>
<td>power sockets for appliances not under worktops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cooker control unit</td>
<td>1050 (to side of cooker)</td>
<td>100 above worktop (to side of hob)</td>
</tr>
<tr>
<td>heating programmer</td>
<td>1050</td>
<td></td>
</tr>
<tr>
<td>immersion heater switch</td>
<td>950</td>
<td></td>
</tr>
<tr>
<td>mains switch and consumer unit</td>
<td>600-1050</td>
<td>700-1050</td>
</tr>
<tr>
<td>door bell</td>
<td>1000-1050</td>
<td></td>
</tr>
<tr>
<td>door entry unit</td>
<td>within 900-1200</td>
<td></td>
</tr>
</tbody>
</table>
18.3 LIGHTING

Good lighting is essential for everyone but is particularly important for older people and anyone with a visual impairment. Light fittings in addition to ceiling mounted pendants are supplied by the occupants, but to avoid an excessive need for lamps with potentially dangerous trailing flexes the ceiling mounted pendants should be capable of providing a good general lighting level (see Building Sight [7]).

18.4 TV AND TELEPHONE

18.4.1 TV and telephone outlets should have adjacent power sockets.

Dwellings specifically for older or disabled people:

18.4.2 Two outlet points should be provided for both TV and telephone. Unless a user's particular circumstances dictate otherwise, these should be located in the living room and the main bedroom.

18.5 DOOR ENTRY SYSTEMS AND AUTOMATIC CONTROLS

18.5.1 Door entry systems will take two basic forms, communal entry systems for groups of flats and individual door entry systems. Individual door entry systems should be provided in all first-floor flats which have their own individual entrance door at ground level. Requirements for external equipment to be used by the caller are given in Section 7.11.

18.5.2 Equipment within a dwelling for answering a door entry system should normally be located in the hall.

Dwellings specifically for older or disabled people:

18.5.3 For people with very impaired mobility, whether they are ambulant or use a wheelchair, it may be preferable for the answering point to a door entry system to be in the living room and possibly with an additional point in the appropriate bedroom.

18.5.4 In addition to a system for answering the door to visitors, some people with very impaired mobility may need other automatic control of the entrance door, and possibly internal doors. Information on such controls is given in the BRE publication Domestic automatic doors and windows for use by elderly and disabled people [14]. Such systems will usually only be provided when required by a particular occupant but all dwellings should allow for future installation by the provision of conduit, draw cords and blanked off outlets in the living room and main bedroom.

18.5.5 Button operated answering equipment is usually found easier to use than the hand-held telephone type. Occupants with impaired hearing will require these to have a flashing light signal rather than an audible one.
Dwellings specifically for older or disabled people:

18.6 ALARM CALL SYSTEMS

18.6.1 Some dwellings will require to be wired for an alarm call system to summon help and others may require to have a system added at a later date. Allowance should be made for this in dwellings intended for people who are likely to need such a system. This applies particularly, though not exclusively, to housing intended for older people. The type of system and its operation will depend on the provider of the support system, but with all systems it should be possible to summon help from the hall, living room, kitchen, bedroom(s) and bathroom. The methods for doing this may vary, though a pull cord, or pendant system worn round a person's neck, are generally preferred as it is particularly important that a person can raise the alarm if they collapse on the floor.

18.6.2 The positioning of the pull cords needs careful consideration. They should be positioned against a wall so as not to cause obstruction and should be easily accessible. A position near the door may be most suitable but the cord should not be positioned immediately inside the door where it could be mistaken as a lighting pull switch. A cord should be reachable by a person in bed. Also by a person lying in the bath as well as from the bathroom floor; this may necessitate two alarm points in the bathroom.

18.6.3 The length of pull cords should allow them to be reached while lying on the floor and there should be pull rings that can be easily grasped at floor level and 900mm above it. However if they are found to be a nuisance on a day-to-day basis they may be tied up and be impossible to reach. To reduce the nuisance of floor-length cords it should be possible for the occupant to anchor them to the wall at the base. The use of coloured cord will help distinguish alarm cords from lighting pull switches.

18.6.4 It should be recognised that any method of summoning help from particular points cannot alone provide a fail-safe system. There are various forms of surveillance equipment, such as pressure mats, which providers of support may wish to consider, but a person's need has to be weighed against what may be considered as an intrusion on privacy.

18.6.5 People with dementia may require passive alarm systems. These combine PIR, heat sensors, smoke alarms, thermostats and door magnets in combinations to suit the individual and raise an alarm at the appropriate signal.

18.7 SAFETY DEVICES

18.7.1 Occupants with impaired hearing will require safety devices such as smoke detectors to have a flashing light signal in addition to an audible alarm and may in addition need a vibrating signal, such as a pillow vibrator. Such devices should be fitted as and when needed by an individual.

18.7.2 Various special devices are available to assist with the safety and security of people who may be forgetful or confused, by means of audible or visual signals, for instance, when equipment has not been turned off or an external door is not properly closed. Such devices should be fitted as and when needed by an individual.
18.8 FUTURE DEVELOPMENTS

18.8.1 Several technological devices are described in this guide, but further new and advancing technology is likely to play an increasing role in all our homes. It will help disabled people to live more independently and in general terms is likely to provide access to new fields of communication, entertainment and home-based employment.

18.8.2 The concept of ‘smart homes’, which maximise available technology in order to help people live more independently, is currently at the development and experimental stage and though it has many benefits it also poses ethical questions which have yet to be resolved in relation to people, such as those with dementia or learning difficulties, who are unable to make a rational choice for themselves on the presence of the technology. Guidance on good practice in this regard is therefore considered to be premature.

<table>
<thead>
<tr>
<th>SUMMARY OF DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Allowance is made for additional future wiring</td>
<td>18.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Sockets, switches and controls of suitable design and at suitable location and height</td>
<td>18.2</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td><strong>Older and disabled people</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• As above plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Where provided alarm call points are located where they can best be reached</td>
<td>18.6</td>
<td></td>
<td>•</td>
</tr>
</tbody>
</table>
19 EXTERNAL FACILITIES

19.1 ACCESS

Access to all external facilities should be as Section 7.3.

19.2 PRIVATE EXTERNAL SITTING AREAS AND GARDENS

Dwellings specifically for older or disabled people:

19.2.1 Where gardens are provided they should generally be small. Many people, while appreciating an external area will not be able to cope with the upkeep of a lawn and it is therefore of benefit if the garden is of a size that can reasonably be mostly paved and with a slope shallower than 1:20. However with family houses designed for wheelchair use the size and form of the garden should be as for general housing, though incorporating the features given below.

19.2.2 Gardens should incorporate an area of paving that can be used as a sitting area. For people who are unable to bend to ground level a raised planting bed should be provided. The planting bed should have a maximum width of 1200mm and have a clear paved area around it at least 1200mm wide. The soil surface should be 600-850mm from the ground and have a toe recess. For wheelchairs users the base should be recessed by 175mm to a height of 300mm.

Fig 19.1 raised planting bed

19.3 CLOTHES DRYING

Dwellings specifically for older and disabled people:

19.3.1 Where there is suitable external space such as a garden, facilities for clothes drying should be provided. The full extent of washing line should be accessible on a hard surface.
**Dwellings specifically for wheelchair users:**

19.3.2 Where external clothes drying is provided there should be either a height adjustable rotary drier or a winch operated line.

**19.4 REFUSE STORAGE**

19.4.1 The form of container and the arrangements for collection of refuse will depend on the local authority. Refuse storage will be provided to comply with the *Technical Standards* [3], Part R, but the location and design of this must meet the local authority requirements. All hoppers for refuse chute systems should be 600-700mm from the ground and have a laying shelf alongside them.

**Dwellings specifically for older or disabled people:**

19.4.2 If the occupants are responsible for transporting the refuse to the road, it may be preferable for the storage to be at the front of the dwelling in a screened or enclosed area, rather than in a rear garden.

**Dwellings for wheelchair users:**

19.4.3 A wheelchair user will require the top of the refuse container to be no more than 1000mm from the ground. Where refuse has to be deposited into a container higher than this there will need to be a raised platform with a step free approach.
### SUMMARY OF DESIGN CRITERIA

<table>
<thead>
<tr>
<th></th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Older and ambulant disabled people</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Paved sitting out area</td>
<td>19.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Raised planting bed</td>
<td>19.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wheelchair users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Paved sitting out area</td>
<td>19.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Raised planting bed</td>
<td>19.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• External clothes drying has adjustable line</td>
<td>19.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Refuse storage of suitable design</td>
<td>19.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
20 REFURBISHMENT AND ADAPTATIONS

20.1 REFURBISHMENT

When existing houses and flats are being refurbished opportunities should be sought to provide accommodation that is suited to the needs of older or ambulant disabled people or people who use a wheelchair. The design criteria and considerations will be as given in this guide, though compromises may have to be made and minimum rather than preferred requirements adopted due to the limitations imposed by the existing structure or available space.

20.2 ADAPTATIONS

20.2.1 Adaptations to existing housing to suit an occupant's needs are required in significant and increasing numbers. This fact emphasises the desirability of barrier free design features being incorporated at the design stage in all new dwellings so that the need for adaptation is reduced and adaptations that have to be made are easier and less costly to carry out.

20.2.2 The design criteria and considerations for adaptations will be as given in this guide, though compromises will often have to be made between what is possible and what is preferred. In implementing adaptations it is extremely important that design decisions involve the person whose needs are to be met, the occupational therapist and the architect, so that all aspects of the problem are considered.

20.2.3 Many adaptations will be of a relatively minor nature, but where major work is required a careful assessment should be made of the quality of accommodation that the adaptation will achieve and the extent to which it results in a dwelling fully suited to the needs of people with a particular need. Though it is not envisaged that adaptations can always result in a dwelling that is equivalent to one designed from the outset to be suited to these needs, it should be recognised that there may be situations where a dwelling, even after adaptation, would be intrinsically unsuited for occupation by a disabled person and that the occupant's needs can be met properly only in different accommodation.

20.3 ADAPTATIONS FOR CONFUSED PEOPLE

People with dementia or other cognitive impairment, while they continue to live in a house or flat that has been their home for some time may benefit from their familiarity with their surroundings, but to augment this some simple adaptations may be of help:

- differentiation of doors by the use of colour and/or symbols;
- removal of some doors so that there is no visual barrier between spaces;
- removal of doors to cupboards and kitchen fittings so that the contents are not hidden;
- addition of electronic equipment to act as safety devices, in relation to electrical equipment, security, etc (see 18.7).
SUMMARIES OF DESIGN CRITERIA

The summaries of design criteria on the following pages list the features which characterise the three broad categories of housing covered in this guide. The majority of design criteria are considered to be a 'basic' requirement, but a few additional design criteria are given as 'desirable', which are of benefit to many people and should be included if possible. These levels of provision are denoted in the right hand columns headed ‘B’ and ‘D’.

The list is intended to be used in conjunction with the main text which expands the criteria and their context and to which references are given. The terms ‘suitable’, ‘sufficient’ and ‘adequate’ are used to denote the requirements given in the main text.

All housing should have a surrounding environment as outlined in Chapter 4.
## SUMMARY OF DESIGN CRITERIA: DWELLINGS IN GENERAL TO SUIT VARYING NEEDS

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to individual dwellings</td>
<td>• Step-free access from road pavement and parking space to dwelling entrance 7.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Paths within curtilage of sufficient width 7.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Gates of sufficient width 7.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Step-free entrance where possible 7.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Space allowed for possible future ramp where the entrance is stepped 7.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm 7.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Platform of suitable size at the door 7.5</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Clear space beyond the handle edge of the door where the entrance is step free 7.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ramp and/or steps of suitable design 7.7/7.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door bell/entry system at suitable height and position 7.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• External light at entrance 7.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Canopy or porch at entrance 7.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In-curtilage parking of suitable size 7.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to blocks of flats</td>
<td>• Step-free access from road pavement and parking space to a communal entrance 7.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Paths of sufficient width 7.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Step-free entrance leading to flats on ground floor and/or with lift access 7.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Step-free entrance to all blocks 7.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm 7.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Platform of suitable size at the door 7.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clear space beyond the handle edge of the door 7.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ramp and/or steps of suitable design 7.7/7.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door bell/entry phone at suitable height and position 7.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• External light at entrance 7.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Canopy or porch at entrance 7.12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Dwellings in general to suit varying needs continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communal access areas, stairs and lifts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All doors with clear opening width at least 800mm</td>
<td>8.2</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• All doors with clear opening width at least 840mm</td>
<td>8.2</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• Level threshold</td>
<td>8.2</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• Door ironmongery of suitable design</td>
<td>8.3</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• Area inside the door and circulation areas allow for people with impaired mobility</td>
<td>8.4</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• Access stairs suited to use by people with impaired mobility or sight</td>
<td>8.5</td>
<td></td>
<td>●</td>
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<tr>
<td>• Any lift is fully usable by disabled people</td>
<td>8.7</td>
<td></td>
<td>●</td>
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</tr>
<tr>
<td>• Communal areas with features to help those with visual impairment</td>
<td>8.8</td>
<td></td>
<td>●</td>
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</tr>
<tr>
<td>• Signage suited to people with visual impairment</td>
<td>8.8</td>
<td></td>
<td>●</td>
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</tr>
<tr>
<td><strong>Entrance doors to individual houses or flats</strong></td>
<td></td>
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<td></td>
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<tr>
<td>• All entrance doors with clear opening width of at least 800mm</td>
<td>9.2</td>
<td>9.8</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• Level thresholds where access is step free</td>
<td>9.3</td>
<td></td>
<td>●</td>
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<tr>
<td>• Upstand at other thresholds no more than 25mm</td>
<td>9.3</td>
<td></td>
<td>●</td>
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</tr>
<tr>
<td>• Door ironmongery of suitable design</td>
<td>9.4</td>
<td></td>
<td>●</td>
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<tr>
<td>• Area inside entrance door of adequate size</td>
<td>9.6</td>
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<td>• Door position with clear space beyond the handle edge</td>
<td>9.6</td>
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<td>●</td>
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<tr>
<td>• Any lobby is of sufficient size</td>
<td>9.7</td>
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<td>●</td>
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<tr>
<td><strong>Circulation spaces and internal doors</strong></td>
<td></td>
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<td></td>
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<tr>
<td>• Passages of sufficient width</td>
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<tr>
<td>• Stairs allow the addition of stair lift and have no tapered treads</td>
<td>10.3</td>
<td></td>
<td>●</td>
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<tr>
<td>• Space for future thro' floor lift in two-storey houses</td>
<td>10.3</td>
<td></td>
<td>●</td>
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</tr>
<tr>
<td>• Doors positioned and hinged to assist circulation</td>
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<td>●</td>
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<tr>
<td>• Doors with clear opening width of at least 750mm</td>
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<td>• Pass doors without threshold plates</td>
<td>10.5</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>• Door ironmongery of suitable design</td>
<td>10.7</td>
<td></td>
<td>●</td>
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<tr>
<td>ELEMENT</td>
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<td>D</td>
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<tr>
<td>Living and</td>
<td>Living room and dining space allow for notional furniture and circulation 'path'</td>
<td>11.2 &amp; 11.3</td>
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<td>sleeping areas</td>
<td>Bedroom(s) allow(s) for notional furniture and circulation 'path'</td>
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<td></td>
<td>Double bedrooms allow for twin beds</td>
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<tr>
<td></td>
<td>At least one bed space can be accessed in a wheelchair</td>
<td>11.4</td>
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<tr>
<td>Storage</td>
<td>Provision is made for adequate and accessible general storage</td>
<td>12.1 &amp; 12.2</td>
<td></td>
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<tr>
<td></td>
<td>In family houses there is storage space for a pram</td>
<td>12.1</td>
<td></td>
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<tr>
<td>Kitchen</td>
<td>Layout with continuous sequence of worktop-sink-worktop-cooker/hob-worktop</td>
<td>13.2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Clear space of at least 1200mm in front of all fittings and appliances</td>
<td>13.2</td>
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<tr>
<td></td>
<td>Area 1500 x 1500mm in which to turn a wheelchair</td>
<td>13.2</td>
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<tr>
<td></td>
<td>Adequate space for appliances</td>
<td>13.2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Adequate and convenient storage</td>
<td>13.3</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Windows as 16.3</td>
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<tr>
<td></td>
<td>Taps as 17.5</td>
<td></td>
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<tr>
<td>Bathroom</td>
<td>Size and layout allow for bath or walk-in shower if this is needed and access in a wheelchair</td>
<td>14.2</td>
<td></td>
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<tr>
<td></td>
<td>Allowance for fixing grab and support rails to walls</td>
<td>14.2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Fittings and activity spaces of suitable size</td>
<td>14.3 - 14.6</td>
<td></td>
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<tr>
<td></td>
<td>Any bath incorporates a shower or allows for future provision</td>
<td>14.5</td>
<td></td>
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<tr>
<td></td>
<td>Windows as 16.3</td>
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<tr>
<td></td>
<td>Taps as 17.5</td>
<td></td>
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<tr>
<td>Additional WC</td>
<td>WC of adequate size at ground floor/entrance level where bathroom is upstairs</td>
<td>14.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjacent storage space to allow enlargement if necessary</td>
<td>14.8</td>
<td></td>
<td></td>
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<tr>
<td>Windows</td>
<td>Design allows view from seated position</td>
<td>16.2</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Controls easily and safely accessed reached, and operated</td>
<td>16.3</td>
<td></td>
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</table>
Dwellings in general to suit varying needs continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
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<tbody>
<tr>
<td>Heating and water services</td>
<td>• Heating and ventilating controls easily accessed, reached and operated</td>
<td>17.1 &amp; 17.2</td>
<td>•</td>
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<tr>
<td></td>
<td>• Crosshead or lever type taps</td>
<td>17.5</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td>Power and communications</td>
<td>• Allowance for additional future wiring</td>
<td>18.1</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Sockets, switches and controls of suitable design and at suitable location and height</td>
<td>18.2</td>
<td></td>
<td>•</td>
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</table>
### SUMMARY OF DESIGN CRITERIA: DWELLINGS SPECIFICALLY FOR OLDER AND AMBULANT DISABLED PEOPLE

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to individual dwellings</td>
<td>• Step-free access from road pavement and parking space to dwelling entrance</td>
<td>7.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Paths within curtilage of sufficient width</td>
<td>7.3</td>
<td></td>
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<tr>
<td></td>
<td>• Gates of sufficient width</td>
<td>7.4</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Step-free entrances where possible</td>
<td>7.5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Step-free entrance for ambulant disabled people</td>
<td>7.5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Space allowed for possible future ramp where the entrance is stepped</td>
<td>7.5</td>
<td></td>
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<tr>
<td></td>
<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm</td>
<td>7.5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Platform of suitable size at the door</td>
<td>7.5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Clear space beyond the handle edge of the door where the entrance is step free</td>
<td>7.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ramp and/or steps are of suitable design</td>
<td>7.7 or 7.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door bell/entry system at suitable height and position</td>
<td>7.11</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• External light at entrance</td>
<td>7.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Canopy or porch at entrance</td>
<td>7.12</td>
<td></td>
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<tr>
<td></td>
<td>• In-curtilage parking of suitable size, or parking within 30 metres of the entrance</td>
<td>7.13</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access to blocks of flats</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Step-free access from road pavement and parking space to a communal entrance</td>
<td>7.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Paths of sufficient width</td>
<td>7.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Step-free entrance leading to flats on ground floor or with lift access</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Step-free entrance to other blocks</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Platform of suitable size at the door</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Clear space beyond the handle edge of the door</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Any ramp or steps are of suitable design</td>
<td>7.7 or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door bell/entry phone at suitable height and position</td>
<td>7.11</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• External light at entrance</td>
<td>7.11</td>
<td></td>
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<tr>
<td></td>
<td>• Canopy or porch at entrance</td>
<td>7.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Dwellings specifically for older and ambulant disabled people continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communal access areas, stairs and lifts</td>
<td>• All doors with clear opening width at least 800mm</td>
<td>8.2</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• All doors with clear opening width at least 840mm</td>
<td>8.2</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Level threshold</td>
<td>8.2</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door ironmongery of suitable design</td>
<td>8.3</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Area inside the door and circulation areas allow for people with impaired mobility</td>
<td>8.4</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Circulation areas at least 1400mm wide</td>
<td>8.4</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Handrails on both sides of circulation area</td>
<td>8.4</td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td>• Access stairs suited to use by people with impaired mobility or sight</td>
<td>8.5</td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td>• All handrails of suitable design</td>
<td>8.6</td>
<td>•</td>
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<tr>
<td></td>
<td>• Any lift is useable by disabled people</td>
<td>8.7</td>
<td>•</td>
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<tr>
<td></td>
<td>• Lift with internal dimensions of 1400 x 1600mm</td>
<td>8.7</td>
<td>•</td>
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<tr>
<td></td>
<td>• Communal areas with features to help those with visual impairment</td>
<td>8.8</td>
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<tr>
<td></td>
<td>• Signage suited to people with visual impairment</td>
<td>8.8</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Entrance doors to houses or flats</td>
<td>• All entrance doors with clear opening width of at least 800mm</td>
<td>9.2 &amp; 9.8</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Level thresholds where access is step free</td>
<td>9.3</td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td>• Upstand at other thresholds no more than 25mm</td>
<td>9.3</td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td>• Allowance is made for recessed doormat</td>
<td>9.3</td>
<td>•</td>
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<td></td>
<td>• Door ironmongery of suitable design</td>
<td>9.4</td>
<td>•</td>
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<tr>
<td></td>
<td>• Area inside the main entrance door is at least 1200 x 1200mm</td>
<td>9.6</td>
<td>•</td>
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<tr>
<td></td>
<td>• Shelf beside the door</td>
<td>9.6</td>
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<td></td>
<td>• Door position with clear space beyond the handle edge</td>
<td>9.6</td>
<td>•</td>
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<tr>
<td></td>
<td>• Any lobby is of sufficient size</td>
<td>9.7</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Circulation spaces and internal doors</td>
<td>• Passages of sufficient width</td>
<td>10.2</td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td>• Doors positioned and hinged to assist circulation</td>
<td>10.4</td>
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<td></td>
<td>• Doors with clear opening width of at least 750mm</td>
<td>10.5</td>
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<td></td>
<td>• Pass doors without threshold plates</td>
<td>10.5</td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td>• Door ironmongery of suitable design</td>
<td>10.7</td>
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</tbody>
</table>
## Dwellings specifically for older and ambulant disabled people continued

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<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Living and sleeping areas</strong></td>
<td>• Living room and dining space allow for notional furniture and circulation ‘path’</td>
<td>11.2</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Bedroom(s) allow(s) for notional furniture and circulation ‘path’</td>
<td>11.4</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Double bedrooms allow for twin beds</td>
<td>11.4</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• At least one bed space can be accessed from both sides and in a wheelchair</td>
<td>11.4</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>• Provision is made for adequate and accessible general storage</td>
<td>12.1</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>12.2</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td><strong>Kitchen</strong></td>
<td>• Layout with continuous sequence of worktop-sink-worktop-cooker/hob-worktop</td>
<td>13.2</td>
<td></td>
<td>•</td>
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<tr>
<td></td>
<td>• Clear space of at least 1200mm in front of all fittings and appliances</td>
<td>13.2</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Area in which to turn a wheelchair</td>
<td>13.2</td>
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<tr>
<td></td>
<td>• Adequate space for appliances</td>
<td>13.2</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Adequate and convenient storage</td>
<td>13.3</td>
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<td></td>
<td>• Kitchen fittings of suitable design</td>
<td>13.3</td>
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<td>•</td>
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<tr>
<td></td>
<td>• Slip-resistant floor finish</td>
<td>13.3 &amp;</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Windows as 16.3</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>• Taps as 17.5</td>
<td></td>
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<td>•</td>
</tr>
<tr>
<td><strong>Bathroom</strong></td>
<td>• Size and layout allow for bath or walk-in shower if this is needed and access in a wheelchair</td>
<td>14.2</td>
<td></td>
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<td>• Floor gulley or allowance for future provision</td>
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<td>• Outward opening door</td>
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<td></td>
<td>• Allowance for fixing grab and support rails to walls</td>
<td>14.2</td>
<td></td>
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<td></td>
<td>• Slip-resistant floor finish</td>
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<td></td>
<td></td>
<td>15.2</td>
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<td>•</td>
</tr>
<tr>
<td></td>
<td>• Fittings and activity spaces of suitable size</td>
<td>14.3</td>
<td></td>
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<td></td>
<td></td>
<td>14.6</td>
<td></td>
<td>•</td>
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<tr>
<td></td>
<td>• Any bath incorporates a shower or allows for future provision</td>
<td>14.5</td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Windows as 16.3</td>
<td></td>
<td></td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• Taps as 17.5</td>
<td></td>
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</tbody>
</table>
### Dwellings specifically for older and ambulant disabled people continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Finishes</strong></td>
<td>• Slip-resistant floor finish in kitchen and bathroom</td>
<td>15.2</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>Windows</strong></td>
<td>• Design allows view from seated position</td>
<td>16.2</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>• Controls easily and safely accessed, reached and</td>
<td>16.3</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>operated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heating and water</strong></td>
<td>• Suitable heating system</td>
<td>17.1</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>services</strong></td>
<td>• Heating and ventilating controls are easily</td>
<td>17.1 &amp;</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>accessed, reached and operated</td>
<td>17.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Exposed hot water pipes lagged</td>
<td>17.4</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Crosshead or lever type taps</td>
<td>17.5</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>Power and</strong></td>
<td>• Allowance for additional future wiring</td>
<td>18.1</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td><strong>communications</strong></td>
<td>• Sockets, switches and controls of suitable design</td>
<td>18.2</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and at suitable location and height</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Where provided alarm call points located where</td>
<td>18.6</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>they can best be reached</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External areas</strong></td>
<td>• Paved sitting out area</td>
<td>19.2</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>• Raised planting bed</td>
<td>19.2</td>
<td>*</td>
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</tbody>
</table>
### SUMMARY OF DESIGN CRITERIA: DWELLINGS SPECIFICALLY FOR WHEELCHAIR USERS

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to individual dwellings</strong>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Step-free access from road pavement and parking space to dwelling entrance</td>
<td>7.3</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>• Access paths at least 1200mm wide</td>
<td>7.3</td>
<td>•</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• All other paths within curtilage 1200mm wide</td>
<td>7.3</td>
<td>•</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• All other paths within curtilage 900mm wide with widening to 1200mm at turns</td>
<td>7.3</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>• Gates of suitable width</td>
<td>7.4</td>
<td>•</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Step-free entrance</td>
<td>7.5</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>• Platform of suitable size at the door</td>
<td>7.5</td>
<td>•</td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>• Clear space beyond the handle edge of the door</td>
<td>7.5</td>
<td>•</td>
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<tr>
<td></td>
<td>• Door bell/entry phone at suitable height</td>
<td>7.11</td>
<td>•</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>• External light at entrance</td>
<td>7.11</td>
<td>•</td>
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<tr>
<td></td>
<td>• Canopy or porch</td>
<td>7.12</td>
<td>•</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>• Covered car space in-curtilage or within 15 metres of entrance</td>
<td>7.13</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>• Charging space for electric wheelchair</td>
<td>7.14</td>
<td>•</td>
<td></td>
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<tr>
<td><strong>Access to blocks of flats</strong>*</td>
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<td></td>
<td>• Step-free access from road pavement and parking space to entrance</td>
<td>7.3</td>
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<tr>
<td></td>
<td>• All paths at least 1200mm wide</td>
<td>7.3</td>
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<td></td>
<td>• Step-free entrance</td>
<td>7.6</td>
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<tr>
<td></td>
<td>• Steps in addition to ramp where steeper than 1:15 or rising more than 400mm</td>
<td>7.6</td>
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<td></td>
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<tr>
<td></td>
<td>• Platform of suitable size at the door</td>
<td>7.6</td>
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<td></td>
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<tr>
<td></td>
<td>• Clear space of at least 550mm beyond the handle edge of the door</td>
<td>7.6</td>
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<td></td>
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<td></td>
<td>• Ramp and/or steps of suitable design</td>
<td>7.7/7.8</td>
<td>•</td>
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<tr>
<td></td>
<td>• Door bell/entry phone at suitable height and position</td>
<td>7.11</td>
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<tr>
<td></td>
<td>• External light at entrance</td>
<td>7.11</td>
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<tr>
<td></td>
<td>• Canopy or porch at entrance</td>
<td>7.12</td>
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<tr>
<td></td>
<td>• Car space within 15 metres of entrance</td>
<td>7.13</td>
<td>•</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Covered car space within 15 metres of entrance</td>
<td>7.13</td>
<td>•</td>
<td></td>
</tr>
</tbody>
</table>
### Dwellings specifically for wheelchair users continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communal access areas and lifts</strong></td>
<td>• All doors with clear opening width of at least 840mm</td>
<td>8.2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Level threshold</td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door ironmongery of suitable design</td>
<td>8.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door closers of the adjustable delayed action type</td>
<td>8.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Area inside the entrance door and circulation areas allow for wheelchair turning and manoeuvre</td>
<td>8.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Entrance door positioned with space of at least 550mm beyond the handle edge</td>
<td>8.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Handrails on both sides of circulation area</td>
<td>8.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Handrails of suitable design</td>
<td>8.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Any lift is fully usable by disabled people</td>
<td>8.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lift with internal dimensions of 1400 x 1600mm</td>
<td>8.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Communal areas with features to help those with visual impairment</td>
<td>8.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Signage suited to people with visual impairment</td>
<td>8.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Entrance doors to individual houses or flats</strong></td>
<td>• All entrance doors with clear opening width of at least 840mm</td>
<td>9.2</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Level threshold</td>
<td>9.3</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Allowance for recessed doormat</td>
<td>9.3</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Door ironmongery of suitable design</td>
<td>9.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Any door closer has adjustable delayed action</td>
<td>9.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Area inside the entrance door and circulation areas allows for wheelchair turning and manoeuvre</td>
<td>9.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Entrance door positioned with a return of at least 300mm beyond the handle edge</td>
<td>9.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Entrance door positioned with a return of at least 550mm beyond the handle edge</td>
<td>9.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Letter box or bag behind the letter plate</td>
<td>9.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Shelf beside the door</td>
<td>9.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Any lobby is of sufficient size</td>
<td>9.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Dwellings specifically for wheelchair users continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Circulation spaces and internal doors</strong></td>
<td>• Passages of sufficient width</td>
<td>10.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Doors positioned and hinged to assist circulation</td>
<td>10.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Doors positioned with a return of at least 300mm beyond the handle edge</td>
<td>10.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Doors positioned with a return of at least 550mm beyond the handle edge</td>
<td>10.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pass doors with clear opening width of at least 800mm</td>
<td>10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pass doors without threshold plates</td>
<td>10.5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Doors opening beyond 90°</td>
<td>10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door construction allows pull handles to be fixed at different heights</td>
<td>10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Door ironmongery of suitable design</td>
<td>10.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Living and sleeping areas</strong></td>
<td>• Space for wheelchair turning in all apartments</td>
<td>11.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Living room and dining space of a size that allows for notional furniture and circulation ‘path’</td>
<td>11.2 &amp; 11.3</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Bedroom(s) of a size that allows for notional furniture and circulation ‘path’</td>
<td>11.4</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Beds for wheelchair user can be accessed on three sides</td>
<td>11.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Double bedrooms allow for twin beds</td>
<td>11.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Built-in clothes hanging space</td>
<td>11.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>• Provision is made for adequate and accessible general storage</td>
<td>12.1 &amp; 12.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Storage space is allowed for special equipment</td>
<td>12.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Dwellings specifically for wheelchair users continued

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>DESIGN CRITERIA</th>
<th>ref.</th>
<th>B</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kitchen</strong></td>
<td>• Layout with continuous sequence of worktop-sink-worktop-cooker/hob-worktop</td>
<td>13.5</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Space in front of fittings and appliances to turn a wheelchair</td>
<td>13.5</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Worktops are of suitable design</td>
<td>13.6</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adequate and convenient storage</td>
<td>13.7</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Kitchen fittings are of suitable design</td>
<td>13.7</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sink of suitable design</td>
<td>13.8</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adequate space is allowed for cooking and other appliances</td>
<td>13.9 &amp; 13.10</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Splash back to worktops and sinks</td>
<td>13.11</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Slip-resistant floor finish</td>
<td>13.11 &amp; 15.2</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Windows as 16.3</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Taps as 17.5</td>
<td></td>
<td>●</td>
<td></td>
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<tr>
<td></td>
<td>• Electrical services as 18.2</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Laundry/utility area</td>
<td>13.13</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td><strong>Bathroom</strong></td>
<td>• Size and layout allow for full use by a person in a wheelchair</td>
<td>14.9</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Outward opening door</td>
<td>14.9</td>
<td>●</td>
<td></td>
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<tr>
<td></td>
<td>• Allowance for a ceiling mounted hoist</td>
<td>14.10</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fittings of suitable design</td>
<td>14.11 - 14.14</td>
<td>●</td>
<td></td>
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<tr>
<td></td>
<td>• Floor gulley</td>
<td>14.14</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Allowance for fixing grab and support rails to walls</td>
<td>14.15</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Walls with adequate area of impermeable finish</td>
<td>14.16</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Slip-resistant and sealed floor finish</td>
<td>14.9 &amp; 15.2</td>
<td>●</td>
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<tr>
<td></td>
<td>• Windows as 16.3</td>
<td></td>
<td>●</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Taps as 17.5</td>
<td></td>
<td>●</td>
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<tr>
<td><strong>Additional WC</strong></td>
<td>• Provided in dwellings for four or more people</td>
<td>14.17</td>
<td>●</td>
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<tr>
<td></td>
<td>• Accessible in a wheelchair</td>
<td>14.17</td>
<td>●</td>
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<tr>
<td></td>
<td>• With transfer space beside WC</td>
<td>14.17</td>
<td>●</td>
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<th>B</th>
<th>D</th>
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<td></td>
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<td>16.2</td>
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<td></td>
<td>• Controls are easily and safely accessed, reached and operated</td>
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<tr>
<td></td>
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<td>17.1</td>
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<td></td>
<td>• Lever taps</td>
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<td>• Allowance for additional future wiring</td>
<td>18.1</td>
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<tr>
<td></td>
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<td>18.2</td>
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<td></td>
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<td>18.6</td>
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<td></td>
<td>• Raised planting bed</td>
<td>19.2</td>
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<td></td>
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<td>19.3</td>
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GLOSSARY

ACCESS STAIR - a stair providing access to more than one dwelling.

ADAPTABLE - which allows for possible alteration to suit people with particular physical needs.

ALARM SYSTEM - a system of summoning assistance in an emergency from a warden, house manager or remote support service.

AMBULANT DISABLED PEOPLE - those with a range of impaired mobility, lack of agility and/or strength but who are able to walk with or without the use of walking aids or the occasional use of a wheelchair.

BARRIER FREE - that is designed to allow for the needs of people who have either a permanent or temporary impairment affecting their mobility, agility or sensory perception.

DEXTERITY - skill of manipulation with hands.

DISABLED PEOPLE - persons with a physical, hearing, sight or other impairment which affects their mobility or their use of buildings.

DWELLING - a self contained house, flat or maisonette having the accommodation required by Parts M and Q of the Technical Standards that support the Building Standards Regulations (i.e. accommodation with its own bathroom and kitchen).

IMPAIRED MOBILITY - difficulty with walking and general lack of agility.

OLDER PEOPLE - those aged 65 or over.

RAMP - a sloping footpath with a gradient of 1:20 or steeper.

SAFETY - that relating to protection from accident.

SECURITY - that relating to protection from criminal action.

SENSORY IMPAIRMENT - total or partial loss of sight, hearing or touch.

STEP FREE - with no change in level greater than 15mm.

VALUE FOR MONEY - the relationship between costs and benefits.

WHEELCHAIR USERS - people whose physical disability prevents them from moving around without the use a wheelchair or other wheeled form of transport.
NOTE ON RELATED TERMINOLOGY

The following terms relating to housing, and particularly that for older or disabled people, are not used within this guidance as they are considered to have the meanings given below and therefore not directly relevant to this document.

ACCESSIBLE HOUSING - the term as used in England for housing that is broadly equivalent to barrier free.

AMENITY HOUSING - housing designed to suit older people to the standards contained in Scottish Housing Handbook 5 - Housing for the Elderly.

LIFETIME HOMES - housing designed to the standards set by the Joseph Rowntree Foundation

VISITABLE HOUSING - the term used to describe housing that allows disabled people to enter and have access to a living room and a WC, but not a bathroom, bedroom and kitchen.
REFERENCES

DOCUMENTS REFERRED TO IN THE TEXT


17 Energy Design Advice Scheme, Royal Incorporation of Architects in Scotland, 15 Rutland Square Edinburgh EH1 2BE. (Tel 0131 228 4414 or 0131 229 7545).

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