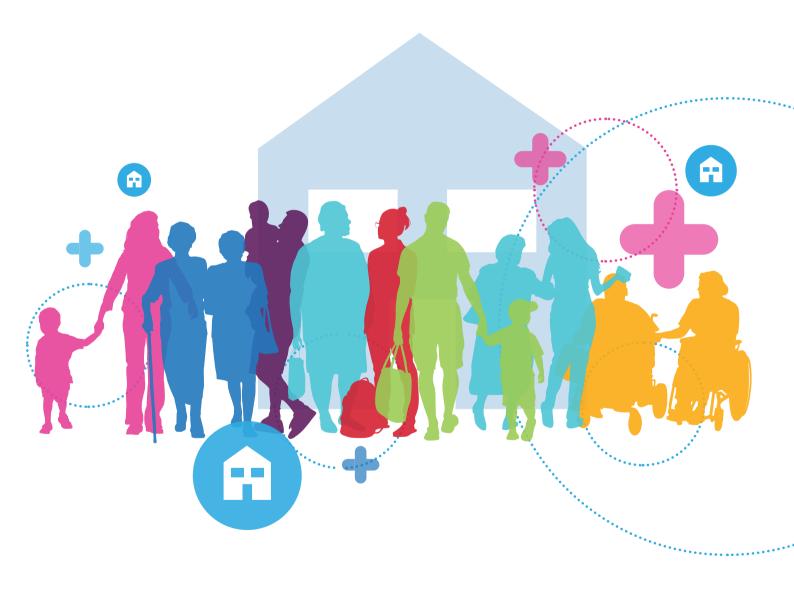
Centre for Excellence in Universal Design

Universal Design Guidelines For Homes in Ireland



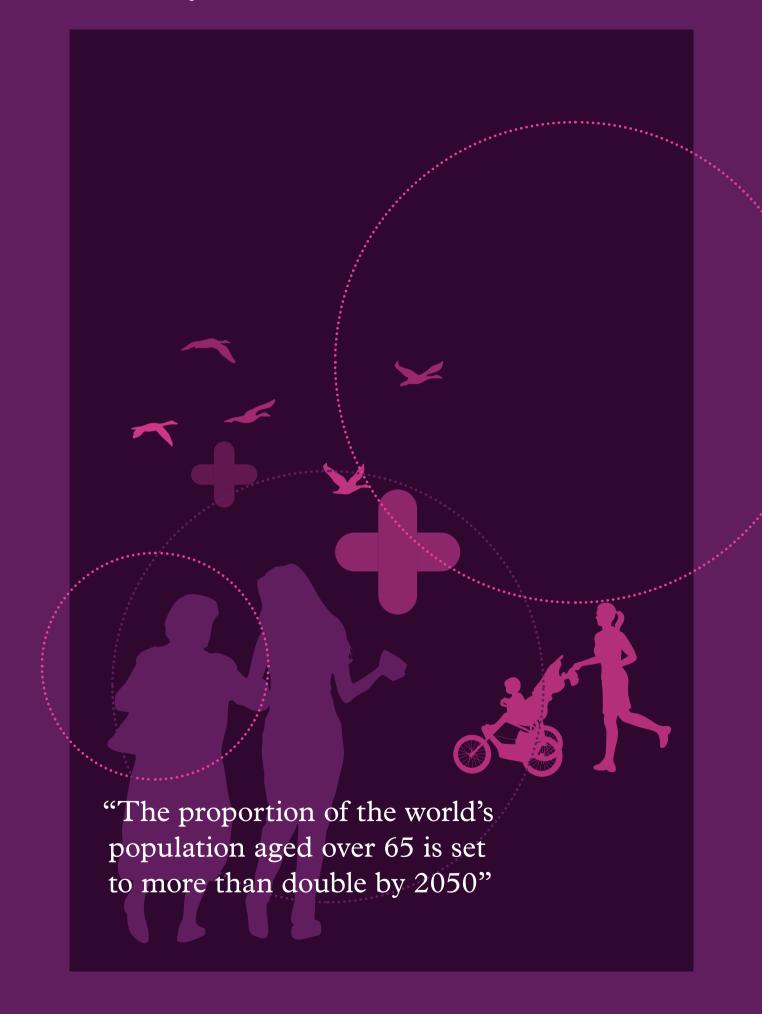






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Foreword

Our Centre for Excellence in Universal Design (CEUD) which is part of the National Disability Authority has produced these Guidelines for Universal Design Homes for Ireland to inform policy and practice in relation to new home design.

Ireland is unique in having a statutory Centre for Excellence in Universal Design. Our work in raising awareness and informing policy is to enable people in Ireland to participate in a society that takes account of human difference and to interact with their environment to the best of their ability.

Our aim is that these Guidelines will inform national policy and be used in practice by all stakeholders – those who commission, design, build, provide and occupy homes. If new homes or alterations to existing homes are built to a Universal Design standard, then they will be suitable for the needs of people regardless of age, size or ability. This will facilitate provision of homes that can readily meet the changing requirements over time, facilitating people remaining in their own homes and communities as they get older or they become more disabled.

This Document therefore brings together guidance in relation to new homes and complements our publication "Building for Everyone—A Universal Design Approach". The Guidelines also complement current Regulations in relation to home design, and the wealth of guidance available on designing for specific needs.

The next step will be to undertake a life cycle cost benefit analysis of universally designed homes, which will inform policy and practice in relation to building standards.

I would like to thank all the stakeholders for their engagement to date in this process and I would like to also thank our contractors MCO Projects, PRP Architects and Detail Design Studio for their work on this design guidance publication.

Chairman

National Disability Authority

Peter le Karitt

The purpose in producing Guidelines for Universal Design (UD) Homes is to:

- Inspire people to think differently about better quality homes for everyone.
- Assist in the design and delivery of UD Homes through practical guidelines.



There's a **OOO** chance that a new home will be occupied by a person with some form of disability at some stage

About The Guidelines

The Guidelines are informed by: distilling existing research undertaken by CEUD; a literature review of national and international best practice and guidance; and an initial consultation process with key stakeholders by MCO PRP who were commissioned to produce the Guidelines with CEUD.

- The concept of universally designed homes (*UD Home*s) is described in the introduction to the guidance.
- The design quality guidelines for **UD Homes** are provided in Sections 1–4 to assist better understanding of how to incorporate Universal Design into new housing design.

The guidelines are not intended to be overly prescriptive, but provide a flexible framework for designers to apply the guidelines creatively to all new home types through incremental steps described as **UD Homes** and **UD Homes** Although the guidelines enhance quality of life for everyone in their homes, they would not necessarily meet every need to accommodate an individual's personal factors, circumstance or choice. Therefore **UD Home** Guidance and design tips are also provided to raise awareness and assist in person-centred design.

The guidelines cover the access and use of homes for people of any age, size, ability or disability. This publication is informed by National Policies developed by the Department of the Environment, Community and Local Government (DoECLG) and the Department of Health. It is in compliance with the National Building Regulations and Technical Guidance Documents (TGD's) developed by the DoECLG, for further detailed information on these refer to DoECLG website www.environ.ie/en/.

Engagement with key stakeholders was carried out reflecting the diversity of home occupants, home providers and home designers. It is evident from consultation that to inspire the change in mindsets that is needed to mainstream universally designed homes in the future, consumer-focused information will be needed to communicate the ideas, and act as a catalyst for cultural change in new home design.

As the application of UD Homes becomes more mainstream, custom features will become less costly and less frequently needed — thereby improving the whole home design and development process for everyone in future.



Introduction

These Guidelines are a first step in the process of raising awareness and inspiring people to think differently about the benefits of universally designed homes. This section gives an overview of the wider context for Universal Design and the potential opportunity to address some of the global challenges society faces by future-proofing our homes through embracing Universal Design thinking.

Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability.

When home environments are people-centred in design, convenient and a pleasure to use, everyone benefits. Simply put, Universal Design is good design.



The Changing Landscape —

The Need for Universally Designed Homes

UD Home design builds upon social and technological advancements in Ireland and internationally. The consultation process with stakeholders that informs these guidelines highlighted a need for better quality housing design for everyone in Ireland for the future.

The rapid changes in our society, our lifestyles, and lifetime patterns means the concept of an 'average person' or 'typical family home' becoming increasingly less relevant. Living longer, with improved health, is one of the great successes of our society. People regardless of age, size, ability or disability are positively contributing to the social, economic and cultural life of our communities. However, finding suitable and appropriate homes that can accommodate our changing needs over time can be difficult – whether for families with young children, a person with a temporary or permanent injury, someone with a disability, or an older person living independently. Universal Design can meet everyone's needs through flexible homes designed to adapt to lifecycle and lifestyle patterns of people over time.

There is also an evident need to meet an increase in the Social Housing demand, and an unmet market need for people with a disability and older people who increasingly want to live independently in homes that work well and look good. The Department of the Environment, Community and Local Government (DoECLG) has developed Best Practice Guidelines for delivering homes and sustaining communities titled 'Quality Housing for Sustainable Communities' 2007.



The Benefits of UD Homes

We all have changing needs at different stages in our lives – changes in family, lifestyle or health circumstances. A *UD Home* can adapt and change with us by factoring in at the outset key design features that benefit the quality of life of everyone in the home. The application of Universal Design thinking to our homes recognises our differences and accommodates them through the integration at the outset of the design and construction stages of:

- Flexibility and ease of adaptability to meet people's changing needs over time in a cost effective way;
- Sustainable design to improve comfort and energy efficiency; and
- Smart technologies to enable ease of living independently for longer.

Living in a UD Home helps to avoid the need for re-location or costly building works as you or your family's needs change over time. Integration of smart infrastructure and energy efficient systems at the outset of home design avoids costly re-fits and also benefits everyone in terms of comfort, efficiency and quality of services.

It is not about a 'one-size-fits-all' model – the UD Home environment enables the widest possible number of people to participate at home, in society, and to live independently. For a housing provider, builder or developer, a UD Home thereby provides a competitive advantage as the home offers a more attractive market proposition for the widest range of potential residents.

UD Homes are about good design, efficiency and a broader market need.

Future-proofed homes are comfortable and cost-effective quality homes.



UD Homes work well for everyone and look good. They are mainstream in aesthetics not separate or distinct for special needs – and are designed to 4 key Principles:

- 1. Integrated into the neighbourhood
- 2. Easy to approach, enter and move about in
- 3. Easy to understand, use and manage
- 4. Flexible, cost effective and adaptable over time

For Example:

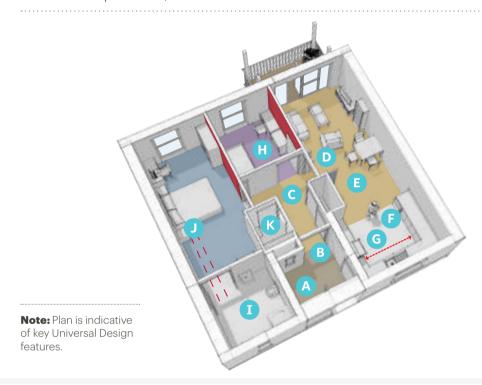
- Easy, safe, access from the immediate neighbourhood to the entrance to the home works for everyone whether you are carrying shopping, with small children, or are an older person living alone.
- Clever use of limited space designed for multi-purposes with wider entrances works for young families who need ease of movement for strollers, for children's play areas, or for extra storage or shelving space, and it also works for wheelchairs and double buggies.
- Providing homes with a flexible lay-out with more easily adaptable internal walls allows the home to expand or contract as the family grows; this works for 'empty-nesters' and works for people living alone or independently with particular needs.
- Ease of movement and simple control of the home environment and systems works for everyone, but also improves quality of life for people with temporary injuries, those with a disability who need to move safely around their home, and works for older people who are vulnerable to accidents in their homes.
- Smart home services and entertainment enjoyed by everyone in their homes can also work for the integration of assistive technologies for people with a disability, or for older people living alone.

These illustrations highlight key design features in existing case studies that are in line with a universal design approach. However, please note that the floor plans are not fully compatible with a UD Home.

Social Housing in Dundalk Town Centre

Existing case study plans with key universal design features highlighted:

2-bedroom apartment, 74 m².

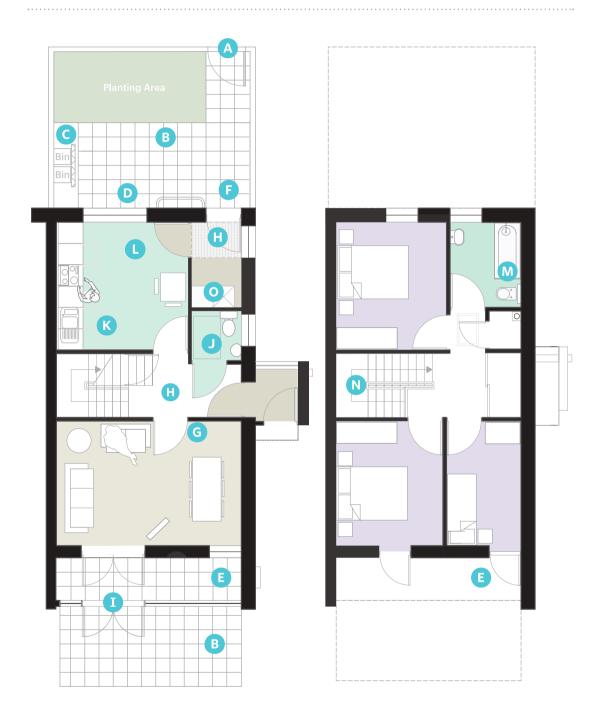


- A Multi-purpose porch with power point (could be also used for an electric wheelchair or buggy)
- B Entrance door with a clear width of circa 1000mm
- Wide hallway of circa 1200–1500mm with storage
- Flexible width door openings called 'cat and kitten' doors.
- **■** Circa 1800—2400mm turning circle in all habitable rooms
- F Kitchen arranged in a 'U' shape, with the door outside the kitchen area
- **G** 1800mm between opposing work surfaces
- (H) Easily adaptable with 'soft-spots' eg internal walls to change from two bedroom lay-out to one larger bedroom (highlighted in red)
- Bathroom immediately adjacent to the main bedroom
- Provision of 'hard-spots' eg in ceiling construction for hoist track to be installed in bedroom
- Accessible WC

Social and Affordable Houses in Rural County Cork

Existing case study plans with key universal design features highlighted:

3-bedroom semi-detached house, 104 m².



Ground Floor

First Floor

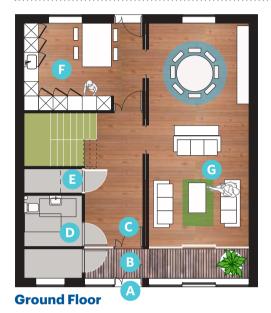
 $\textbf{Note:} \ \mathsf{Plan} \ \mathsf{is} \ \mathsf{indicative} \ \mathsf{of} \ \mathsf{key} \ \mathsf{Universal} \ \mathsf{Design} \ \mathsf{features}.$

- A Easy to use pedestrian gate circa 900mm wide
- B Permeable paving that is firm, non-slip, non-reflective, and suitable for all weathers
- C Easily accessible bin storage area near entrance to utility and kitchen
- Paved area of circa 1800mm across full width of house
- Enclosed terrace as a wintergarden
- E Level or gently sloping external landing outside each entry point of circa 1500 × 1500mm
- G Circa 300mm clear space on the leading edge of doors
- (H) Circa 1800mm wide entrance hall with storage and natural light, rear door entry also provides cloak store
- Level transition at all doors
- Entry level WC of circa 1500 × 1800mm with side transfer space and outward opening door
- Reasily adaptable kitchen with space for occasional eating
- Ease of movement through kitchen
- M Bathroom of circa 2100 × 2500mm that can be easily converted at a later date into a shower room
- N Straight and simple flights of stairs with no winders
- O Utility room with space for washer and dryer adjacent to kitchen

House in Dublin Suburbs

Existing case study plans with key universal design features highlighted:

3-bedroom semi-detached house, 104 m².





First Floor

Note: Plan is indicative of key Universal Design features.

- A Flexible width 'cat and kitten' doors with level threshold
- B Large porch and wintergarden with access to store
- © Wide entrance hall for many functions with natural light and access to storage
- **D** Entrance level WC large enough to be adapted to a shower room should that be required in the future
- Store room with 1500×1000mm potential aperture for future installation of through-floor lift
- E Large kitchen in an 'L' shape that is not a thoroughfare in the house and doors are outside the kitchen area
- G Large and flexible living room and dining room with ample space to access all areas for everyone
- H Large and accessible family bathroom
- Ensuite and dressing room adjacent to main bedroom that could be easily adapted in the future
- Bedrooms with ample space to access all areas for everyone

Apartment in Dublin Inner City Centre

Existing case study plans with key universal design features highlighted:

2-bedroom apartment, 89 m².



Note: Plan is indicative of key Universal Design features.

- A Living Room with ample clear unobstructed space
- B Kitchen is not a thoroughfare and located next to dining space
- C Minimum 1200mm between facing work surfaces
- Double bedrooms of circa 12m2 located close to bathroom
- Bathroom easily adaptable with ample clear space and storage
- Bath with firm side access of circa 1100 × 700mm
- G Store and Laundry room
- Balcony of circa 1800mm in depth
- Entrance hall adequate for different uses with storage for cloaks, buggies etc

UD Homes —

Informing future national policy and practice

The provision of UD Homes guidance is to inform the cultural change needed in the planning and delivery of quality homes and sustainable communities. The Guidelines therefore include the wider neighbourhood context of the home location, recognising the importance of social interaction, community and local services.

Ireland's home design has to adapt and change to meet a new paradigm shift in our future society. Given the overwhelming preference for people as they get older to live in a familiar environment close to family and friends, more and more homes need to be designed and built with ease of use as a core feature. Home services, and management of resources such as water, waste and energy will in future be transformed by enabling technologies. New models of care and welfare are also being transformed, with innovation in assistive care technologies driving change towards non-institutional, community oriented, home based care services.

No other force is likely to shape the future of national economic health, public finances, and policy making, as the irreversible rate at which the world's population is aging

Standard and Poor, Global Ageing 2010



UD Homes can create an enabling home environment for the widest possible number of people by providing opportunities for easy adaptations. By smartly designing-in ease of use and the infrastructure for smart technologies at the outset, the home can provide a supportive environment to optimise participation and activity throughout our lifetimes.

There is an opportunity to increase awareness of Universal Design Principles across all care and housing related professions and services. There is also an opportunity to inform other strategic areas such as energy efficient home design, smart cities and sustainable communities.

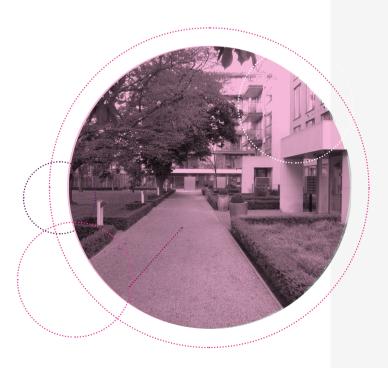
In Australia, Government policy states that all new homes will be of an agreed Universal Housing Design standard by 2020.

The **UD Home** Guidelines can help inform the implementation of a new approach to better quality public and private sector housing in Ireland and can also play an important role in how Ireland plans for its ageing population in our society. There is an opportunity to think differently about the planning and delivery of housing and this is timely in light of recent Government policy such as the National Housing Strategy for People with Disabilities 2011-2016 and National Implementation Framework, the Quality Housing for Sustainable Communities 2007, the National Positive Ageing Strategy 2013 and the National Dementia Strategy 2013 and "commitment to promote and support Universal Design, particularly to ensure accessible housing".

The guidance is in compliance with National Building Regulations and Technical Guidance Documents (TGD's) as set down by the Department of Environment, Community and Local Government (DoECLG)

Universal Design is an evidence based approach to design, learning from what works well for people.

This provides an opportunity for professional development, and new skills in the design and construction industry. *UD Home*s can also provide an opportunity for innovation and enterprise development such as technologies to support independent living for everyone, universally designed home appliances, furniture and fittings that could be developed for international markets.



The Guidelines for UD Homes are intended to influence innovative solutions in the longer term for:

- Informing national policy to support a Universal Design approach;
- Informing a balance of regulation, enforcement and creativity in home design;
- Encouraging joined-up thinking between different professions and services;
- Assisting the integration of Universal Design into the design, planning and building process;
- Encouraging a people-centred approach to the creation of enabling home environments;
- Highlighting and demonstrating the social and economic imperative for embracing Universal Design.

These issues will be further explored in a cost/benefit analysis to be undertaken by CEUD to inform the Final Guidelines.





How to Use the Guidelines in Sections 1-4

The Guidelines document comprises:

- Four sections of guidelines that flow from the outside of the home, to inside different rooms within a home, to specific elements and system;
- Each section describes design considerations with photos of existing homes to communicate universal design features;
- Design quality guidelines with indicative floor plans and sketches of technical details are provided that can be applied to any home type;
- Guidance is provided in a two-tiered system described as: UD Home optimising flexibility, adaptability and usability for everyone; UD Home ⊕ providing for greater accommodation of people's changing needs over time;
- **♦ UD Home** ⊕ ⊕ guidance and design tips are also provided to raise awareness and assist in person-centred design;
- Appendices include the consultation process, a bibliography of references and a glossary of terms.

At A Glance —

UD Home Design Quality Features

Section 1 - Home Location and Approach



- Homes integrated into the neighbourhood, with clear, safe, routes from bike, car or public transport to the entrance of the home.
- Space designated near entrances for accessible car-parking and a drop-off space for an adult carrying a child, carrying shopping, someone on crutches, a person in a wheelchair, an older person or a person with visual difficulties.

Section 2 - Entering and Moving About the Home



- Level thresholds at doorways for simple, easy movement and ease of cleaning and maintenance.
- Wide front door and internal doors for ease of movement for all.
- More spacious entrances and hallways for multipurpose uses and ease of movement within the home.



Section 3 - Spaces for Living



- Flexible or open-plan layouts with some 'softspots' like internal walls that can easily be removed for cost effective adaptation as the family expands or contracts.
- Reinforced walls and ceilings as 'hard-spots' around the toilet, shower and bath to support the easy installation of handrail and drop down supports as required.
- Enough space in a bedroom for easy manoeuvring and access to an adjacent bathroom.
- Flexible space in living rooms for social interaction.
- Enough space for a kitchen to adapt easily for different layouts.
- A toilet at entrance floor level that can adapt to a shower room.
- Enough space for integrating space for laundry, storage and refuse.

Section 4 - Elements and Systems



- Sockets, light switches and window sills at levels that are within easy reach and view for everyone.
- Details like lever door handles and taps that are easier to use for everyone, especially young children.
- Easy control and use of systems and the capability to integrate smart entertainment, energy efficiency and security systems or assistive technologies.
- Ohoice of materials and colour, with fittings and finishes that are easy to use, maintain and are attractively and smartly designed.
- Optimised use of natural light, ventilation and energy efficiency.

Universal Design Guidelines For Homes in Ireland	

Home Location and Approach O1



Universal Design Homes should be appropriate to their context and create a strong sense of place. Attention to detail and high quality materials are essential to ensure longevity of use. Welldesigned housing will be appreciated and treated well by the people who live there.

1.1 Location



Landscaping and approach path to housing development.

Photo Design Features

- Distinctive character to housing and external environment
- A wide pavement is provided, at least 2000mm clear width
- Dight fittings do not reduce the width of pavement
- Clear colour contrast between path and planting
- Open views not obscured by planting foliage kept to low or high level
- Semi-public realm well overlooked

Photo Design Tip

Gravel is difficult for many people to use, particularly those using strollers, wheelchairs, walking sticks or crutches.



The development creates a new street off an existing busy thoroughfare in the town centre.

Development Sites for New Homes

Design Considerations and Awareness

It is important that development sites be selected on the basis of the quality of the environment which exists or can be created around the new homes. A development site should be well-connected locally, with easy access to transport links and places to socialise and shop. The development should enhance the existing local identity and be a desirable place for everyone to live.

Consider site features that could provide a challenge to some people in the community. For example, steeply sloping sites are difficult for walking, cycling, pulling luggage, pushing a buggy, a wheelchair, or for toddlers, people with breathing or heart conditions.

UD Home and UD Home Guidance

- Ensure that large schemes include, or are close to, public amenity space, with good access to transport and local shops, pubs and cafes.
- Avoid steeply sloping sites, or factor in from the outset how to ensure that gradients do not compromise accessibility when developed.
- On large sites with a gradient between 1:60 and 1:25, provide regular resting places for people.
- Provide regular resting places on sloping sites, at every 19m maximum, for gradients of 1:25, and at every 25m maximum for gradients of 1:33. An access route steeper than 1:25 should be designed as a ramp.
- Consider provision of WiFi and mobile applications to further the enhance accessibility and provide useful local information for everyone.



Sufficient space is provided for all users to pass, with clear differentiation between traffic and pedestrian areas. Bollards, light fittings and trees are kept within a defined zone and do not interrupt the pavement width.

Roads, Streets and Pavements

Design Considerations and Awareness

The layout of the buildings, roads and streets, and position of signage in a new development should make it easy for everyone to find their way around. All new roads and streets should link well with existing roads in the neighbourhood, and there should be a clear hierarchy from the main circulation road to smaller streets. All routes should be pedestrian, cycle, and vehicle friendly, and well overlooked to provide passive surveillance. Provide wide pavements, where people can pass easily, for example when using walking aids or pushing a buggy.

To make the route comfortable for everyone, avoid placing obstacles such as trees, bins, bollards, lighting columns and signs in the clear footpath area. Ensure that inserts for services such as manholes or drains are level with the paving and that bicycles or wheels of prams cannot get stuck, and high heels or walking aids don't get trapped. Design the pavement with cross-falls to prevent water ponding after rain. This avoids slippery surfaces, a reflective glare, or ice being formed.

Select paving materials that are hard and firm, with non-slip and non-reflective properties as these are comfortable and safe for everyone. Surfaces like cobbles, bare earth, loose gravel and sand are difficult to walk on for most people especially those using walking sticks or crutches, wheelchairs, bicycles, infant buggies and wheeled luggage. Colour contrast on pavements, for example in a pattern, can cause confusion for people with visual or cognitive difficulties. However, contrast colour can be used for kerbs, to indicate the edge of the pavement, assisting those with visual or cognitive difficulties. Consider the ease of making repairs at a later date, as replacement of sections in a different colour may also cause confusion.

Shared surfaces should use contrasting colour and surface textures to make the area easier to understand and safer for everyone. If there is a level change beside a pavement higher than a standard kerb drop to a roadway, provide protection to indicate the level change for safety. Tactile paving is essential for people with visual difficulties, for example to indicate where a dropped kerb or zebra crossing is located.



The parking area is clearly designated as a shared surface area.

Photo Design Tip

More design features to signal the designation would ideally have been included, such as trees and carriageway narrowing.

UD Home and **UD Home** Guidance

- Provide a clear hierarchy of streets that is logical, easy to understand and well integrated with the existing context.
- Install street signs at the head of T-junctions, so that visitors can identify easily where they are.
- Design pavements with a minimum width of 2000mm, narrowing only to 1800mm where unavoidable for electric junction boxes, etc..
- Design pavements with a minimum width of 2400mm, narrowing only to 2000mm where unavoidable for electric junction boxes, etc..
- Ensure that pavements are kept clear of obstructions.

- Ensure that the surface materials specified are appropriately non-slip with a dry friction coefficient between 35 and 45.
- Specify materials which are non-reflective.
- Ensure materials can be replaced and repaired easily and quickly.
- Ensure that kerbs are installed on pavements.
- Provide kerbs in a contrast colour to the footpath paving for good visibility.
- Install dropped kerbs at all junctions, matched on each side of the road.
- Provide kerb upstands, barriers or guardrails where there is a change of level beside the pavement higher than a kerb.
- Avoid the use of cobbles, sand or gravel for pavements.
- Ensure that any breaks in paving are maximum 10mm wide and perpendicular to the direction of movement.
- Ensure that any insert, whether for an inspection chamber, gully or similar, is level with the paving.
- Design pavements with a cross-fall gradient not exceeding 1:50, except where there is a dropped kerb.

UD Home **⊕ ⊕** Guidance

Consider providing pavements of minimum width 2400mm for the full length of the pavement without interruptions.





Access path is well-lit and lighting does not obstruct the clear width.

Photo Design Tip



The tactile surface should cover the dropped kerb area but not the radiused corner.

Street Furniture and Lighting

Design Considerations and Awareness

Co-ordination of street furniture such as sign-age, lighting, junction boxes, seats, litter bins and parking meters, as well as planting, should ensure that a clear and wide enough route for all is provided. The design of street furniture should be co-ordinated and incorporate colour or tonal contrast with its surroundings for good visibility. Bollards should be very easy for everyone to see and should never be linked by chains.

Wherever possible all street furniture, such as litter bins and signage between columns, should be the full width down to ground level to allow people with visual difficulties to understand the full dimensions at ground level with a mobility cane.

Good lighting design should provide even illumination along a street, sufficient for everyone to feel safe and move around easily at dusk and night time. Lighting should make it easy to locate entrances and identify front door numbers and signage.

For lighting levels, please refer to section 4.



Broad footpaths that are clear of obstacles, with indicators of the location of the road using tactile surfaces and bollards.

Photo Design Tip

- The tactile surface should cover the dropped kerb area but not the radiused corner.
- The bollards should be highlighted, for example by using paint or a reflective strip.

UD Home and **UD Home** Guidance

- Ensure that street furniture layout is co-ordinated and consistent.
- Highlight bollards by means of a light or contrast colour at the top, and do not link with chains.
- Avoid installing letter boxes, litter bins and telephones on pedestals because they may confuse and cause accidents to people with visual difficulties using a mobility cane.
- If eye-level signs are not taken down to ground level, ensure that there is a tapping rail between posts at 250 to 400mm above ground level, with posts and rail contrasting visually with the background.

- Ensure that eye-level signs do not extend more than 150mm beyond the posts.
- Ensure that suspended signs are above head height for tall people and cyclists, at 2300mm minimum.
- Highlight free-standing posts and columns with a 150mm-high feature, such as a visually contrasting crest or band 1500mm above ground level.
- Locate lighting columns at the back edge of the pavement where possible.
- Lighting columns may be mounted on buildings or walls wherever possible to keep pavements clear of obstacles.
- Locate lighting columns and any other signage posts at least 1000mm apart.



1.2 Approaching the Home



Terraced housing

Photo Design Features

- Devel access provided from pavement
- Parking space allows for car door opening and is adjacent to path
- Firm, non-slip, non-reflective surfaces
- Planting and materials define boundaries clearly
- Public realm is well overlooked
- Ocnsistency in design with no unit standing out
- A canopy is provided above each front door

Photo Design Tip

- Tree reduces pavement clear width locally
- There is a lack of planting for visual interest, distinctiveness, and privacy screening



A mix of house typologies and tenures is provided.

Appearance of the Home

Design Considerations and Awareness

There should be a range of home sizes, types and tenures in every residential area. A mix of family homes and smaller apartments provides moving-on accommodation when it is required, as well as a mixed population which will reflect the make-up of society. It is important to ensure that vulnerable groups in society are not targeted by anti-social behaviour. Therefore the overall external appearance of UD Homes that might be adapted to particular needs should be consistent with neighbouring homes, and should be integrated across the site and not grouped together in one area alone.

Where there are many houses of consistent design it is also important to make it easy for everyone to locate a home, for example by using distinctive design features such as door colours, boundary treatments, planting, porch canopy details etc.

UD Home on and UD Home Guidance

- Ensure that all homes are designed to a high standard and of good quality, using sustainable materials with quality detailing.
- Ensure that there is a mix of tenures and home sizes in every development of 20 homes or more.
- Ensure that UD homes that might be adapted to particular needs are consistent with neighbouring homes, and not constrained to one part of a site, or grouped together.
- Ensure that each UD home has potential to be distinctive through individualised design features such as door colours or planting.



Designated parking spaces with 1200mm access zone located close to communal entrance and integrated into the design of the street.

Setting-down Points and Communal Parking

Design Considerations and Awareness

Providing a clearly identified set-down point close to the entrance of any housing complex can benefit everyone. For example, it can make it easier to deliver groceries, and to help young children or older people out of a car, especially in bad weather.

Generous parking spaces make life easier for everyone including people with mobility difficulties, someone unloading shopping from a car, and young families moving from the car to the home.

Depending on the size of car park, there should be at least one clearly marked accessible parking bay with a 1200mm zone on both sides and at the rear located near each communal entrance.

If underground parking is provided, some designated accessible parking bays should be provided close to the lifts serving the apartments above.





Clear designation of set-down area in front of the entrance with level surfaces for everyone to use.

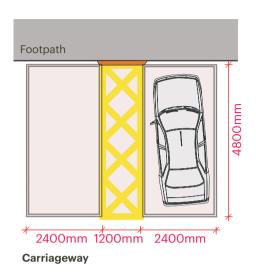
UD Home and **UD Home** Guidance

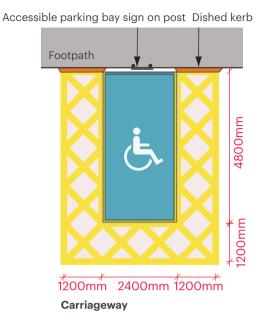
- Provide a setting-down point in close proximity to the main entrance in addition to any designated car parking spaces, but only where these spaces are not in front of the entrance.
- Provide a setting-down point in close proximity to the main entrance in addition to any designated car parking spaces of at least 3600 × 6000mm.
- Provide a dropped kerb for ease of access onto the pavement.
- Provide signage to ensure that the setting-down point is easily located, and not used for casual parking.
- Ensure that the setting-down point has a firm, level, even surface, clear of manhole covers and gullies.
- Design the car parking so that it is well integrated into the streetscape and does not dominate.
- Ensure parking is located no more than 25m from an apartment block, but preferably much nearer.
- Ensure that the route between the designated car parking spaces and the entrance to the apartments is accessible, understandable, well-lit and safe to use.
- Ensure head-on (perpendicular) parking bays are at least 2400 × 4800mm.
- Ensure parking bays which are parallel with the direction of travel are at least 2400 × 6100mm.



Technical Sketch:

Car parking spaces with shared access space, and fully accessible space





- Ensure that there is a minimum of one accessible parking space with a 1200mm zone to the sides and rear, located near each communal entrance or lift serving the apartments above.
- Where space permits provide an extra space of 1200mm shared between two bays to make getting in and out of a car easier for everyone.
- + Provide sheltered parking spaces for electric wheelchairs, scooters, shopriders, tricycles, etc., located near to the main entrance of the building.
- Ensure that some of the communal parking spaces are provided with a power socket for charging batteries etc.
- + Design 5% of parking bays to 3000 × 6000mm.



UD Home **⊕ ⊕** Guidance

Consider providing

- A canopy at the setting-down point with a clearance of 2600mm.
- Some parallel parking spaces at 7000mm long,
- At least one van space at 4800 × 8000mm,
- Some dedicated larger parking bays which are 4500 × 6000mm close to a block of apartments.





Footpath to front door located adjacent to parking space, creating a flexible space for everyone to use.

Parking for Houses

Design Considerations and Awareness

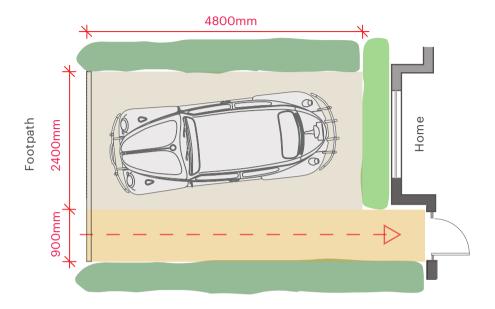
For individual houses the car space should be the minimum standard bay size of 2400 x 4800mm, but with the ability to extend the width from 2400 to 3300mm. This can be achieved by locating the footpath to the front door, or a planting bed that could be adapted in the future, adjacent to the parking bay. On-plot parking will also benefit from an electrical socket for charging an electric car or motorised wheelchair, and for connecting a vacuum cleaner when cleaning the car.

Car parking design quality guidelines

- Design on-plot parking for houses at a length of 4800mm and width of 2400mm, extendable to 3300mm.
- Where garages are provided, ensure they have minimum internal dimensions of 4200 × 5700mm.
- Provide a vehicle charging point at the entrance to the home. The power socket should be installed at an operating height of between 800mm and 1100mm above ground level.
- nsure that the vehicle charging point is sheltered for the comfort of the user.

Technical Sketch:

On-plot parking provision beside path or planted bed.



UD Home **⊕ ⊕ G**uidance

Consider providing:

• A parking area of 3600 × 7000mm.







The gate is in a logical position with a wide and firm path to the entrance door.

Design Tip

Gates and Paths (private and communal)

Design Considerations and Awareness

The gate should be located so that it is easily identified from the street or road.

Gates should be easy to use for everyone, regardless of their upper arm strength. Adjust hinges so that the gate does not spring shut on someone pushing a buggy, using a wheelchair, or carrying groceries. Ideally the path to the gate should be extended in width on the latch side to make it easy to open and shut.

The design of paths from the property boundary to the entrance of the home is similar to the design of street pavements generally. Paths need to accommodate people passing with room for those with bikes, buggies or wheelchairs.

Lighting to paths from the entrance to the property boundary should be provided for apartment blocks. This also applies to homes with long front gardens where the light at the entrance door is insufficient for the whole length of path.

UD Home and **UD Home** Guidance

- Ensure that pedestrian gates are at least 900mm wide, and easy to open and shut.
- Ensure that pedestrian gates are at least 1000mm wide, and easy to open and shut.
- Ensure that gates over 1200mm high are not solid.

- Provide wiring for future installation of assisted opening mechanism.
- + Provide assisted opening mechanism for the gates from the outset.
- Extend the path to the gate by 500mm on the latch side of the gate.
- Ensure that paving within the property boundary is firm, non-slip and non-reflective
- Provide cross-falls of 1:50 so that the path drains easily.
- Ensure that paving is permeable so that it does not pond in wet weather, or contribute to overcharging local drains.
- Ensure that the path is completely clear of obstacles throughout its length.
- Design the pathway to individual houses at a minimum of 900mm wide, and to communal entrances at 2000mm wide, with a minimum width of 1500mm where there are obstacles.
- Design the pathway to individual houses at a minimum of 1200mm wide, and to communal entrances at 2000–2400mm wide.
- Provide switched or P.I.R. sensor lighting at each pathway entrance to an apartment block, and to long front garden paths to houses.





Ramp and landings provided to raised ground floor with handrails on both sides.

Photo Design Tip

- A larger landing outside the front door will make it easier for everyone to manoeuvre and interact.
- There is no guarding at the lower edge of the ramp on the right hand side and there should be tactile paving at the base and top of each section of ramp.

 There should be tactile warning surface indicators to the top and bottom of each ramp section at communal entrances.
- Steps should be provided as an alternative for ramps longer than 2000mm and the ramp should be lit at night.
- Onsider addition of lower handrails for people of smaller stature and children.

Ramps and Landings

Design Considerations and Awareness

Ramps and steps are difficult for many people, such as wheelchair-users or someone pushing a buggy, to negotiate. If absolutely unavoidable, ramps and landings need to be fully integrated into the design of the home or apartment development, and designed to look attractive and accessible for everyone. Steep gradients can be difficult for everyone. Level landings provide resting places and the shallower the slope, the longer the interval can be between landings. A maximum length of 10m is allowable in any one stretch.

Wherever there is a level change beside the ramp there should be protection to indicate the level change and avoid creating a hazard. The base of a guard rail or barrier can be taken down to the level of the ramp. The protection should contrast visually with the ramp surface.

A slope may be difficult for some people with mobility difficulties, and some people might prefer to walk a shorter distance, and use steps instead. Steps should always be provided in addition to a ramp.

If the rise of the ramp is 2000mm or higher, it is likely that the control needed to push a wheelchair up, or control a descent, will be too great for the majority of people to manage. Therefore an alternative means of access should be provided, such as a lift or platform lift.

UD Home and **UD Home** Guidance

- Avoid ramps and steps wherever possible.
- Any access gradient which is steeper than 1:25 should be designed as a ramp. Refer to graph on page 41 for ramp gradients and distances.
- Ensure that ramp slopes are consistent and straight, not curved. Change of direction can take place at a landing.
- Where unavoidable, design the ramp as an integral part of the garden and building.
- Ensure that the width of the ramp is not less than the path it serves and:
 - minimum 900mm wide ramp to individual houses
 - minimum 1500mm wide ramp to communal entrances
- not less than the path it serves and:
 - minimum 1500mm wide ramp to individual houses.
 - minimum 1800mm wide ramp to communal entrances.
- Ramps of 1:20 or less are preferred for a distance of 10m; a slope of 1:12 is allowable only for a distance up to 2m.
- Any ramp of 1:25 needs level landings at max. 19m intervals. At a gradient/slope of 1:33 provide landings at max. 25m intervals.
- Provide a cross-fall of 1:50 maximum, sufficient to ensure good drainage of the ramp and landing.
- Provide a minimum landing length of 1200mm for individual dwellings, and 2000mm for communal buildings, clear of any door or gate swing.
- Provide a minimum landing length of 1500mm for individual dwellings and 2400mm for communal buildings, clear of any door or gate swing. A landing of 2400 x 2400mm is recommended for large apartment buildings at the top and bottom of all ramps.
- Locate handrails on both sides of a ramp or steps (see section on Handrails).

- Continue the handrail around the landings.
- Provide protection that visually contrasts with the ramp ground surface where there are level changes beside the ramp.
- Provide steps alongside any ramp that is more than 2000mm in length.
- Provide a corduroy tactile warning surface indicator (TWSi) at the top and bottom of the flight of steps leading to communal buildings.
- Provide a corduroy tactile warning surface indicator (TWSi) at the top and bottom of the flight of steps leading to private dwellings.
- Ensure that no ramp is greater than 2000mm in height. If it is, provide an alternative means of access, such as a lift or platform lift.
- Provide lighting to ramps and landings to 150 lux.

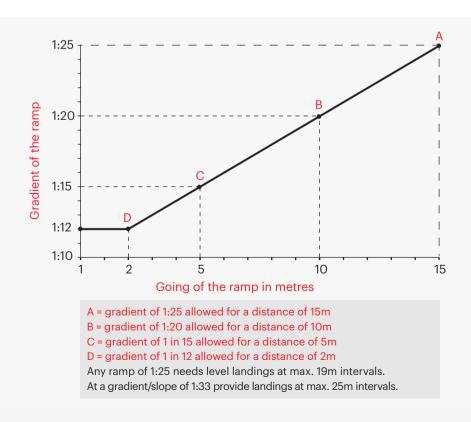
UD Home **⊕ ⊕** Guidance

Consider providing

- A minimum 1800mm wide ramp to individual houses.
- A minimum 2400mm wide ramp to a communal entrance.
- Landings of 2400mm length at the top and bottom of the ramp,
 with intermediate landings of 2000mm minimum length

Technical Graph:

Ramp Gradients and Distances





A ramp is provided in addition to a step.

Photo Design Tip

- Handrails and visual contrasts should be used. As this is an individual dwelling there is no requirement for TWSi's.
- Single steps should be avoided as they are a trip hazard and can cause confusion.

Steps and Landings

Design Considerations and Awareness

External steps should always be provided in conjunction with ramps in order to offer a choice for people. The dimensions of the steps (the rise and going) should be consistent, and there should be no single steps as these can cause confusion or create a trip hazard for anyone.

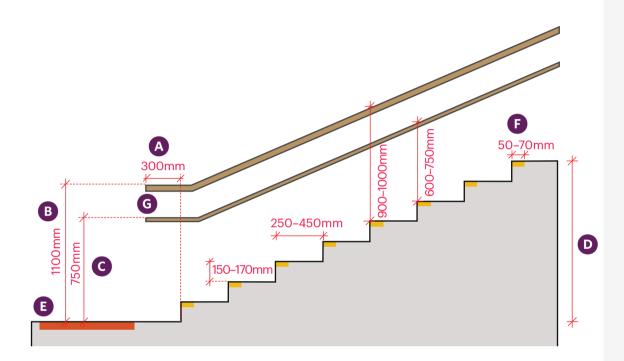
The profile of the steps should be simple, without projections that can cause a risk of tripping. Open risers can be disconcerting and confusing for many people so should be avoided. Steps need to be level and well drained to avoid pooling of water. A contrast strip at the nosing of each tread helps to highlight the location of the edge of the step. This should extend for the full width of the step, and be 50–70mm deep, measured from the front of the step. Avoid using two parallel contrast strips as this can cause confusion.

For steps to a communal entrance, provide corduroy pattern tactile warning surface indicators (TWSi's) to the top and bottom of the flight of steps, and adequately sized landings, to make the steps safe and easy to use for everyone.

Landings at entrances need to be level or gently sloping for people to feel safe while resting or standing. This means that the landing should be flat, or at a gradient not greater than 1:60, and a cross fall not greater than 1:50.

Technical Sketch:

Dimensions for external steps and handrails



- A Handrail overruns 300mm beyond the first and last step.
- B Upper handrail at 1100mm above landing and 900–1000mm above pitch line.
- C Lower handrail at 600 750mm above landings and pitch line.
- D Less than 1500mm rise in one flight between landings.
- A corduroy tactile warning surface indicates the top and bottom of the flight of steps leading to a communal entrance.
- © Contrast nosings extending the full with of the step at 50-70mm deep.
- **G** Handrail ends turned towards the wall or downwards.

UD Home on and UD Home Guidance Avoid single steps. Avoid open risers. Construct external steps with an easy rise and easy going: 150-170mm rise (height) and 250-350mm going (depth). Ensure that external steps are the same width as ramps and footpaths, appropriate to the type of building they serve. Provide a landing at every 1500mm maximum rise, with equal numbers of risers between landings. Fit contrast nosings extending the full width of the step and 50-70mm deep. Provide landings a length at least the same as the width of the flights of steps, unobstructed by door swings or gates. Provide a profile of the steps which is straight, with no projecting nosings. Protect any area below steps which has a headroom of less than 2100mm. Provide a corduroy tactile warning surface indicator (TWSi) at the top and bottom of the flight of steps leading to a communal entrance. Ensure that steps and landings are lit adequately to 150 lux, so that they can be used safely in the dark. Provide level or gently sloping landings (1:60 maximum slope) at the entrance to every home, and at intervals along long ramps Cross-falls shall be a maximum of 1:50 to ensure good drainage. At entrances to individual dwellings provide a level or gently sloping clear landing at the entrance door of 1200 × 1200mm free of door swing. At entrances to individual dwellings provide a level or gently sloping clear landing at the entrance door of 1500 × 1500mm free of door swing. At communal entrances provide a level or gently sloping external landing (1 in 60 maximum slope) of minimum 1800mm square clear of door swings at the entrance point to every apartment building. At communal entrances provide a level or gently sloping external landing (1) in 60 maximum slope) of between 1800 and 2400mm square clear of door

swings at the entrance point to every apartment building.



Handrails provided on both sides of ramp, and following the line of the ground surface. Supports do not get in the way of hands and the railing turns downwards at the end to avoid clothes getting snagged.

Photo Design Tip

- Steel handrails are cold and uncomfortable to touch for many people. Specify timber or plastic-coated handrails to avoid this problem.
- Provide a second lower handrail for people of lower stature and children.

Handrails

Design Considerations and Awareness

Handrails should be provided on both sides of a ramp or steps and should be continuous around the landings as well.

The design of the handrail should take into consideration all users. Ensure that brackets do not get in the way of someone who needs to grip around the entire handrail and/or hold on all the time. Locate brackets underneath the handrail, far enough away from the adjacent wall or surface to prevent knuckles being grazed. Extending the handrail sufficiently beyond the line of the first and last step or edge of a ramp makes it easier for people to approach or leave the steps or ramp. If the rail is turned towards the wall or downwards, then someone who has visual difficulties will know that the end of the stair has been reached. An additional handrail at a lower height will be beneficial to people of shorter stature, including children.

People who need to grasp a handrail firmly will find a cold rail uncomfortable or even painful. Therefore the choice of material for the handrail should be comfortable for all, for example by using timber or plastic coated steel.

UD Home and **UD Home** Guidance

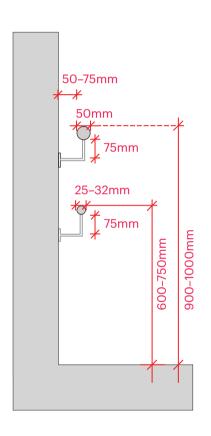
- Design the handrail so that it is:
 - Extended 300mm beyond the end of the first and last step and the ends of a ramp
 - Constructed with profiles which are circular in cross-section (40-50mm diameter) or elliptical (50mm wide and 38mm deep) which are easy to grasp.
 - Supported centrally and at intervals on the underside, so that fingers aren't knocked.
 - Constructed with a clear gap of minimum 75mm below the handrail. Set out with a clearance from a wall of minimum 50mm with a smooth wall, and 75mm for a rough surface
 - Installed with a positive end, curving downwards or against the wall
 - · Visually contrasting with the background
 - Warm to touch timber or plastic-coated steel are acceptable
 - Continuous across landings and ramps or steps, and easily distinguishable from the background.
- Set the handrail at 900–1000mm above the pitch line of the stair or ramp, and 1100mm above landings.
- Provide an additional handrail at 600–750mm height above the pitch line of the stair or ramp for people of smaller stature or children, of diameter 25–32mm to suit smaller hands.

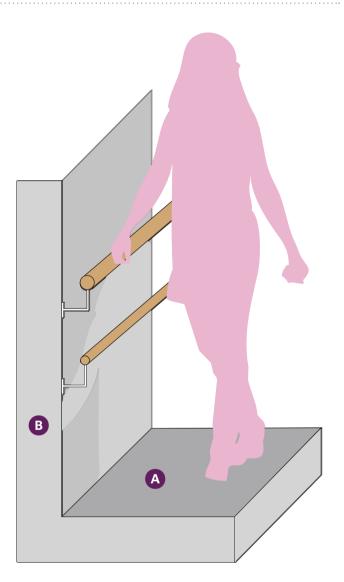


Technical Sketch:

Dimensions for handrails

- A Ramp or steps
- **B** Supporting structure







Access path is well-lit and lighting does not obstruct the clear width.

Photo Design Tip

The lighting is very directional and may result in the pooling of light. It is preferable to have an even lighting level.

Lighting

Design Considerations and Awareness

Lighting around the entrance to the home or the apartment building is important for safety, security, and ease of use for everyone.

The route from the gate on the street to the entrance of the home should be easily legible at all times, with an even, adequate spread of light across the route. Avoid pools of light or dark, reflections or glare.

Lighting to steps and ramps should be located so that it clearly highlights the tread and riser surfaces or the ramp slopes without casting shadows. If lights are fitted at a low level the light source should not be visible, as this can cause glare. Also avoid the use of floodlights because of the glare.

Lighting should be provided around an entrance door to highlight the location and orientate people at night or when the weather is overcast. External canopies should not block out any of the external lighting. Ensure that the door number and keyhole are adequately illuminated.

A Passive Infrared (PIR) sensor-activated light can prevent the need to locate a switch, and if it is linked with a sounder which is audible inside the home, this will help to advise the occupants with hearing difficulties that someone is approaching. Sensor lights need to be located and adjusted so that they are not switched on inadvertently as this can cause anxiety among a household who may be continually alerted by a light or sound activated by passers-by and animals.

UD Home on and UD Home Guidance

- Provide an external light or lights to all entrances.
- Provide at least the recommended levels of illumination (lux) externally as follows (measured at ground level):

Entrances	100
Pedestrian access routes and walkways	50
Walkways, if colours are to be visible	30
Steps, ramps and landings	100
Designated parking spaces	30
Passenger setting-down points	50
Signage	30

- If it is important that colours are to be visible, then 50 lux min. illumination is required.
- Ensure glare ratings are generally less than or equal to 50.
- Ensure that access routes are well lit with an even spread of light.
- Ensure that the door number and keyhole are adequately illuminated.
- Provide P.I.R. sensor-activated lighting which is adjusted to suit its location.
- Install lighting along one side of the access route only to avoid confusion.
- Ensure that kerbs are illuminated where they are intended to be used as guides along a route.





Low maintenance planting defines boundaries and provides privacy and security.

Planting

Design Considerations and Awareness

Planting provides an opportunity for personalisation of a home, visual interest, some control of privacy and views, and definition of boundaries. In apartment developments planting may also soften hard, reverberating surfaces.

Avoid installing plants which produce high levels of pollen dispersal at approaches to apartment buildings or houses, as these can cause distress to people who suffer from allergies. Avoid plants with poisonous fruit or flowers that might be within reach of children. Planting design should avoid creating a hiding place for a potential intruder, for example within or behind a large shrub. Generally planting should achieve a clear zone between 1 and 2 metres in height, in order to ensure all areas are visible and therefore improve safety and security.

Distinctive trees and shrubs, scented flowers, colourful plants with berries, fruit or flowers, or unusual leaves, will all help to distinguish one building or home from another. This is very helpful to people who have vision or cognitive difficulties.

More information is provided about planting and gardens in Section 3.

UD Home on and UD Home Guidance

- Ensure that planting provided does not affect the clear width required for any pathway, steps or ramp.
- Avoid designing a planting scheme which might provide hiding places for a potential intruder.
- Avoid installing plants which might cause allergies or other health problems.
- Distinguish between similarly designed homes and apartment buildings by means of different planting schemes.



Robust and conveniently located enclosure for communal bin store with firm, level, non-slip ground surface. Pedestrian access for home owners is from the side pavement.

Photo Design Tip

- Please note that the dropped kerb in the image is for the movement of bins and is not suitable for wheelchair-users. Bin stores should be accessible for everyone to use. A level area is required in front of the gates for ease of access by a wheel-chair user.
- A bin store will need an accessible and easy to use external tap for convenient cleaning of the area and bins.

Refuse Disposal and Recycling

Design Considerations and Awareness

The design and layout of refuse disposal for all homes should be easy to access and use, and avoid causing a nuisance in terms of unsightly appearance, noise or smells. Refuse arrangements will depend upon storage capacity, collection methods and frequency of collections.

For individual houses, a storage location for bins should be provided in an accessible location that is convenient to the house and collection point.

For apartment blocks and housing complexes, the collection point for communal waste should be conveniently located. A refuse storage location close, but not adjacent, to shared entrances is usually best for bagged waste carried down and deposited by residents.

Alternatives to wheelie bin collection exist in apartment buildings, such as the incorporation of vertical refuse chutes or the use of an underground refuse system

with a small accessible silo at ground level. These should be carefully designed so as to avoid noise and smells and to accommodate collection procedures.

Provide enough space inside the home to store non-recyclable and recyclable waste in an accessible location at an accessible height. Kitchen cupboards can be fitted with separated bins for different sorts of recyclable waste, and these are often colour-coded for ease of distinction.

UD Home and **UD Home** Guidance

- Ensure compliance with the local authority's storage and collection systems.
- Provide storage space within the home for non-recyclable waste and recyclable waste, bearing in mind the level of pre-sorting of recyclable waste required by the local authority.
- Provide storage for food waste internally, and composting space for food and organic waste externally in the gardens of houses and ground floor units.
- Ensure that bins and bin storage areas are easy to use and accessible, and do not require anyone to lift a bin bag above a height of 1100mm.
- Locate the communal bin store near the entrance of the block to ensure that people use it.
- Provide all refuse storage facilities with a hard, level non-slip floor and a tap to facilitate cleaning.
- If refuse chutes are installed, ensure that:
 - there is adequate space around refuse chutes for a 1500mm clear turning circle
 - hoppers open wide enough for bags to be inserted easily
 - hoppers are located at a height of 700-1100mm from floor level
 - chutes are coated with a sound-deadening material to avoid noise nuisance
 - there is a nearby point with a water supply for washing down and cleaning chutes regularly.

UD Home **⊕ ⊕** Guidance:

Consider providing:

- A central accessible composting point for organic waste (grass cuttings, raw fruit and vegetable peel) in large developments.
- An Underground Refuse System which is accessible and maintains a clean and tidy environment.
- A bespoke pick-up system for refuse disposal offered by a caretaker or estate officer for those who have difficulty accessing their refuse storage space.

Entering and Moving Around 02



UD Home Guidance	Houses
UD Home Plus Guidance	Apartments

Attention to detail, taking into consideration the different sizes and capabilities of people over their lifecycle, can make Universal Design Homes easy and safe to enter and move around for everyone. Good design decisions can allow the home to adapt to changing requirements over time.

2.1 Entering the Home

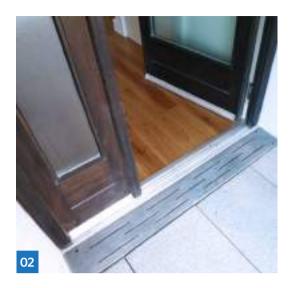


Photo Design Features

- An inset door provides protection for anyone waiting outside
- Two adjacent inset doors ensure that visibility is good from the street
- The gate contrasts with the other boundary treatment to make it easy to identify where the entrance is
- A glazed panel beside the door gives daylight to the hallway and views in and out
- The letter box is at an accessible height
- The planting on top of the bin store provides interest along the street, and an opportunity for someone who can't bend easily to tend plants
- Ocod contrast provided between the brickwork and the door

Photo Design Tip

- The covered area by the front door could be increased with a small projecting canopy
- ① Differently coloured front doors can make it easier for everyone to recognise individual homes.



A level threshold with no more than a 10mm upstand and level drainage strip is installed here. There is good colour contrast between external, threshold and internal floor surfaces. The front door is made up of a 'cat and kitten' door that can allow wider opening widths.

Photo Design Tip



A recessed mat inside the entrance should be fitted.



Thresholds for houses

Design Considerations and Awareness

All entrances should be logically located, clearly visible, readily identifiable, easy to access, with some form of weather protection.

For individual houses there should be at least one level entrance from the street into the dwelling so that the household members, their family and visitors, can enter and leave the home easily. This should be the main entrance door that is used most regularly by everyone. Ideally all doors will have a level threshold.

For apartment buildings and communal entrances there should be a level entrance from the street and rear garden, and at all other entry points into the apartment building.

Shelter at the door is required to provide protection from inclement weather while a person is unlocking the door, or waiting for the door to be opened for them. This can be achieved through setting the door back from the face of the building. However, for security the set-back should be no greater than 700mm to avoid screening a potential intruder. For security, provide a wider opening which ensures that the front door and perhaps an adjacent window can be seen and monitored easily from the street. As 700mm does not provide sufficient shelter from weather, consider adding a canopy to the inset doorway, so that it projects far enough to provide the minimum required total depth of shelter of 900mm.

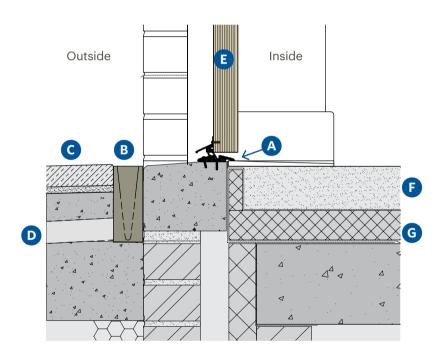
From the street, it is essential that a visitor can easily see the door number or name. Where there are many houses or apartment buildings of similar design it is important to make it easy for everyone to locate a particular entrance, for example by using distinctive design features such as door colours, boundary treatments, planting, porch canopy details etc. An enclosed porch can be a useful transition space, draught excluder and storage for outdoor clothes, shoes and buggies.

The design and detail of the threshold should prevent extreme rain or seasonal floodwater coming into the home while still allowing easy wheeled access. It will often be important to combine the threshold with an integral level drainage strip or a separate drainage and gulley system to avoid flooding.



Technical Drawings:

Section through an entrance door threshold.



- A Proprietary threshold with maximum height of 10mm
- B Step drain
- C Paving at maximum 1:60 gradient
- 40mm diameter waste pipe outlet
- **E** Entrance door
- Concrete floor
- **G** Insulation

UD Home and UD Home Guidance

- Position the entrance to a home or apartment building in a logical location that is readily identified from the road or pavement.
- Avoid setting the entrance door back deeper than 700mm from the face of the building.
- Provide lighting to illuminate the door, the home number and location of the entry system separate to a P.I.R. light or general external light.
- Ensure that the external light is controlled from inside the home or apartment building, or sensor-activated.
- Provide a compressible level threshold which reduces to a maximum upstand of 10mm, or a level threshold of 5–10mm with chamfered, ramped or pencil-rounded edges, to all entrance doors.
- Consider recessing the porch area into the building to provide improved weather protection at the door.
- Check the local flood and water table levels beforehand and design the layout, drainage and gullies to address the potential for flooding.
- Provide a slope of maximum 1 in 60 to direct water away from the door, and incorporate a flush drainage channel at the threshold wherever necessary.

For individual houses:

- Provide level thresholds at all entrance doors.
- Provide a canopy of minimum dimensions 900mm deep with a 300mm overhang either side of the door at a height of maximum 2300mm.
- Provide a canopy of minimum dimensions 1200mm deep by 1500mm width at a height of maximum 2300mm.
- Provide a charging place(s) for an electric wheelchair in a well-ventilated porch area or entrance hall.
- Provide enclosed storage space for outdoor clothes and equipment in the porch area or entrance hall.
- Provide an internal or additional porch area of minimum dimension 1800 x 1800mm.

For apartment buildings:

- Provide level thresholds at all entrance doors.
- Entrances at the side of the building are to be avoided unless the route is very clearly visible from the front.
- Provide a canopy of minimum 1500mm deep for the full width of the entrance, and a maximum height of 2800mm. Higher canopies will need to be deeper to provide the same level of protection.
- Install an opening device such as a push-pad door operator.

UD Home **⊕ ⊕** Guidance

A larger external landing of at least 2400 × 2400mm at the entrance to the home can be an advantage for a number of people waiting at the door, or for deliveries.





A glazed panel beside the door gives daylight to the hallway and views in and out. The door furniture is at an accessible height, the number is clear, and a light is provided. There is good contrast between the brickwork and the door.

Photo Design Tip

- The canopy provides some protection to users, but could be larger.
- Oclour contrast between the steel plate and the post box would make it easier for everyone to use the post box.



Entrance Doors for Houses

Design Considerations and Awareness

The front door marks the threshold of the home, and therefore needs to be easily identified from the street, and look welcoming. It needs to be wide enough for a range of activities, like pushing a double buggy or walking frame, carrying suitcases or shopping, without damaging the door or frame. A clear space on both sides of the door will make opening the door easier for someone in a wheelchair or using walking aids.

The lock, letterbox, doorbell and any intercom system should be installed at an accessible height so everyone can use them. Provision should be made for secure entry systems that provide audio and/or visual communication, or remote opening, to help everyone manage the home more easily.

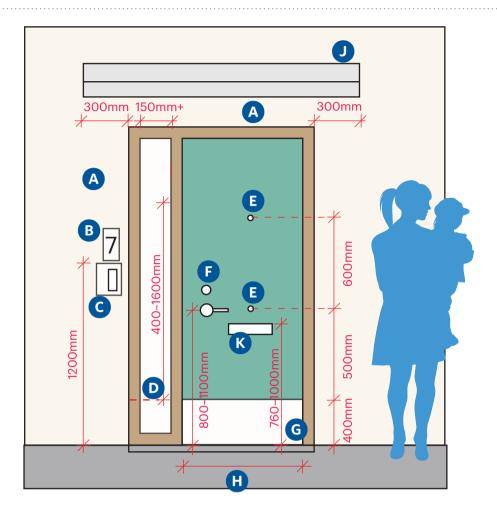
UD Home and UD + Guidance

- Ensure that the entrance door contrasts visually with the adjacent walls or screens.
- Provide an entrance door with a clear width of between 800mm and 850mm.
- Provide an entrance door with a clear width of between 850mm and 900mm.
- Provide a vision panel to create a clear view through the door, or adjacent to the door, for people at all eye levels.
- The vision panel should provide a zone of visibility between 400mm and 1600mm above floor level that is at least 150mm wide and positioned no more than 200mm from the leading edge of the door.
- Consider frosted or one-way glass instead as clear glass may make residents feel vulnerable.
- Provide a 300mm clear space on the leading edge side of the door externally and internally.
- Provide robust and well-designed ironmongery that contrasts in tone or colour with the background surface:
 - Provide a large door number that contrasts in colour or tone with the background
 - Provide pull and lever handles rather than knobs
 - Position lever handles between 800mm and 1100mm above floor level, preferably at 900mm.
 - Ensure the lever handle returns back towards the door to avoid catching clothes.
 - Install a spy hole or door viewer at two heights to suit people of all heights, seated or standing, at 900mm and 1500mm with a 132–200° viewing angle
 - Provide a multi-locking system for security that is easy to operate.
 - Position letter boxes between 750mm and 1100mm above floor level
 - Ensure letter plates have a gentle closing action, are draught-proof, and designed to prevent arm access through the door
 - Consider the need for 200–400mm kickplates to protect the bottom of the door.



Technical Sketch:

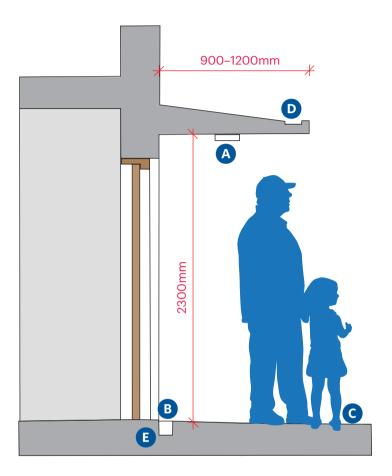
Elevation dimensions for front entrance doors for houses



- A Lighting position option: internal or sensor activated
- **B** Well-lit and clear home number
- Well-lit home entry system no higher than 1200mm above floor level
- D Vision panel from 400–1600mm as a minimum
- **E** Door viewers at 900mm and 1500mm above floor level
- Door lock positioned above the door handle
- G Kick plate 400mm high to protect base of door
- H Clear opening width of between 800 and 900mm
- Oanopy overhangs door and vision panels by 300mm on each side
- Letterboxes at a height between 760 and 1100mm above floor level

Technical Sketch:

Section dimensions for front entrance doors



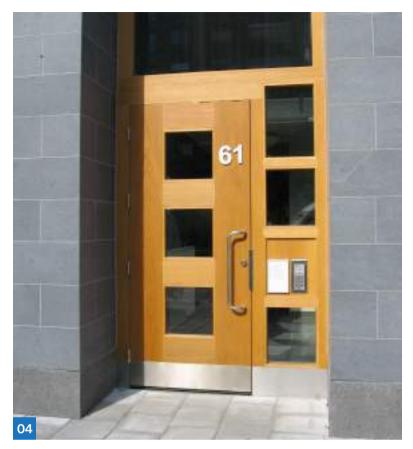
- A Lighting position option: internal or sensor activated by sensor or internal switch
- B Proprietary threshold with maximum height of 10mm
- C Paving at maximum 1:60 gradient
- Canopy to provide weather protection
- Flush drainage strip

- Install a letter cage fixed to the back of the door in order to make deliveries more accessible to all.
- Offset the front door from the adjacent wall to ensure it doesn't get marked or damaged by the letter cage.
- Position the door bell and home entry system/intercom no higher than 1200mm above external ground level.
- Provide visual and audio intercom.
- Provide an electrical spur to facilitate future fitting of remote control door opening devices. Magnetic locking is most suitable for remote opening systems.
- Provide a door bell that is lit internally or spot lit from outside, so that it is easily visible to callers.
- Provide a bench or shelf externally for resting packages.
- Provide a separate pull-handle on the door in order to pull it shut when leaving the home.
- Provide a keyhole which is backlit for ease of access.
- Provide remote entrance door opening facility to be controlled from the living room, kitchen and main bedroom.

UD Home ♠ Guidance

The entrance door can be increased in size to a clear width of at least 900mm to provide additional space for ease of access. However, bear in mind that larger doors can be significantly heavier, so assisted opening may be required.

Picking up deliveries of groceries or parcels can be difficult, so provide a cupboard within the wall that is accessible and locked separately from both sides. Ideally, this would be located near the front door.



The inset door provides some protection from inclement weather and the block number is clearly visible, contrasting well with the background. Note use of vision panels, accessible location of control panel, a long and easy to use pull handle, and kick plates at the bottom of the door to protect it from damage.



Entrance Doors to Apartment Buildings

Design Considerations and Awareness

The front door to an apartment building marks a communal entrance, one which will be used by many people throughout each day. It needs to be wide enough for a range of activities, like pushing a double buggy, carrying suitcases or shopping, without damaging the door or frame. Providing clear space at the opening (or leading) edge of the door will make opening the door easier for everyone. Continuing the additional space for some distance into the entrance lobby area will be of greater benefit when a number of people are trying to go in and out at the same time, or managing large items like furniture.

It is helpful if there is some glazing at the entrance, either in the door itself or in panels beside the door. This enables people to see whether another person is approaching the door on the other side and also to gauge the size and type of space they are about to enter.

UD Home and UD Home Guidance

- Ensure that the entrance door contrasts visually with the adjacent walls or screens. For glazed doors ensure the edges and frame are clearly visible and contrasting.
- Provide a clear space 300mm on both the inside and outside of an entrance door, on the leading edge side.
- Provide 300mm clear space on the leading edge side of the door inside the entrance area for a depth in plan of at least 1500mm.
- Install entrance doors that are at least 2400mm high to suit people of different heights.
- Provide an entrance door with a minimum clear width of 1000mm.
- With double doors, ensure that the primary door leaf of each pair of doors provides a minimum clear width of 1000mm.
- Provide energy efficient automatic swing operation for large, heavy doors.
- Ensure that all hinged entrance doors are capable of opening more than 90 degrees.
- Provide vision panels in all entrance doors and entrance lobby doors.
- Ensure that clear glazing in the vision panels extends between 400mm and 1600mm above floor level, is at least 150mm wide, and is positioned no more than 200mm from the leading edge of the door.
- Ensure that fully or mostly glazed doors are easily distinguishable from their background by making the edges and frame clearly visible and contrasting.
- Provide markings/manifestations in glazed panels between 850mm and 1000mm, and between 1400mm and 1600mm above floor level.
- Ensure that safety glass is used in doors and panels, to make it less likely to break, or less likely to pose a threat when broken.
- Install kickplates to protect the door from damage. Ensure kickplates extend for the full width of the door and to a height of 400mm above floor level.
- Provide power cable spur and actuator for future adaptation to power assisted door.

Door handles

- Provide pull and lever handles rather than knobs.
- Position lever handles between 800mm and 1100mm above floor level, preferably at 900mm.

- Ensure the lever handle returns back towards the door to avoid catching clothes.
- Provide pull handles that are at least 400mm long and positioned vertically with the lower end 1000mm above floor level.
- Consider that while full-height tubular pull handles provide the maximum possible range of heights for opening, they also reduce the clear width of the door.
- Provide handles that are warm to the touch, using a material like timber or plastic-coated steel.
- Provide finger plates of at least 350mm in height, located with the bottom edge 1000mm above floor level. Select finger plates with a matt finish, to avoid glare.
- Position door locks above the handle or at least 72mm below so that the keyhole can be distinguished and accessed easily.
- Where there is no closing device, provide the door with a horizontal rail for pulling the door closed, located at a height of 1000mm.
- Provide keys that are capable of being fitted with a bow/butterfly adaptor to make them larger and easier to grip.
- Provide a greater space on the pull-side of swing-doors to enable a person to pull the door open and to manoeuvre clear of the door swing.

UD Home ♠ Guidance

Providing an entrance door of at least 1000mm clear width and a clear space of 600mm on the leading edge side of the door, front and back, will make access much easier for everyone.

A greater diversity of users will be accommodated if power assisted doors that are fully automatic or have a manually-activated control device are provided. However, these may only be suitable for apartment buildings which have a concierge system or access control further inside the building.

Door closing devices will be required for fire doors, many entrance and lobby doors, and security doors. These can render the door extremely heavy or difficult to open. Therefore the design should consider options to reduce or overcome door forces, such as door-holding and swing-free devices, which make it much easier for everyone to move around freely and safely.



Intercom is located on the same side as the door handle with lock above.

Photo Design Tip



A visual intercom with a two-way camera should be fitted.



Access Control for Apartment Buildings

Design Considerations and Awareness

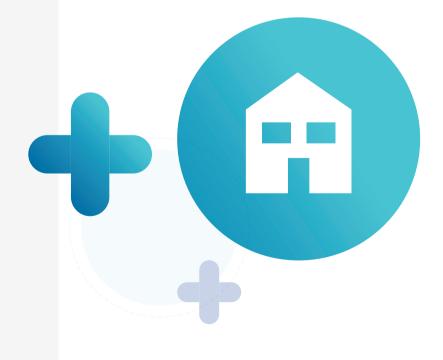
It should be clear to anyone approaching an apartment building for the first time how they can easily gain entry. The lighting around the entrance should ensure that visitors can see where the entry system is located, and the system itself should be accessible, clear and simple to use.

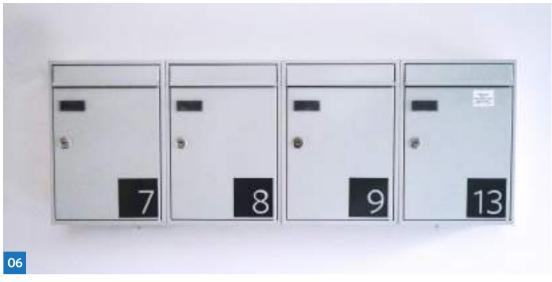
An intercom facility is preferred for visitors, and a fob entry or card swipe system for occupants, as these are easiest for most people to manage. An intercom system with video link will be the most appropriate as it provides safety and security for residents with hearing difficulties, allowing them to identify their caller before they let them into the building.

The intercom should be clearly located on the handle side of the door, in a contrasting tone or colour to the background, and at a height appropriate for all users whether seated or standing. The intercom buttons should be large enough for various levels of dexterity for ease of use. The intercom buttons need to be lit, either from within or externally, and there should be a light and a sound signal made when a button is pressed, to reassure people that the intercom is working.

UD Home and **UD Home** Guidance

- Provide a visual and audio intercom from the outset.
- Position the intercom on the handle side of the door, and close to the entrance door.
- Ensure that the intercom is in a contrasting tone or colour to the background.
- Ensure intercom controls are positioned no higher than 1200mm above external ground level, with intercom buttons between 1000mm and 1200mm.
- Install only door bells and call buttons that are large and give a visual or aural indication of their operation.
- Ensure intercom buttons contrast visibly with the mounting plate, and each button has an embossed symbol, number or letter, all arranged in a logical order.
- Ensure the microphone is capable of picking up speech from people of all heights.
- Position the video camera so that the face of the caller is caught clearly on camera for the benefit of the occupant.
- Provide a fob entry or card swipe system for residents.





Mailbox numbers are clearly displayed

Photo Design Tip



• Colour contrast with the wall should be stronger.



Hallways and Lobbies for Apartment Buildings

Design Considerations and Awareness

Inside the entrance door to the apartment building there will be a hallway leading to stairs and/or lifts, or a lobby with an additional door beyond for security or fire escape separation.

The entrance area should be large enough to allow everyone likely to be going through the area at peak times to do so easily and comfortably, and a lobby should only be provided where absolutely essential. All the doors and routes need to be accessible, logical, understandable and useable by everyone.

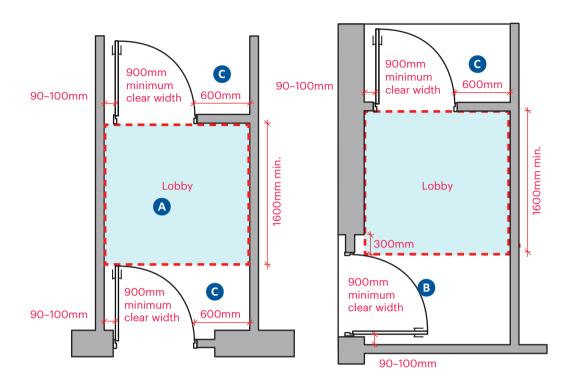
A matwell is essential, to prevent mud and dirt being spread throughout the building. The mat should be flush with the adjacent floor surface. Mat materials need to remove dirt, rainwater and snow from the soles of shoes, and the wheels of buggies, trollies and wheelchairs. Compressible and ridged surfaces and deep pile are not easy to cross with a walking aid or wheeled vehicle, and so should be avoided.

The entrance area may need to contain secure letter boxes for all apartments. These need to be accessible and easily located for everyone.

- Only provide an entrance lobby where essential.
- If a lobby is required, provide a minimum 1600mm clear zone between door swings.
- Provide guarding for doors when they are in the open position to prevent people walking into the edge of the open door. Consider providing a recess in the wall for doors to open into.
- Install recessed mats flush with the adjacent floor surface.
- Avoid ridged or compressible mats and provide mats that trap dirt efficiently.
- Ensure glazed screens or doors in entrance lobbies are constructed of safety glass, and provide clear views into and out of the building.
- Provide markings/manifestations in glazed panels between 850mm and 1000mm and between 1400mm and 1600mm above floor level.
- Where possible provide letterboxes in the individual home front door.
- Where banks of letterboxes are to be provided ensure that:
 - Half of the letterboxes are at a maximum operating height of 1100mm
 - Letterboxes are deep enough for long envelopes and designed to prevent theft
 - There is a good level of lighting to the letterbox area of 100 lux minimum
 - Letterboxes are easy to identify from surrounding surfaces, with large contrast numbers
 - Letterboxes are easy to use.
- Provide entrance area and lobby lighting that is designed to ease the transition between external and internal spaces and adequate for safe circulation.
- Ensure that lighting does not cast shadows and steps in common stairwells including the beginning and end of the stair should be lit to 150 lux minimum.
- Time-delay switches for lighting, if provided, will need to accommodate the needs of all users in terms of the length of time delay, method of operation, location and height of installation.



Dimensions For Lobbies In Communal Circulation Areas for apartments



- A lobby should have at least a 1600mm clear zone between door swings.
- B If the door does not open more than 90° then the clear width should be achieved with a wider door.
- C Maintain a leading edge of 600mm to lobby doors to allow space for people to pass at the door.



Views out to local landmarks can help orientation.



Corridors in Apartment Buildings

Design Considerations and Awareness

A well-designed horizontal circulation layout with a logical, clear circulation route will benefit everybody. The width of the corridor should be appropriate to the size of the apartment block, and the numbers of people who are likely to be moving around at any time, allowing people with a buggy or wheelchair, walking aids, travelling bags or furniture, to move around and pass easily.

Where possible, corridors should be naturally lit and ventilated for energy efficiency and comfort. Many people benefit from being able to orientate themselves within a building by looking out of the window, checking and confirming their location and the time of day or night.

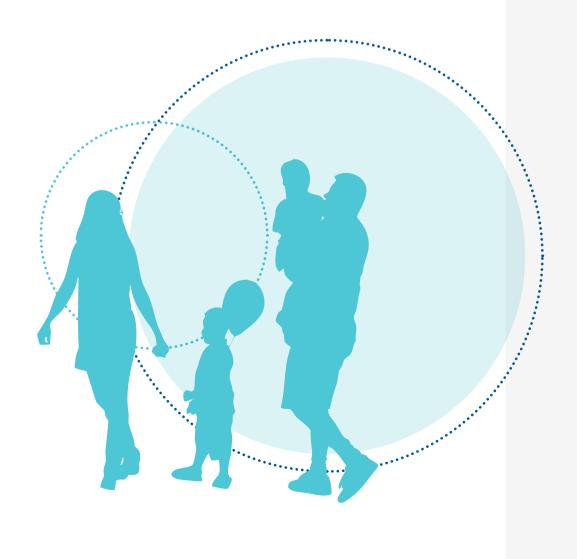
- Provide communal corridors of width between 1500mm and 1800mm.

 Passing places should be provided where the width is less than 1800mm
- Provide communal corridors of width between 1800mm and 2400mm.
- Avoid changes of level within a storey.
- Ensure corridors are well-lit and ventilated for comfort by providing natural daylight and openable windows.

- Provide acoustic damping of corridors to avoid excessive noise.
- Reduce the number of intermediate doors where possible.
- Minimise the number of fire doors required by Fire Regulations at the early design stages as these doors can be difficult to open for all users.
- Provide all intermediate doors with glazing to aid orientation.
- Distinguish corridors from one other at different levels or areas by colour, lighting or other means.
- Display the floor level in large clear numerals opposite lift doors.

UD Home **G** Guidance

Provide communal corridors of at least 2400mm in width to enable a wheelchairuser or carer with a stroller to turn round easily and pass other people.





Stairs with minimal projection and contrast strips across the full width.



Communal Stairs in Apartment Buildings

Design Considerations and Awareness

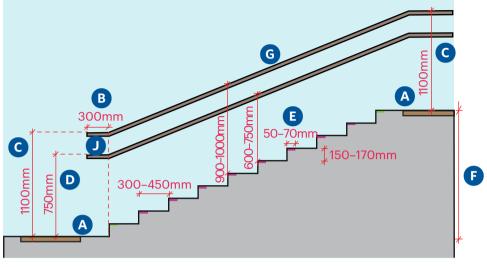
The design of the communal stair needs to facilitate comfortable and unimpeded movement between floors, regardless of whether lifts are installed. This means that the stair should be designed with a shallow pitch, with an easy rise (vertical part of the step) and an easy going (horizontal part of step), to avoid accidents and make the stair easy to use for people. Unequal flights of stairs can be confusing to people with visual and cognitive difficulties, so all flights should be designed to be equal.

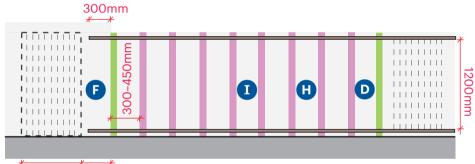
It is important that the step nosing is straight, rather than profiled, in order not to confuse people with visual difficulties who climb stairs by sliding their feet up the surface of each step.

Communal stairs for apartment buildings should not be located in the direct line of travel in order to avoid someone inadvertently stepping onto the stair. Ideally the stair should be positioned at an angle to the direction of travel to require a conscious change of direction by users.

Well designed handrails can make stairs much easier to use for everyone. For example, people with hearing difficulties often have issues with balance, and so a handrail on both sides of the stair can be beneficial. An additional lower handrail would benefit children and people of smaller stature using the stairs.

Dimensions for communal stairs In apartment buildings





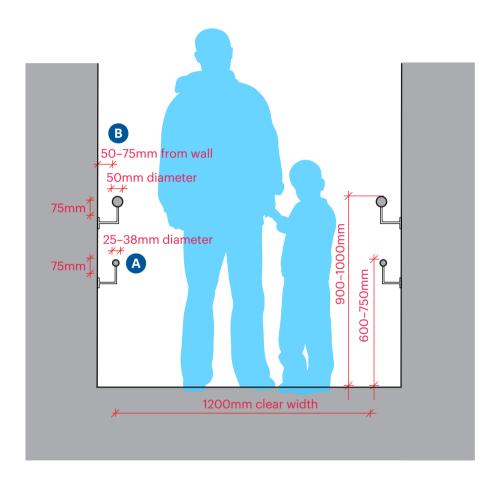
- *800mm *400mm
- A Optional corduroy tactile surface indicator at the top and bottom of stairs with maximum 300mm high ridges.
- B Handrail overruns 300mm beyond the first and last step.
- © Upper handrail at 1100mm above landing and 900–1000mm above pitch line.
- D Lower handrail at 600−750mm above landings and pitch line.
- © Contrast nosings extending the full width of the step at 50–70mm deep.
- E Less than 1500mm rise in one flight between landings.
- **G** Non-continuous support provided to handrail below.
- **H** 1200mm clear space allows for fitting a stair-lift.
- Straight flights of stairs with no winders.
- Handrail ends turned towards the wall or downwards.

- Avoid single steps anywhere in the building as this can cause a trip hazard.
- Design the stairs with a clear width of not less than 1200mm measured between handrails.
- © Construct the stair with an easy rise of 150–170mm, and an easy going of 300–450mm.
- Ensure that every flight of stairs within a stairwell has the same number of steps in order to avoid confusion
- Ensure that the total rise of a flight of stairs is no more than 1800mm between landings, with no more than 12 steps.
- Ensure that landing lengths are the same as the width of the stair and a minimum of 1200mm, clear of door swings.
- Design each step with a non-slip surface and a nosing or single contrasting strip to highlight the step edge, extending for the full width of the step.
- © Consider installing tactile TWSi's to top and bottom of stairs with maximum 300mm high ridges.
- Ensure that the step nose profile is straight, with no projections, or if projections are required, they should have maximum 25mm overhang and be smoothly profiled.
- Provide a continuous handrail on one side of the stair set at 900–1000mm above the pitch line of the stair, and 1100mm above landings.
- Provide a continuous handrail on both sides of the stair set at 900–1000mm above the pitch line of the stair, and 1100mm above landings.
- Provide a second handrail 600–750mm above the pitch of the stair and landing to benefit people of different heights. The diameter of this handrail should be 25-32mm to be suitable for smaller hands.
- Design handrails which:
 - extend 300mm beyond the end of the last step
 - are continuous around landings and on both sides of the stair
 - have profiles which are circular in cross-section (40–50mm diameter) or elliptical (50mm wide and 38mm deep) which are easy to grasp
 - are supported centrally on the underside
 - are constructed with a clear gap of minimum 75mm below the handrail

- have a clearance from a wall of minimum 50mm with a smooth wall, and 75mm for a rough surface
- have ends turned towards the wall or downwards to avoid catching clothes and to indicate that the end of the stair has been reached.
- · contrast visually with the background
- are warm to touch for example timber or plastic-coated steel.



Dimensions for Handrails in Apartment Buildings



- A Non-continuous support provided to handrail below.
- B Distance from the wall is greater if the surface is rough.

- Design the lighting on stairs and landings to be 150 lux minimum.
- Time-delay switches for lighting, if provided, will need to accommodate the needs of all users in terms of the length of time delay, method of operation, location and height of installation.
- Provide a refuge space within the stair enclosure and on every landing in an apartment block. This is for use of people who cannot use the stairs, when the lift is not operable, such as in an emergency.
- The refuge space shall be:
 - a space 1400 × 900mm that is clear of the escape route, where a single refuge space is considered sufficient
 - enclosed in a not less than 30 minutes fire-resisting structure that has a 30 minute, fire-resisting, self-closing fire door fitted with cold-smoke seals, where the refuge is internal
 - provided with a 30 minutes fire-resisting construction (integrity and insulation) from a fire inside the building, where the refuge is external
 - located either within, or be a space with direct access to, each protected stairway required for means of escape
 - provided with a two-way communication system linked between the refuge and the management control point, in order to suit a range of mobility difficulties and be compliant with the recommendations of BS5839-9: 2003
 - separated from the general accommodation by solid enclosure with no glazing
 - provided with clear, accessible signage indicating that the space is designated for a refuge including identification of the floor level
 - provided with a notice providing guidance on procedures in the event of fire.
- Ensure that stairs are not located in the direct line of travel, but positioned at an angle to the direction of travel.
- For further information on evacuation please refer to Building Regulations.

UD Home **Guidance**

A gentler pitch for the stairs will obviously take up more space, but will be easier for many people to use comfortably. An easy rise of between 150mm and 170mm, and an easy going of between 300mm and 450mm can be beneficial.



Inside lift with handrails, mirrored surface at correct heights and large numbers with Braille on the buttons. The lift buttons shown in the photo should contrast more with the surrounding lift wall to make them easier to see.



Lifts in Apartment Buildings

Design Considerations and Awareness

A universally designed passenger lift is preferred to a platform lift, as they carry more people at a time, are faster and easier to use.

A common concern of many people who are considering a home in an apartment building is what will happen if the lift is out of action due to breakdown or for routine maintenance. It is therefore preferable for more than one lift to be provided so that convenient access can be maintained at all times. If only one lift is provided it is important to ensure that the maintenance contract minimises any time that the lift is out of use for maintenance.

Glass-walled lifts can be of great assistance to some people, such as those with hearing difficulties, while others may be distressed with vertigo. If a glass-walled lift is provided, there should also be the alternative of an enclosed lift nearby.

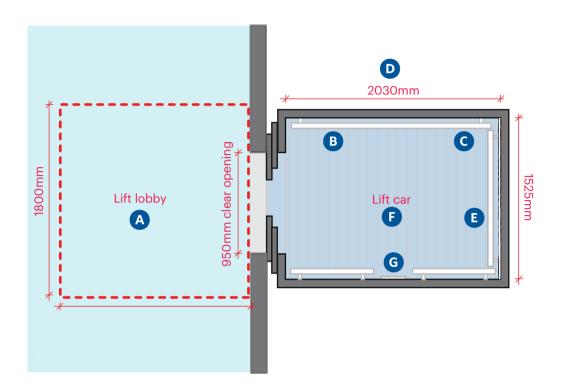
Easy access to the lift is important, with enough space to allow people to pass as they enter and exit. A clear landing space is therefore required in front of the lift, and this will also facilitate someone turning round in a wheelchair or turning a buggy, for instance.

Ideally there should be at least one lift installed which is large enough for people to use with a mobility scooter or a stretcher wheelchair, or to accommodate a number of people with buggies or walking aids.

The interior of a lift must be carefully specified to ensure it is easy to use and understand. For example mirrored surfaces that meet the floor can make it difficult for many people to understand how big the space is.

- Ensure lifts are easy to find, and located adjacent to the stairs.
- Ensure that lifts serve all floor levels in apartment buildings, including underground parking and floors containing communal facilities.
- In two and three storey small blocks of apartments (no more than 3 units per floor) provide in communal areas:
 - for future installation of a platform lift at soft spots, designed and constructed in the ceiling, with all electrical connections in place from the outset
- at least one small passenger lift of minimum dimensions 1100 × 1400mm.
- In four and five storey buildings provide:
 one passenger lift of minimum dimensions 1525 × 2030mm.
- at least two passenger lifts of minimum dimensions 1525 × 2030mm.
- In apartment buildings of six or more storeys provide: two passenger lifts of minimum dimensions 1525 × 2030mm.
- at least three passenger lifts of minimum dimensions 1525 × 2030mm.
- One lift to be of minimum internal dimensions 1800mm × 1800mm.
- If glass-walled lifts are provided, ensure there is an alternative enclosed lift available nearby.
- Provide a clear manoeuvring space in front of the lift at least 1800 × 1800mm and clear of all doors.
- Ensure that lift controls are located 900–1200mm from floor, and 400mm from an internal front wall for ease of access.
- Provide a lift with internal dimensions greater than 1525 × 2030mm. In exceptional circumstances where there are up to 4 storeys and no more than 3 units per floor, the lift can have internal dimensions of 1100 × 1400mm. Please note that this is not an ideal size as wheelchair-users or parents with strollers will have to reverse out of the lift.
- Provide an 8-person lift, with minimum internal dimensions of 1800mm × 1800mm.

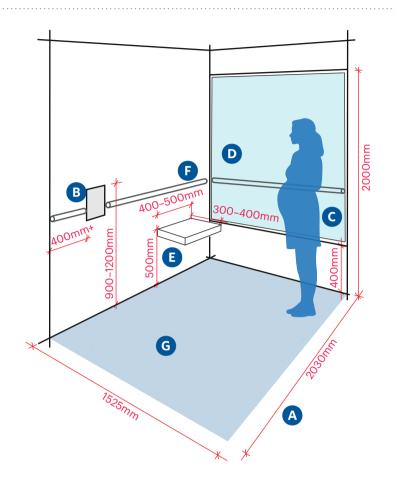
Dimensions for lifts in apartment buildings



- A 1800mm clear manoeuvring space in front of all lift clear of all doors
- B Handrail on all sides of lift car at 900–1100mm above floor level, and in a contrast colour
- C Fold-down seat in lift car
- 1525 × 2030mm minimum internal dimensions (please see guidance on page 80)
- Mirror on back wall of lift car
- Matt finish, firm, slip-resistant flooring in light contrasting tone relative to walls and ceiling
- **G** Lift controls



Dimensions of lifts in apartment buildings



- A Internal dimensions to be 1100 × 1400mm minimum, and ideally 1525 × 2030mm for reasonable accessibility
- B Lift controls at 900–1200mm above floor level and 400mm from the internal front wall
- **©** Walls, floors and ceiling in contrasting colours
- Mirror facing entry
- Drop-down seat 500mm from floor level, 300–400mm deep, 400–500mm wide, to support a load of 100kg
- F Handrail on all sides of lift car at 900–1100mm above floor level, and in a contrast colour
- G Floor to be in a light colour

Inside the lift car:

- Internal lighting should be at least 100 lux, without glare
- Walls, ceiling and floors should contrast with each other to avoid confusion and be of a matt finish to avoid glare
- Mirror surfaces should not be used below 300mm from the car floor.
- A mirror should be positioned on the wall opposite the door opening with bottom edge 400mm from the floor and top edge 200mm above the floor.
- Provide a handrail on at least one side of the lift car for support to users while the lift is moving
- The floor surface should be a matt finish, firm and slip-resistant. It should not be dark in colour or tone, in order to avoid confusion with an empty lift shaft
- Lift controls should have visual and audio means of indication of the requested floors, direction of travel and whether the doors are opening or closing.
- Provide a fold-down seat for someone who is unsteady on their feet while the lift is moving, located 500mm above the floor, depth 300-400mm and width 400-500m, and capable of supporting a load of up to 100kg.

UD Home ♠ Guidance

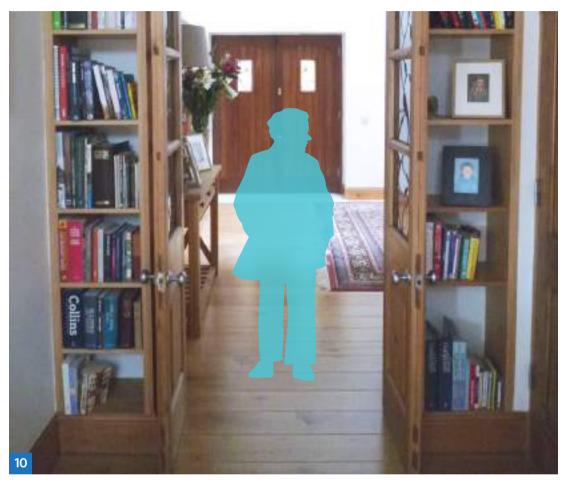
For full accessibility for everyone, consider installing a lift in all residential buildings of two or more storeys.

Increasing the landing outside the lift to 2400 × 2400mm will enable good manoeuvring space for wheelchair users, those with walking aids or a buggy, and for people with hearing difficulties signing to each other as they use the lift.



2.2 Moving About The Home

This section relates to all homes, whether communal homes, apartments or houses. Homes which are designed logically and simply create an environment which is instantly legible with a clear, easy and convenient circulation route for everyone to use.



Double doors set within bookcase between a living area and entrance hall

Photo Design Features

- Tall and wide doors will allow everyone to move easily around the house, increase the sense of space, and make it easier to manage large objects.
- The lack of saddle boards or any threshold makes it easy for everyone to move around between rooms.
- The hallway beyond is spacious.

Photo Design Tip

Wider doors between rooms can facilitate ease of movement, as well as make the home appear more spacious.



A recessed fixed mat is supplied in the entrance lobby. Good colour differentiation between walls, floor and doors. Space is provided for storage of buggies, wheelchairs or scooters, with a power point for charging.



Entrance Hallway in the Home

Design Considerations and Awareness

The entrance hallway should be a welcoming, well-lit and spacious room in which to greet people, manage buggies, coats and shoes, and shopping. Contrasts in light levels between spaces outside and inside the home can be uncomfortable or disorienting for many people. The hallway is therefore usefully considered as a transition zone, where accessible and adaptable lighting may be required.

UD Home and **UD Home** Guidance

- $lue{o}$ Provide entrance hallways with a space of between 1500 × 1500mm and 1800 × 1800mm adjacent to the entrance door
- Provide entrance hallways with a space of at least 1800 × 1800mm adjacent to the entrance door.
- Provide space for storing outdoor wear, coats, shoes and bags.
- Provide additional storage space for a buggy and/or shopping trolley.
- Ensure hallways are well-lit to 200 lux measured at floor level.
- Provide a dimmer switch for changing the lighting level in the hallway.
- Provide natural daylight directly or indirectly to the entrance hall.
- Provide a flow of fresh air from windows or controlled ventilation system.
- Provide a power point for charging

UD Home Guidance

A transfer space between the entrance hall and outside is useful, where someone can change from an outdoor wheelchair to an internal one. If possible, this space should be 1700 × 1100mm with the long dimension open onto another space and therefore fully accessible.





Full height doors will allow everyone to move easily around the house, increase the sense of space, and make it easier to manage large objects.



'Cat and Kitten Doors' provide flexibility for everyone, making it easy to move around the house.



Corridors and Doors in the Home

Design Considerations and Awareness

Wide corridors and doors facilitate comfortable and unimpeded movement between spaces. Corridors, when wide enough, can be used as multi-purpose spaces in the home, such as a library or storage.

Natural daylight and ventilation are beneficial to all, for good orientation, well-being and reduction in energy use. Wider corridors make it easier to move around between rooms and to move furniture around as required.

The width of the door opening needs to be directly related to the width of the corridor it leads from. For example a narrow corridor will require a wider door opening, to make access easy. The direction of approach is also relevant, as less space is needed for someone going straight through a door, than someone needing to turn into the opening.

How the door opens into a room can also affect how the room can be accessed and used. Ideally the door into a room opens with the hinge side against the return wall, so that there is no necessity for negotiating furniture and the door itself when entering.

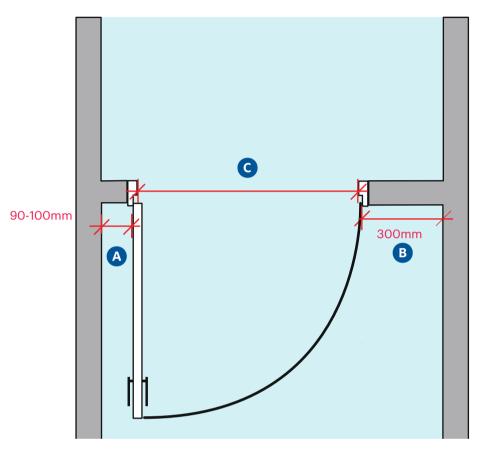
Raised timber thresholds or saddleboards at doorways, that in the past were used to separate floor coverings and reduce draughts, should be avoided as they are not easy for many people to navigate. All doors should be flush at the threshold and floor materials continuous between rooms where possible. Where necessary, different floor finishes between spaces may necessitate different finish levels in the floor construction and should be considered from an early stage in the design. Avoid strong contrasts in floor colours as this can cause confusion (please refer to Section 04).

Residents should be able to access and open the door independently. To assist this, a clear space is required on the handle side, or leading edge, of the door, on the side opening towards them. This enables someone to reach for the door handle and manoeuvre clear of the door swing.

- Provide a width of corridor of 1050–1200mm between walls.
- Provide a width of corridor of 1200–1500mm between walls.
- Provide natural daylight directly or indirectly to the entrance hall.
- Provide a flow of fresh air from openable windows or controlled ventilation system.
- Ensure that lighting levels are at 100 lux at floor level
- Ensure that all doorways to all rooms on the entrance level of the home have a level transition and threshold.
- Position doors that open into rooms, such as living rooms, bedrooms and kitchens, so that the hinge-side of the door is adjacent to a return wall.
- Provide a 300mm clear area beside the leading edge of all doors at entrance level



Dimensions for Leading Edges of Entrance Doors



- A Space on the hinge side of the door allows the door to open more than 90° so that the door handle doesn't obstruct the opening
- B Space on the leading edge of the door gives ease of access to the door
- © Clear width opening depends on the angle of approach



Provide effective clear door widths as follows, depending on the direction of approach:

Effective clear opening width of door:	Direction of approach & width of corridor:
800mm	Straight-on approach
800mm	Right-angled approach via corridor at least 1100mm wide.
850mm	Right-angled approach via corridor less than 1150mm wide.

- Ensure doors or the architraves round them are colour and tone-contrasted with the adjacent walls for good orientation and way-finding round the home.
- Where door closers are unavoidable, they should be selected to suit the type of door, size, weight and location. Ensure door closers are adjustable.
- Install wider doorways of 850mm–1200mm, such as double doors or leafand-a-half doors (cat and kitten doors) to provide additional flexibility and better circulation.
- Provide power spurs at each door for future remote control or assisted opening to be added.

UD Home **G** Guidance

For greater ease of getting around the home, and particularly if one or more of the household uses walking aids or a wheelchair, a corridor of at least 1500mm between walls will be beneficial.

Providing full storey height doors where possible ensures that very tall people do not need to stoop, increases the sense of space, and makes it easier to manage large objects such as ladders and furniture.



Stairs in the Home

Design Considerations and Awareness

The design of the stair needs to facilitate comfortable and unimpeded movement between floors, with flexibility and space for example to easily adopt for a stair lift. It is important to design the stair so that it has filled risers; as open risers can also cause visual confusion and disorientation because the eye is drawn to the spaces beyond the stair.

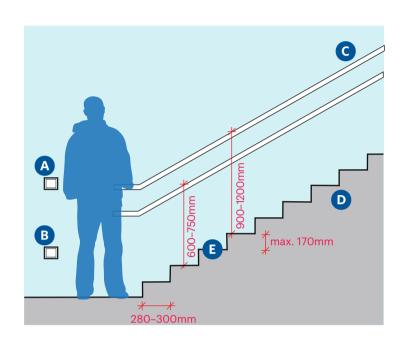
Stairs with winders should be avoided as treads are smaller and awkwardly shaped on the turn, causing people to miss their footing. Therefore, it is important that all stairs are designed to be straight or turn at a square landing for safety and ease of use for all. Accidents are caused by steep stairs, a shallower stair is easy for the majority of people to use, and may help them to remain active in their home for longer.

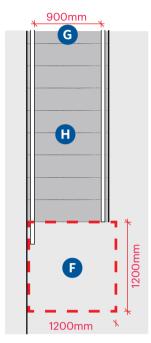
- Avoid a change in level of 2 risers or fewer.
- Ensure that the stair design will allow a stair lift to be fitted at a later date by providing at least 900mm clear width between handrails.
- Ensure that stairs have filled risers.
- Provide only straight flights with integral landings in the line of the stair.
- Construct the stair with an easy rise of no more than 170mm, and an easy going of between 280mm 300mm.
- Construct the stair with an easy rise of no more than 170mm, and an easy going of at least 300mm.
- Provide nosing or single contrating strip to highlight the step edge, extending for the full width of the step.





Section and plan: Dimensions for stairs in a dwelling





- A Light switch at bottom and top of stairs.
- B Capped electrical point for future stair lift.
- Continuous handrail on one side as a minimum, ideally with additional handrail for people of smaller stature in UD+ Homes.
- D Stairs should have filled risers for safety.
- E Step nosings are straight with no projections.
- © Clear landing of 1200mm × 1200mm minimum for UD+ Homes.
- **G** 900mm clear space allows for fitting a stairlift.
- H Straight flights of stairs with no winders.



- Provide a second handrail 600–750mm above the pitch of the stair and landing to benefit people of different heights. The diameter of this handrail should be 25–32mm to be suitable for smaller hands.
- Provide a continuous handrail on one side of the stair set at 900–1200mm above the pitch line of the stair, and 1100mm above landings.
- Provide grounds for second handrail on the opposite side to allow for an additional handrail to be added as required.
- Provide handrails on both sides of the stair, to provide support for those who find stairs difficult to manage.
- Ensure that the step nose profile is straight, with no projections, or if projections are required, they should have maximum 25mm overhang and be smoothly profiled.
- Provide a capped electrical point from the outset adjacent to the potential stair lift route, so that a stair lift can be installed at a later date.
- Provide light switches at the top and bottom of the stair so that the stair is always lit well for access.
- Provide an unobstructed landing of 1200 × 1200mm at the top and bottom of the stair to make it easy to get on and off a stair lift safely.

UD Home ⊕ ⊕ Guidance

Providing 1000 – 1200mm clear width between handrails may be helpful for someone who needs assistance up the stairs.

A more gentle stair, with an easy rise (vertical) of between 150mm and 170mm, and an easy going (horizontal) of between 300mm and 450mm may also be helpful.

A sensor-activated light on the stairs can be helpful for anyone who is confused, who might not find the light switch, and who may miss their step in the dark.



Through-Floor Lifts in the Home

Design Considerations and Awareness

Through-floor lifts can provide useful access to upper levels of the home when a stair can't be used and a stair lift is not appropriate. For example, people who have difficulties balancing or with vertigo often find a stair lift uncomfortable.

Provision should therefore be made for the future installation of a homelift (platform lift) or stairlift capable of serving the entrance level and at least one other floor level of the house.

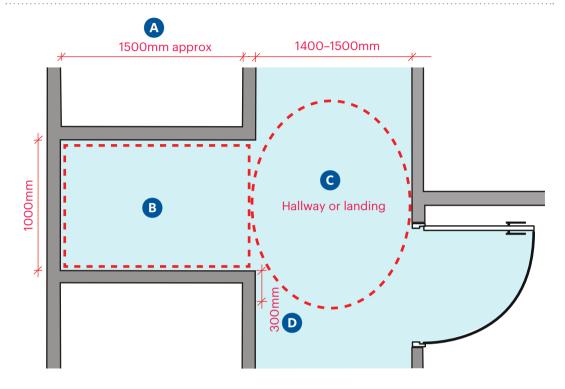
Generally, the higher the specification, the more robust the lift will be, and therefore suitable for continuous use. Some through-floor lifts are not designed to be used more than 3 to 4 times per hour, and burn out quickly.

Ideally the through floor lift should be located where it moves between circulation spaces, rather than between habitable rooms. A dedicated space can be provided by locating two large cupboards accessed from a corridor, one above the other on plan, which can be converted into a shaft for the through-floor lift to use. There should be additional provision for storage elsewhere, if the stores are later occupied by the lift.

- Indicate and facilitate future provision of a 1000mm × 1500mm aperture on plans for a through-floor lift.
- Ensure that the lift space is accessed from corridors rather than habitable rooms.
- Specify a robust lift that will be suitable for continuous use.
- Provide a 300mm nib on the side of the leading edge of the lift car door.
- Provide a store/cupboard on two floors of the right size to allow future conversion for lift installation.



Plan: dimensions For Through-Floor Lifts



- (A) With timber floors indicate a 1000 x 1500mm aperture for future provision of a through-floor lift.
- B Future lift space is ideally used as a cupboard on both floors until needed for the lift, accessed off a circulation space. Alternatively the location could be in a living space rising to a main bedroom.
- Clear turning space required outside the location for 1500mm turning circle or 1400 x 1700mm ellipse.
- D There should be 300mm clear on one side of the future lift position for the leading edge of the lift car door.

UD Home Guidance

In some homes it will be useful to provide for a through-floor lift from the outset. It will need to be tailored to the specific requirements of the household, and therefore might involve installing a homelift (platform lift), rather than a throughfloor lift. Ideally the installed lift serves all floors of the dwelling.

Universal Design Guidelines For Homes in Ireland		

Centre for Excellence in Universal Design

Spaces for Living 03



UD Home Guidance

UD Home Plus Guidance

Apartments

Living areas should be large enough for furniture to be arranged in different ways, and with enough clear, unobstructed space for movement and activities. Thoughtful design decisions can ensure that spaces are easier for everyone to use, and provide flexibility for future adaptations.

3.1 Living Spaces



An open-plan living and dining area.

Photo Design Features

- Potential for a large clear turning space in the living area
- Central pendant light provided as well as other lighting such as uplighters and lamps
- Full height windows for good sun and daylight penetration
- One continuous floor finish throughout for ease of access
- Natural light from two directions

Photo Design Tip

- Window transoms could be lowered to avoid blocking sight level when seated and the window handle should be lowered.
- ① Deep pile carpet is not easy for everyone to walk on.

Living Room

Design Considerations and Awareness

The living room is ideally located at entrance level. An open plan arrangement often works very well, but many larger families prefer to have two separate living space so that different activities can happen at the same time.

The living room should allow ease of movement for everyone, whether they are sitting down, accessing shelves, switching on the TV, or opening windows and doors.

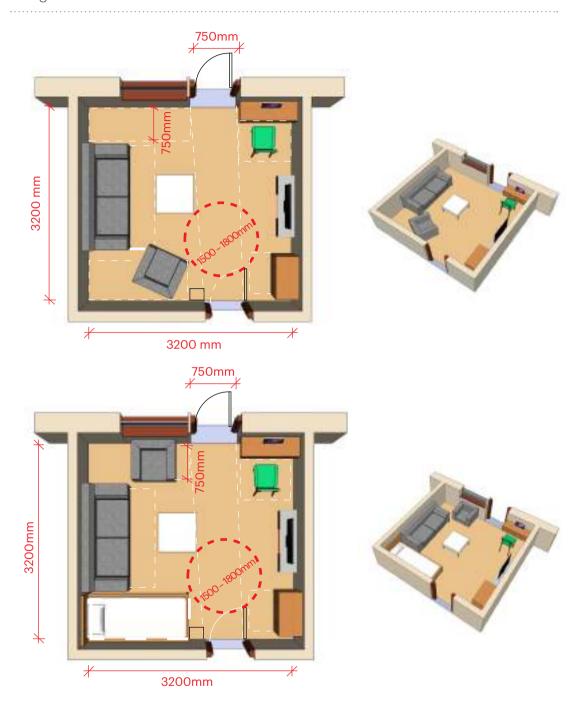
It is important that a household can welcome and entertain all visitors easily, so a living space should be provided at the same level as the front entrance door.

However, a living space does not necessarily have to be a living room; it can, for example, be a large kitchen-dining room with space to eat and socialise. This living space should be large enough to accommodate a temporary sleeping area if there is no bedroom at entrance level of the home. There should be enough space for a full-size bed and chest of drawers or small cupboard. The living space should still be capable of functioning normally even with the bed space in use. Where possible an additional room at ground floor should be provided for various uses such as ground floor bedroom or study. Please refer to section 3.5 for bedrooms and guidance.

- Ensure there is a living space at the same level as the entrance to the home.
- The length or breadth of the room should not be less than 3000mm for 1 and 2-person homes, and 3200mm for larger homes.
- Identify a location for a temporary bed space at entrance level.
- Provide a clear space for 1500–1800mm turning circle or 1700×1400mm ellipse.
- Provide a clear space for an 1800–2400mm turning circle.
- Provide 750mm wide clear route between items and in front of windows and routes between doors.
- Provide 800mm wide clear route between items and in front of windows and routes between doors.

Indicative Room Plan:

Living Room



UD Home **⊕ ⊕** Guidance

Consider providing:

- a 900–1200mm wide clear route between items, in front of windows, and on routes between doors.
- a clear space for a 2400mm minimum turning circle in all habitable rooms.

3.2 Dining Rooms



An open-plan kitchen and dining area.

Photo Design Features

- Generous space provided all around the dining table
- No obstructions from supports beneath table
- Directly adjacent to kitchen beyond

Photo Design Tip

- ① Colour contrast between the floor and walls could be stronger and the loose rug may be a trip hazard.
- ① Open-plan arrangements can work well for people with hearing difficulties as they allow clear visual communication.
- Very reflective surfaces can be disorienting for some people with cognitive and visual difficulties.

Design Considerations and Awareness

Eating, sharing meals and providing hospitality is an important aspect of daily life in every home. In the UD Home, the dining area should be arranged so that the household and their guests can lay the table easily, have enough room to pass behind chairs, and sit down with enough room for everyone.

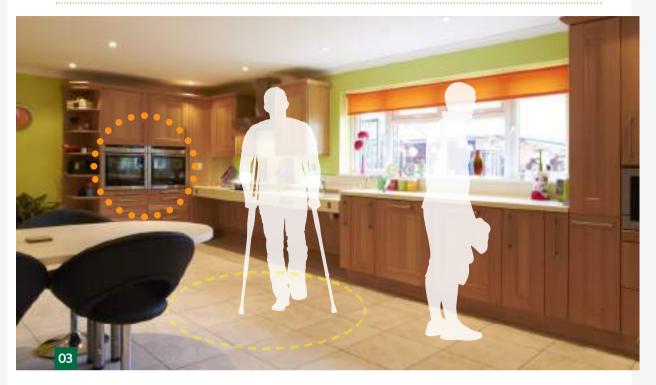
The dining area may be in a room of its own, or part of the living room or kitchen. Most larger families benefit from having a separate living space and kitchen/dining space, because this provides two activity spaces.

Everyone will benefit from having a dining area in or near the kitchen to avoid the difficulty of negotiating doors with trays of food and drinks. If the dining table is in the living room, it is helpful to have a small table in the kitchen for occasional meals or snacks. Breakfast bars may be used as long as there is an alternative place for occasional meals in the kitchen, such as a small table. A breakfast bar is not accessible to someone in a wheelchair or of smaller stature.

- Provide 1200mm clear space on at least two consecutive sides of a table.
- Provide 1200mm clear space on all sides of a table.
- If the dining table is in the living room, provide a table for occasional eating in the kitchen.
- Locate the dining area within or immediately adjacent to the kitchen.



3.3 Kitchens



A 'L' shaped plan kitchen and dining area.

Photo Design Features

- Darge clear turning space in the kitchen area
- Dining table located within the kitchen
- Single run of worktop has sink and hob in it, and can move up and down to suit user
- Olear space below worktop for persons seated
- Ovens located higher than standard for ease of access
- Oupboard handles arranged according to type of drawer or shelving behind
- Good tonal contrast between floor and cupboards
- Deep plinth and toe space provided below all base units

Photo Design Tip

A different layout could have provided natural light and views to dining area



A 'U' shaped plan is easy for everyone to use. An accessible kitchen can look very stylish and should not look like an adapted kitchen. All it takes is some imagination, and careful design.

Kitchen General Layout

Design Considerations and Awareness

The kitchen is usually a busy place with many activities taking place at any one time. Health and safety, and flexibility in use are key to this area of the home being used and enjoyed by everyone in the household.

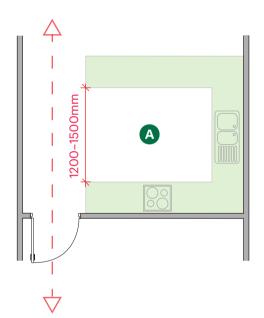
It is important that the kitchen is not part of the circulation route through the home to avoid accidents. Kitchen units and worktops need to be arranged to limit the number of activities which involve crossing the space, particularly to avoid someone having to carry hot food or liquids from one worktop to another. This can be achieved by locating the hob and sink in the same run of worktop, or by having an 'L' or 'U'-shaped layout, where pans and containers can slide from hob to sink.

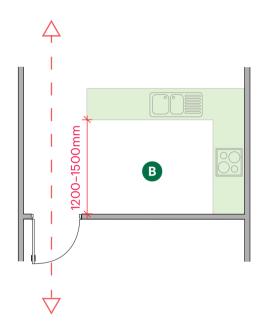
- Design the home so that the kitchen is not the main thoroughfare through the home
- Design the layout in a 'U' or 'L'-shape
- Ensure that the cooker/hob and sink are in the same run of worktop
- The kitchen space should be located next to the dining area to ease access for carrying food and crockery

- Provide an occasional eating space in the kitchen if the dining area is not in the same room
- Ensure all doors to the kitchen are outside the main workspace
- Provide between 1200 1500mm between opposing work surfaces
- Provide between 1500–1800mm between opposing work surfaces.

Technical Sketch:

Kitchen configuration plans





- A U-shaped layout with route through the room avoiding the working space
- B L-shaped layout with route through the room avoiding the working space





At least 1200 – 1500mm between counters will make it easier for everyone to use the kitchen safely.

Kitchen Safety and Ease of Use

Design Considerations and Awareness

The kitchen needs to be easy to use for everyone and a good design requires a high level of attention to detail. For example, handles need to be easy to grasp and use, and appropriate to the size of the task they perform. Specification should bear in mind the needs of small hands or hand weakness. The use of colour or tonal contrast between elements, and the avoidance of highly reflective surfaces, in the kitchen is important for people with visual or cognitive difficulties.

To help make the kitchen easier to use for someone who is seated most of the time, shallow sinks can be installed, and a fascia on the worktop which is deeper than the sink avoids scalding by hot water in the basin. Angled sockets within a worktop or to the side of a cupboard are ideal as they are easily seen and accessed. A sound insulation pad installed underneath the sink will minimise noise from washing cutlery and pans.

UD Home and UD Home Guidance

- Provide contrast colour D-handles to drawers and cupboards, which are easy to grip and a minimum of 100mm long.
- Position handles vertically on side-hung doors and horizontally on drawers.
- Fit hinged cupboard doors which can opened at least 135°C.
- Install glare-free task lighting above workspaces.
- Ensure switches and sockets are clearly visible and within reach.
- Ensure that the hot water supply to sink does not exceed 40°C.
- Adjust water pressure in the sink so that the water does not spray or splash.
- Provide a level surface for ease of moving cooking pots on and off the hob.
- Provide colour or tonal contrast on worktop counter edges, for handles and controls, between floor finish and walls, switches and sockets and their backgrounds.
- Position switches and sockets near the front of the worktop.
- Provide a separate oven and hob to provide further flexibility in the kitchen design.
- Install lighting inside deep drawers to assist access to the contents.

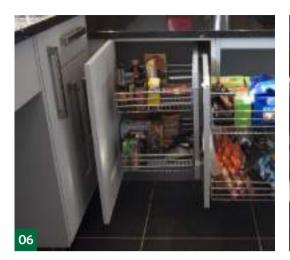
UD Home **⊕ ⊕** Guidance

Consider providing:

- sinks of minimum depth 130-150mm, with a sound insulation pad underneath.
- a fascia (elevation to worktop) which is deeper than the sink.
- angled sockets within a worktop or to the side of a cupboard.
- plumbing connections which are flexible for ease of adaptation.

Design Tip

- Open plan kitchens are easy to use but can create acoustic and odour problems. It may help to have sliding doors to provide separation between living room and kitchen/dining.
- Many people can find blank elevations to cupboards confusing, whereas a mix of open shelving and glass fronted units can remind people what is inside and allow easy checking of contents.



Good design uses space efficiently and makes it easy for everyone to access stored items.



Pull down racks from wall cupboards bring the shelves close enough to the seated person to make access easy.

Kitchen Units and Worktops

Design Considerations and Awareness

There should be plenty of space between facing cupboards, so that more than one person can be working in the kitchen at a time. The minimum distance is 1200 mm, as this will generally allow one person to open a cupboard door or drawer, or 1500mm for two people to work back to back amicably.

Narrow base units, of 300–400mm deep are easiest for everyone to use, as there is less stooping and bending to get items out of the cupboards. However, most worktops need to be 500–600mm wide to provide enough space for preparing and cooking meals. Therefore, pull out drawers are preferable to shelving in 500–600mm deep base units for most people.

Providing clear knee-space beneath the sink, hob and other areas of the kitchen worktop will allow the full use of the kitchen by someone seated. In addition, a setback for the plinth should be deep enough for toe space for someone standing or foot space for a wheelchair footrest.

Wheelchair-users will benefit from the oven and fridge being located in a housing to bring them up to accessible height. Locating the fridge and oven within a housing unit next to a worktop will avoid problems of moving hot, heavy or liquid food around. Alternatively, a pull-out shelf placed next to or beneath the oven and/or fridge is useful as a transfer space.

The edge of the worktop should be detailed to reduce risk of run-off if there is a spillage, for example by using a slightly raised trim or 'waterfall lip'. The height of worktops should respond to the needs of everyone in the household, and this may mean accommodating both standing and seated positions.

Wall cupboard units can be difficult to reach and use for many people including children and people who are short of stature, or anyone with upper arm weakness. Therefore these units should be shallow and supplied with pull-down shelving to make the contents more accessible. These cupboards should generally provide supplemental storage such as surplus crockery and provisions, rather than day-to-day requirements.



An open space below the counter makes the kitchen easy to use. The counter is lower than standard to suit particular needs.

UD Home and **UD Home** Guidance

- Ensure a distance of 1200-1500mm between facing work surfaces and base units.
- ♣ Ensure a distance of 1500-1800mm between facing work surfaces and base units.
- Fit corner cupboards with rotating carrousel units or similar.
- Fit the sink with centreline more than 460mm in distance from any return in the work surface.
- Avoid locating wall cupboards above a sink or hob.
- Provide a continuous worktop between sink and hob.
- Provide space of at least 300mm on either side of the hob, and to one side of the oven.
- Provide pull-out drawers with 600mm deep units, instead of internal shelves.

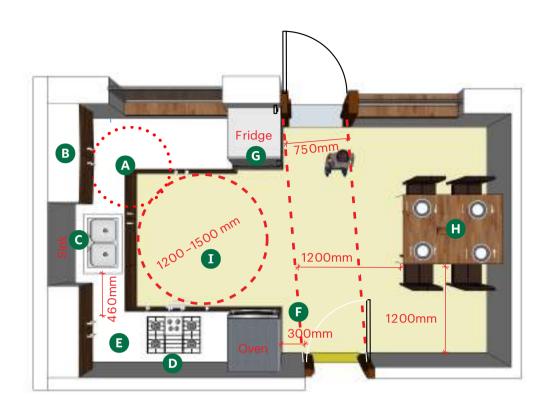
- Install base units with a minimum plinth of 250mm above floor level for a depth of 150mm.
- Provide a pull-out shelf below the oven or fridge/freezer for moving things from one place to another if there is no counter beside the oven.
- In general provide worktops which are 900mm high.
- Provide the option of having easily adjustable height worktops between the heights of 760mm and 900mm high.
- Install wall units at a maximum height of 450mm above worktop level
- Install a pull-down mechanism for bringing shelf contents within reach

Kitchen and dining area.



Note:

A level threshold is required to the back garden, and at every entrance door. (highlighted in red above)

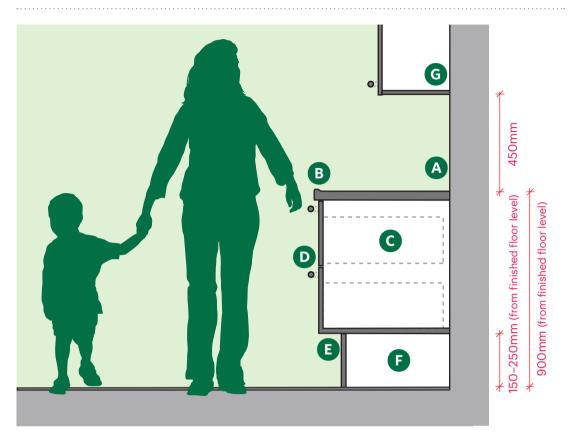


- A carousel unit in a corner cupboard makes contents easy to access by everyone.
- B Wall cupboards should be low enough for most people to reach easily.
- C Locating the sink away from a corner means that one person can wash up while another dries up.
- Wall cupboards should not be located above the sink and cooker for safety.

 This will also prevent tall people hitting their head when cooking or washing up.
- E There is a continuous worktop between the sink and hob, to avoid having to carry heavy or hot dishes across the kitchen.
- Clear space of at least 300mm is provided either side of the cooker and to one side of the oven for ease of moving hot pans and dishes.
- G Tall units, like the oven and fridge freezer housings are located at the end of a run of worktop to avoid interrupting the work space.
- H The table is best located in the kitchen to minimise the distance for carrying food and drinks. There should be 1200mm clear space minimum on at least two sides of the table.
- A clear turning circle of 1500–1800mm should be provided.

Technical Sketch:

Cupboard units in kitchen



- A Tiled splashback protects wall
- B Trim or waterfall lip to protect users from spills
- C Pull out shelving or deep drawers
- Easy to use D-handles
- E Plinth shown 250mm high to suit wheelchair users
- Flooring material continued under base unit
- G Shallow wall mounted cupboard 450mm above work surface

Design Tip;

• Pull-down shelving relies on someone having good upper body strength. Electrically operated units are available but these can be shallow and therefore not as useful.

UD Home **⊕ ⊕** Guidance

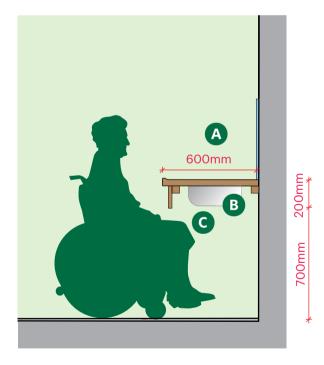
Consider providing:

- A working counter height of 900mm with the potential to raise or lower the counters.
- A distance of 1800 2400mm between facing work surfaces.
- · A waterfall lip to the edges of all worktops to prevent spills.
- A clear knee-space (free of brackets, pipes and cables) 700mm high, 600mm deep and 800mm wide below hobs, sinks and task areas.
- A clear knee space, 700mm high, 600mm deep and 800mm wide, beside ovens, washing machines, dishwashers, fridges and freezers.
- A worktop height between 900 and 1100mm above finished floor level for very tall people.

Technical Sketch:

Clear knee-space for person seated

- A Tiled splashback protects wall
- **B** Kitchen sink
- Clear knee-space below worktop for minimum width of 800mm at key task areas and beside appliances





A small shallow accessible dishwasher unit located under the worktop, with space for dishwasher supplies in a drawer beneath.

Photo Design Tip

In order to optimise the efficiency of potential future rearrangements or adaptations of the kitchen it is useful to continue flooring material to the full area of the room, including under units.

Kitchen Fixtures and Fittings

Design Considerations and Awareness

New kitchens may not be fully fitted out at handover or sale. The following guidance is provided for good practice in choice, location and fittings of household appliances like cookers, fridges, freezers, dishwashers, etc..

UD Home and **UD Home** Guidance

- Ensure that the controls for all fittings are clearly visible, simple and easy to operate with one hand.
- Provide a wall mounted fire blanket and multi-purpose hand-held fire extinguisher at 450–1300mm above floor level within the kitchen.
- Position ovens so that the controls are 750 1050mm above floor level.
- Ensure oven displays are no higher than 1200mm.
- Ensure that cooker hood controls are positioned within reach of everyone expected to use the kitchen. If necessary locate remote from hood.
- Provide a heat-resistant pull-out shelf below the oven, as wide as the oven and at least 250mm deep. It should be suitable for taking heavy dishes.
- Electric hobs to provide a visual and audible warning that rings are hot when switched off.
- Gas burners on a hob should be self-igniting, and operable by one hand.
- Mount microwave ovens on a surface or built into a unit so that the base is not more than 900mm above floor level.
- Ensure that microwave controls are no more than 1150mm above floor level.
- Install the flooring material so that it is continued under the units.
- Specify a floor covering which is slip-resistant and easy to clean.
- Ensure that oven doors open sideways to more than 100°.

UD Home **⊕ ⊕** Guidance

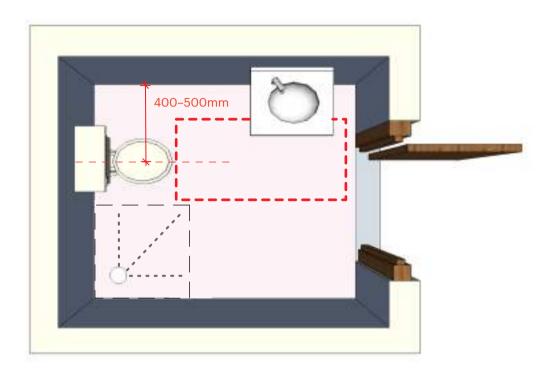
Consider providing:

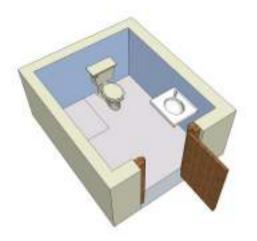
- · Hobs with knee space beneath them, insulated on the underside.
- Installing a fridge, freezer and dishwasher on a 200mm plinth with adequate toe space can make the appliances easier to use for many people.

3.4 Entry-level toilet

Indicative Room Plan:

UD Home Entry Level Toilet





Design Considerations and Awareness

There should be a toilet on the entrance level of every home. It is also useful if this room is large enough to be adapted into a shower room should this be desired at some stage in the future, for example if someone needs to sleep at entrance level for a period and there are no bedrooms on that level.

The toilet should be designed for flexibility in terms of providing any grab

rails or other assistance. There should also be space to one side, sufficient for someone transferring from a wheelchair, or relying on crutches or a walking frame. It is helpful if the transfer space is on a different side to that in the main bathroom, to provide flexibility of approach.

An outward opening door ensures that all the space inside the toilet is useable, the space is not compromised by the door swing, and that the door can be opened from outside in the case of an emergency. The door lock should therefore also be operable from the outside. However, care must be taken not to cause an obstruction or collision when opening the door from the inside. The outward opening door must not obstruct a corridor and cause collisions. The door should open against a wall.

UD Home and **UD Home** Guidance

- Provide a WC compartment of at least 1500 × 1800mm at entry level.
- Ensure that the hand basin in the secondary toilet is large enough for everyone to use. Where space is restricted the wash hand basin can overlap the toilet access zone by 200mm.
- Ensure that the bathroom door opens outwards, and against a wall.
- Ensure the bathroom door lock is operable from outside in case of emergencies.
- All walls are constructed to be strong enough to take fittings and rails (see Section 04).
- Provide below floor drainage and a drainage point. Provide level access for a future shower installation, with only very slight falls to the drain position.
- Tank floor and walls up to a height of 2000mm.
- Good plastering or waterproof plasterboard will obviate the need for tanking.

3.5 Bedrooms



A double bedroom in an apartment.

Photo Design Features

- Description Large windows with easy to reach opening sections.
- At least 800mm clear space either side of bed and more at the end of the bed.
- Sockets and switches installed at between 400mm and 1000mm above floor level.
- Good colour contrast between walls, floor, skirting, window frames.

Photo Design Tip

- Windows should be operable with one hand, with lever fixings between 800mm and 1200mm only.
- Windows should have one section without a transom between 800 and 1500mm.

Design Considerations and Awareness

Bedrooms have multiple functions such as a place for sleeping, for children at play, and sometimes the room is a study space.

The room needs to be large enough for the furniture usually required in bedrooms (for one or two people).

It should be comfortable to move around with easy access to the bed as well as unobstructed access for opening doors and windows.

A UD home will have the main bedroom adjacent to a bathroom, for ease of access. A 'soft spot' in the wall between the bedroom and bathroom can allow easy installation of a door to convert to an ensuite. This requires careful planning at the design stage of wall studs, bathroom fittings and bedroom furniture configurations to suit adaption.

In addition "hard-spots" can provide the infrastructure for future installation of a short hoist for it to be used to transfer someone from the bed to a wheelchair, and from a wheelchair to a WC or bath, or vice versa. This will require reinforcement to ceiling joists, and powerpoints to the appropriate locations in the ceiling.

UD Home and **UD Home** Guidance

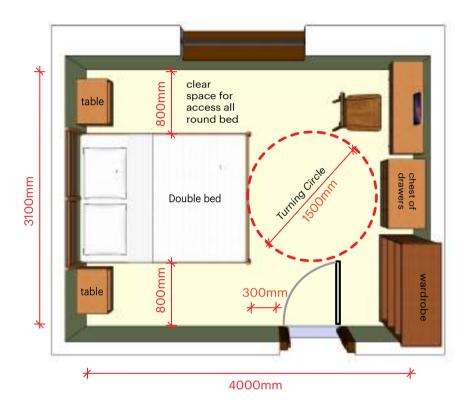
- Ensure that double and twin bedrooms are at least 12m² in area.
- Ensure that a single bedroom is at least 8m².
- Provide clear access space of 800mm on both sides and at the end of the double bed.
- Provide a clear space for a turning circle of 1500mm in the double bedroom.
- Provide a clear space for a turning circle of between 1500 and 1800mm within the room.
- Provide clear space adjacent to the single bed of 800mm.
- Provide a clear space adjacent to the single bed of 1200mm.
- Locate the bathroom immediately adjacent to the main bedroom, with a full height door or 'soft spot' between them, for future installation of a door.
- Provide 'hard spots' in the ceiling at the main bedroom and at the main or adjacent bathroom, or continuous between the main bathroom and an adjacent bathroom to allow a hoist-track to be installed supported by the ceiling construction.
- Provide light switches at the entry door and on both sides of the double bed.
- Provide bedroom at entry level.

UD Home **⊕ ⊕** Guidance

- Wardrobes are easier to use for everyone when provided with adjustable shelving and hanging rails at varied heights.
- A clear turning circle of 1800–2400mm within the room will allow full accessibility, for example by motorised wheelchairs and stretcher chairs.

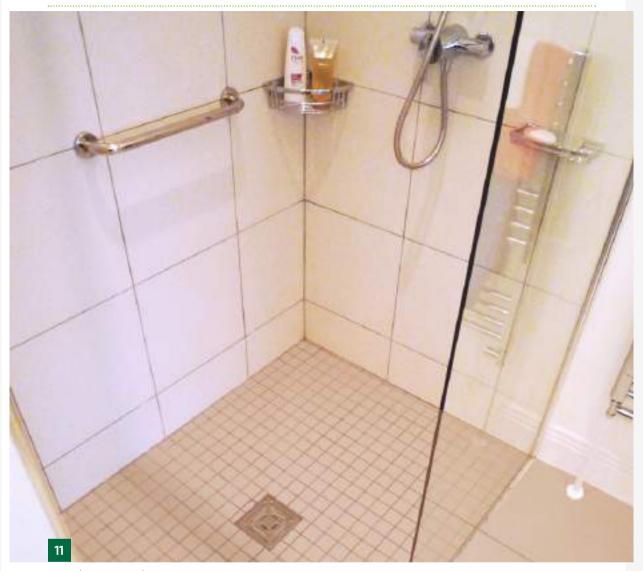
Indicative Room Plan:

Double bedroom.





3.6 Bathrooms



Level access shower.

Design Features:

- Level access to shower area.
- ⇒ Handrail provided for those who need support.
- Storage provided for toiletries.
- Good visual contrast between walls, floor and fittings.

Photo Design Tip

- Underfloor heating helps dry the floor faster.
- ① Use safety glass for shower screen and apply frosted manifestations.
- A drop down seat at 400-800mm in height can be useful for many people.



The level access shower has a recessed drainage area and the basin can be used by someone seated. Ideally there should be better colour contrasts.

Bathroom General layout

Design Considerations and Awareness

The bathroom should have a logical, clear layout, and be accessible by all, regardless of whether it is on the entrance level of the home, or on an upper floor.

The bathroom should provide space for a number of different activities: for example, washing small children, assisting an older person, enabling independent access by a wheelchair user, cleaning pets. The bathroom should also provide space for storage, such a wall cabinet, laundry bin, and towel rack.

An outward opening door to the bathroom from the hallway or landing ensures that the door can be opened from outside in the case of an emergency. The door lock should therefore also be operable from the outside. The outward opening door should not open at the head of the stair or obstruct a corridor and cause collisions. The door should open against a wall.

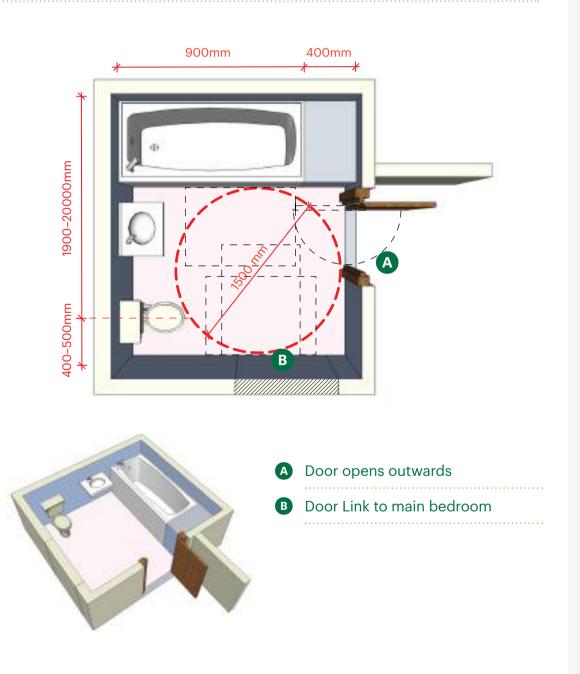
To optimise flexibility the bathroom walls should have "hard-spots" to be able to support fittings and rails, such as grab bars, shower seat, shelving and cupboards. This is best addressed by lining all the walls with plywood unless the walls are blockwork.

Ideally the ceiling should be able to support installation of a short hoist in the appropriate location to allow someone get into and out of a bath, or transfer from a wheelchair. This requires reinforcement to ceiling joists, and powerpoints to the appropriate location in the ceiling, at the outset of design stage.

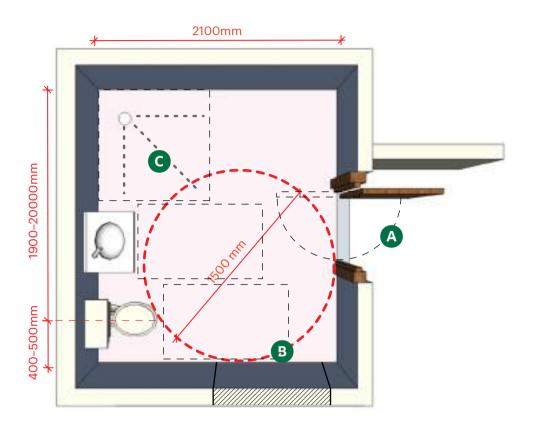
To optimise adaptability a UD Home bathroom should be provided with a floor drain to allow the room to operate as a wet room. It is also useful to have the bathroom immediately adjacent to the main bedroom to allow for future or present provision of a connecting door for an ensuite, as previously noted.

Indicative Room Plan:

UD Home bathroom



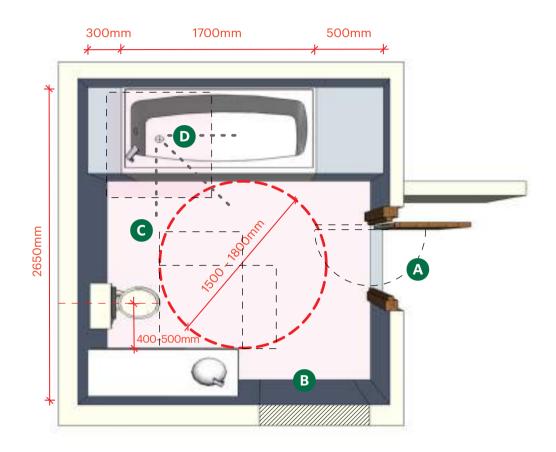
UD Home Shower





- A Door opens outwards
- B Door Link to main bedroom
- **C** Shower location

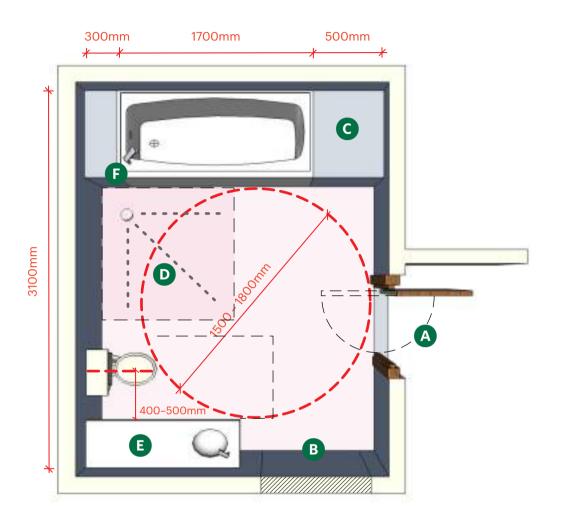
UD Home Plus bathroom





- A Door opens outwards
- **B** Door link to main bedroom
- © Side transfer space for WC and bath
- Provision of drainage point below for shower

UD Home **⊕ ⊕** Guidance bathroom with shower





- A Door opens outwards
- B Door link to main bedroom
- C Side transfer space for bath
- Shower location
- Worktop support: a load-bearing worktop next to the toilet can help many people
- **F** Tap offset on corner of bath

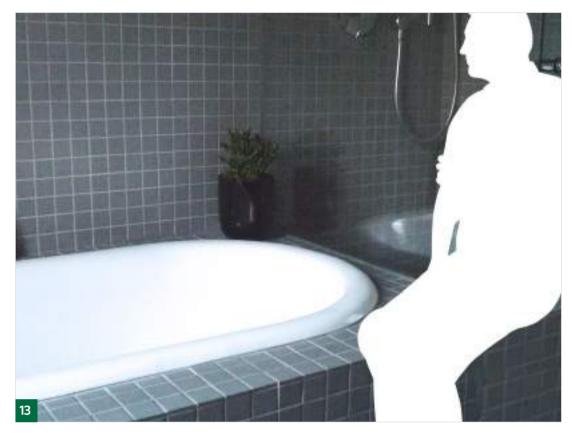
UD Home and **UD Home** Guidance

- Minimum internal dimensions of 2100 × 2400mm.
- ♣ Minimum internal dimensions of 2100 × 2650mm
- Provide a turning circle of minimum 1500mm, with a 200mm overlap of the basin allowed.
- Provide a turning circle of minimum 1500 2400mm, with a 200mm overlap of the basin allowed.
- Ensure that the bathroom door opens outwards, and against a wall.
- Ensure the bathroom door lock is operable from outside.
- All walls are constructed to be strong enough to take fittings and rails.
- Provide the potential for a hoist-track to be installed, supported by the ceiling construction.
- Ensure that provision is made for future adaptation to a shower room for example by providing a capped outlet for future installation of a floor drain and tanking of walls and floors.
- Locate the bathroom immediately adjacent to the main bedroom, with a full height door or 'soft spot' between them.

UD Home **⊕ ⊕** Guidance

- The minimum internal dimensions for a UD bathroom with separate bath and shower together should be 2500×3100 mm.
- If a family bathroom is located next to an en suite shower room they can be combined at a later date into one large fully accessible bathroom.





There is some provision for someone to sit beside the bath to supervise children or aid entry. However ideally greater space would be provided for seated entry to the end of the bath.

Baths

Design Considerations and Awareness

While a wet room approach with a shower rather than a bath is the most versatile, families with small children benefit from having a bath.

Provision of sufficient space alongside the bath will make it easier for everyone to get in and out or the bath, or wash small children. A platform space, or transfer space, at the end of the bath can facilitate different means of access. Integral handles and a non-slip base are also helpful. Provision of 'toe space' at the base of the bath will make it easier for everyone to get access to the bath.

Taps can be easier to use when placed at the nearest corner. When supplying baths for a UD Home, consideration should be made for possible offsetting of taps in the future. Baths supplied for a UD Home should be able to have new tap holes drilled and taps fitted in the event of retro-fitting. Additionally the water supply for the taps would need to be flexible.

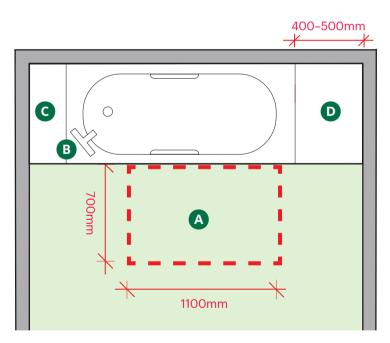
Taps should always operate in the same way, with the hot and cold supplies in the same location - hot on the left and cold on the right.

UD Home and **UD Home** Guidance

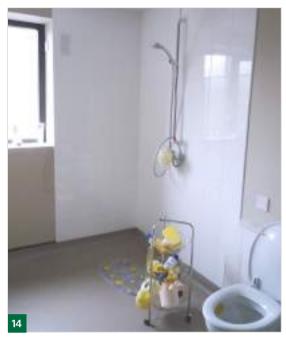
- Ensure there is a clear activity space beside the bath 1100mm×700mm.
- Fit a bath with hand grips and a non-slip surface to bottom of bath.
- Provide a 400-500mm transfer space at end of the bath.
- Ensure the hot water supply is located on the left and cold water on the right.
- Ensure it is possible to offset the taps in the future, should this be required
- Ensure all taps operate in the same way.
- Offset bath taps to the nearside corner of the bath or locate adjacent to the bath in a convenient and easy to use location.

Technical Sketch:

Activity space for baths



- A Clear activity space required of 700 x 1100mm.
- B Taps located on the corner of the bath, or on an adjacent wall, for ease of access.
- © Space behind taps for ease of access.
- D Seated transfer space ideally 500mm wide.



Level access showers can be fitted with doors or curtains to control the spray of water.

Showers

Design Considerations and Awareness

A level access shower in the bathroom can help people live independently. Therefore, the bathroom should either provide a level access shower from the outset, or the potential to remove the bath and replace with a level access shower in the future and all drainage requirements are fitted as part of initial design and first fix. A level access shower is best provided by a wet room approach (a dished floor which slopes gently down to a drainage point) or a proprietary level deck shower tray. In either case, provision must be made for a drainage point and floor and walls tanked from the outset to ensure ease of adaptability.

The construction of a wet room should ensure good falls for the drainage below floor level, a water-tight construction, a robust drainage gulley and a well-sealed floor finish. In addition, the falls within the bathroom need to be as slight as possible. In dished floors ensure the slope is restricted to the shower area. Flexibility in height and an accessible location for the shower controls will make it easy for everyone to use the shower. As with baths, it should also be possible to check the water temperature before getting into the shower.

UD Home and UD Home Guidance

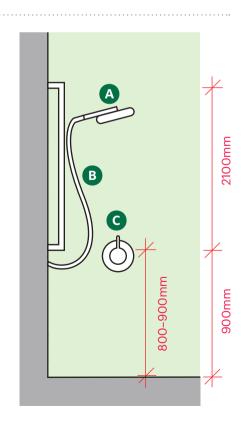
- Provide below floor drainage and a drainage point.
- Provide level access for a future shower installation, with only very slight falls to the drain position.

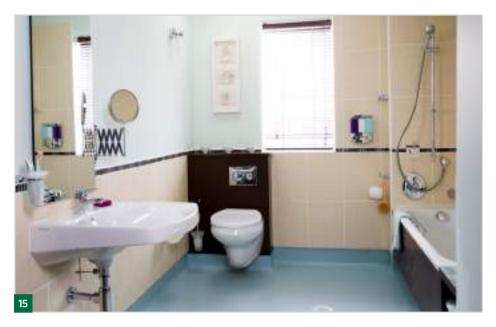
- Tank walls and floor throughout bathroom to a height of 2m on walls.
- Good plastering or waterproof plasterboard will obviate the need for tanking.
- © Cap the shower outlet if not required immediately.
- Locate the shower curtain or screen to enclose all of the shower area in smaller rooms where the spread of water needs to be controlled.
- Locate thermostatic shower controls 800 900mm above floor level.
- Provide a level access shower area of minimum dimensions 1100×1100mm.
- Provide a detachable handheld additional shower head with a 1500mm flexible hose, on a vertical slider bar, height adjustable between 900mm and 2100mm above floor level.
- Ensure the shower head projects far enough into the shower area to easily reach a seated user.
- Supply a drop-down seat fitted at height of 450 to 480mm height for showering.
- Provide a location for toiletries that can be accessed while using the shower.

Technical Sketch:

Activity space in bathrooms

- A Shower head should be adjustable between 900 and 2100mm above floor level.
- **B** Provide a 1500mm flexible hose to the shower head, on a vertical slider bar.
- C Locate the thermostatic shower controls 800-900mm above the floor level.





Large basin unit with work surface and space for storage of toiletries. There is space below the sink so that it can be used by a person seated.

Basins

Design Considerations and Awareness

The basin needs to be accessible by everyone, seated or standing. It is therefore important that it is at a suitable height, and if required in the future, could be adjusted. The waste pipes should not be encased in a cupboard or duct, to allow people to get close enough to use the basin fully. For example, wall-hung units, or units inserted into a worktop, can be easy to use for everyone.

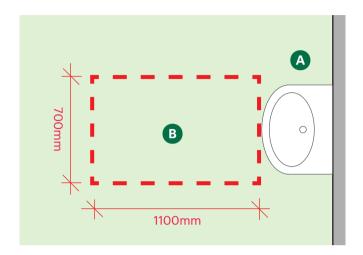
The basin needs to be large enough for a range of activities. For example, allowing someone to wash their hair, or assist someone else in doing it. Space around the basin for convenient storage of toiletries will be beneficial for everyone.

UD Home and UD Home Guidance

- Provide a basin at a height 750-800mm above floor level, with flexible water supply pipes and easily adjustable waste connections.
- Provide a clear access zone of 1100mm × 700mm minimum from the front of the basin from any obstruction under the basin bowl.
- Provide a large basin that is not a pedestal or semi-pedestal basin and provides knee space of at least 600mm below the sink bowl.
- Provide a height adjustable basin

Technical Drawing:

Activity space in front of basins



- A Basin supported off the wall with no pedestal beneath for ease of access
- B Clear activity space required of 700×1100mm, from any obstruction under the basin bowl

Design Tip

A load-bearing worktop that includes the basin, running alongside the toilet, will provide support.





Good large clear space in front and to the side of WC. Storage provided within bathroom. Colour contrast between the WC and wall should be greater to make it easy to find for everyone.

Photo Design Tip

Lever handles are easier for most people to use. Push button mechanisms have the advantage of providing an option for a water saving flush. However this can also be achieved by simply displacing water in the cistern with a device such as a 'water hippo', which can be used with lever handle mechanisms. Dual flush levers with water saving option are also available.

Toilet

Design Considerations and Awareness

A toilet should be located to optimise future flexibility in terms of providing grab rails or other assistance. If there is a second toilet in the home, it is helpful to ensure access space on a different side of each toilet to provide flexibility.

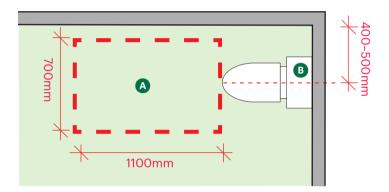
Level handles for flushing mechanisms are generally easier to use, particularly for older people and children, than push button devices.

UD Home and **UD Home** Guidance

- © Centre the toilet at 400-500mm from a wall.
- Provide a clear access zone of 1100mm×700mm minimum from the front of the toilet.
- Provide a lever handle to the cistern, rather than a push-button mechanism.
- Locate the lever handle on the side away from the wall.

Technical Drawing:

Activity space in front of toilets and position from wall



- A Clear activity space required of 700 x 1100mm
- B Toilet located 400-500mm from wall to allow for ease of use and later installation of grab rails



Bathroom tap mixer with lever handle. Levers make it easier for everyone to use the tap.



Storage for toiletries is conveniently located for use in the shower, avoiding the need to bend down or stretch across to pick up an item.

Bathroom Fixtures and Fittings

Design Considerations and Awareness

Fixtures and fittings should be accessible and easy to use for people of different heights, seated or standing. Taps need to be easy to operate and understand.

Wall hung sanitary fittings make it easier to clean and maintain floor surfaces. Wall hung basins can be used by people seated.

Everyone will benefit from the installation of well-placed handrails and grab rails, for getting into the shower or bath, or getting up from the toilet. Reinforced wall construction or "hard spots", as previously described, will make it possible to locate hand and grab rails in any convenient locations in future adaptations.

Colour contrast between fittings and surfaces can make a bathroom easier to understand for everyone. This can involve coloured tiles to define the edge of the bath and basin, coloured seat to the toilet, and/or contrast bath panels. The floor finish should contrast with the wall colour, to facilitate a clear reading of the amount of floorspace.

It is useful to install longer mirrors to suit everyone, including people of small and tall stature, and people seated. Heated mirrors, for example where an electric heated pad is fitted to the rear of the glass, are useful as they allow the mirror to be used even when the bathroom is full of condensation. Bathrooms can get very cluttered with toiletries, so it is important to provide accessible storage space for them. This will ensure that surfaces are less cluttered and the bathroom easier to manage. The bathroom will be easier to use if accessible storage for temporary items such as clothes or towels is provided.

UD Home and **UD Home** Guidance

- © Construct the walls to be able to take loads such as hand rails and grab rails which may be required now or in the future.
- Install lever mixer/taps which can be used single handed and with a closed fist.
- Ensure mixer taps have a clear indication of the difference between water volume and temperature control.
- Provide mirrors at a height between 800mm and 2100mm from the floor with a spur for future installation of electric heating pad.
- Provide heated mirrors at a height between 800mm and 2100mm from the floor.
- Provide specific fittings for items such as soap, shampoos, toothpaste and brushes in accessible locations for everyone to use.
- Install shelving and cupboards for storage within the bathroom.
- Provide colour contrasting fixtures and fittings and ensure all fittings contrast visually with their background.
- Provide clothes hooks at two heights: 1100mm and 1700mm from floor level.
- Install handrails and grab rails where useful.
- Provide anti-scald settings to the shower.

Design Tip

If anti-scald settings are installed these must be regularly tested to avoid Legionella and ensure correct functioning as part of a managed maintenance regime.

Lighting, Heating and Ventilation

Design Considerations and Awareness

Lighting, heating and ventilation are covered in more detail in Section 4. However, some particular aspects are relevant to bathrooms.

In terms of lighting it is necessary to avoid glare and shadows, which can be a problem where there are shiny surfaces and numerous objects, such as in a bathroom. Bathroom light fittings should conform to an Ingress Protection (IP) rating of not less than 44.

Design Tip

- A light fitting rated IP44 indicates that the fitting can be installed within 1m of splashed water from any direction.
- Under floor heating can be installed in the bathroom where it has the advantage of helping to dry wet surfaces after a shower. However, underfloor heating is slow to react, and a faster boost of heat may be preferable for many people. A booster heat source is therefore of assistance in this case.
- A heated towel rail (which is part of a wet central heating system) can warm the room and ensure that towels get dry after use. However, this won't work in the summer when the heating may be switched off unless it is connected to the hot water circuit.
- Flexible back-up heating is useful especially when the central heating is not in use, as people can take a long time in the bathroom and get chilled.

UD Home on and UD Home Guidance

- Provide low-glare task lighting of 300 lux.
- Install moisture resistant low glare task lighting above basin and shower.
- Provide underfloor heating with easy-to-use controls to all wet rooms on a separately controlled and zoned circuit.
- Provide a heated towel rail to all bathrooms.
- Provide additional, booster or secondary heating, for when central heating is off.
- Provide an extractor fan or passive moisture extraction system.

- Locate radiators where people are unlikely to come into contact with them, or with a low-surface temperature cover.
- © Conceal or protect all pipework including heating and hot water supply pipes, and drainage, allowing for easy access in case of repairs/maintenance that will not damage the finish of the bathroom.

UD Home **⊕ ⊕** Guidance

Low-surface temperature (LST) radiators should be installed where relevant to the occupants' safety, for example for older people who may be particularly sensitive to heat and/or unsteady on their feet.



3.7 Multi-Purpose Rooms



Study space off corridor with a good level of natural light.

Study

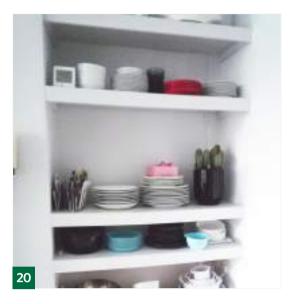
Design Considerations and Awareness

A flexible study space should be provided for home working. This space might be in a bedroom, or in an alcove on a circulation route. As some people may find noise intrusive, it may be preferable to locate the desk away from noisy areas.

Ample sockets should be provided for all the technology likely to be used, such as computer, scanner and printer, provision for a modem, desk light, speakers etc. It is important that the study space has good natural light and easily controlled ventilation, avoiding glare and reflection on the computer screen which can make using the computer difficult and uncomfortable for everyone.

UD Home and **UD Home** Guidance

- Provide space in the home for a desk, chair, filing cabinet and filing storage of at least 1800mm in length and 1500mm in depth (including chair space)
- Provide at least 3 double sockets and a data socket.
- Provide at least 5 double sockets and a data socket.
- Provide direct natural light and adequate artificial light to the study area.
- Ensure that direct light does not fall on the computer screen



Open shelving can make accessing and finding items easy for everyone.



Shallow cupboard shelving can make accessing and finding items easy for everyone.

Storage and Utility Spaces

Design Considerations and Awareness

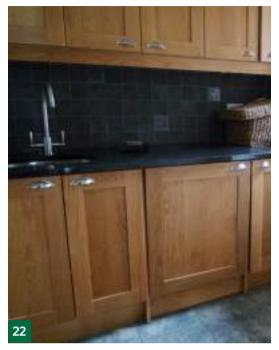
Plenty of storage space is essential for modern life, for example for out-of-season clothes, bags and cases, bulk purchase food stuffs and toiletries, sports equipment, books and files. Therefore, storage needs to be provided in a number of ways and it should be easily accessible.

A variety of storage solutions should be provided in the UD home. For instance, shallow cupboards are generally more accessible, and their contents more visible than a deep cupboard. However, deep cupboards will still be required for larger objects, such as suitcases, winter clothes, vacuum cleaner, etc.

In family homes of 3-bedrooms or more, a separate utility space is ideal to keep certain activities, such as washing and drying of clothes, out of habitable spaces and for general convenience. It needs to be easily accessible, and proximity to the kitchen is generally desirable.

A utility space should accommodate washing and drying machines, with sockets and controls that are easy for everyone to use and understand.

As accidents can happen with water, and washing machines are likely to break down at some point in their lifespan, it is recommended that a floor drain be provided in the washing machine area. This allows the householder to deal with excess water with a minimum of trouble and permits someone servicing the machine to drain it easily.



Separate room adjacent to kitchen for general convenience. Large cupboards for washer and dryer provided.



Washing machines and dryers on a plinth in a laundry room.

Photos Design Tips:

- 23: 'D' handles are easier to use for everyone.
- 1 24: A toe space and better colour contrast between floor and plinth should be provided in order to make it easier for everyone to use the appliances.

UD Home and **UD Home** Guidance

- Ensure all store rooms are fully accessible with an outward opening door and internal lighting.
- Provide cupboards which are not deeper than 600mm.
- Provide wide and shallow cupboards, 300-400mm deep, with shelving.
- Provide visual contrast at the front of shelves to make it easy to distinguish between contents and shelf position.
- Provide adjustable height hanging rods for clothes and shelves suitable for different ages and heights.
- © Consider a pull-out larder-type shelving system in deep cupboards, suitable for small items which can be accessed from both sides.

- Provide all plumbing supplies, ventilation, drainage and electrical connections required for laundry machines in a separate utility space in homes of 3-bedrooms or more.
- Provide a minimum 800mm square cupboard or space in the utility room to fit a washer-dryer with drainage connection and power points.
- Provide a cupboard or space in the utility room 800mm deep and 1500mm wide to fit a tumble dryer and washing machine side by side with drainage connection and power points.
- Ensure that controls and displays are easy to use for everyone.
- Provide a clear space in front of laundry machines of at least 1200mm.
- Ensure that slip-resistant flooring is continuous under laundry machines and base units.
- Provide a floor drain in utility room in case of flooding and for cleaning.
- Provide a plinth for front-loading machines, so that the door is accessible without stooping.
- Provide a plinth toe-space 150mm deep and 250mm high below the machines to allow everyone to get close to the laundry machines.
- Provide task lighting above the work surface.
- Provide internal lighting to each shelf to make retrieval from storage easier for all.

UD Home **⊕ ⊕** Guidance

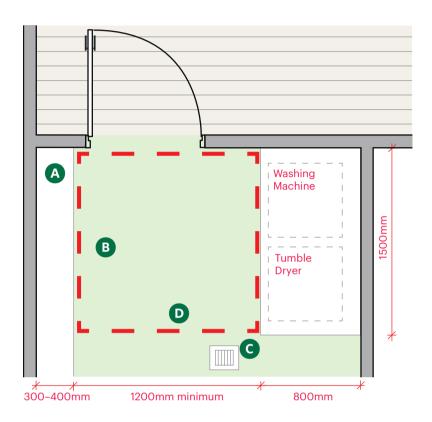
To optimise accessibility of storage for people of different sizes, seated or standing, provide at least half of all storage space below 1200mm above floor level. Fit pull-down shelves and clothes rails in wardrobes also.

In order to optimise ease of use in a utility space it may be useful to provide:

- a clear space in front of laundry machines between 1500 and 1800mm.
- an open knee-space beneath the worktop and sink for seated persons
- switches that are accessible remotely and placed between 700 and 900mm above floor level.

Technical Sketch:

Dimensions for storage and utility spaces in plan



- A Shelving 300-400mm deep
- B Slip resistant flooring continuous under machines and cupboards
- G Floor drain with cover flush with the floor
- D Clear space of 1200mm in front of laundry machines



3.8 Private Outdoor Space:



External private spaces to apartment development.

Photo Design Features

- Each of these apartments is provided with a balcony or a terrace
- Devel access is provided to balconies and terraces
- Balconies and terraces are screened from neighbours
- Full height windows provide good natural light to the apartments

Photo Design Tip

The balconies and terraces would ideally be larger for a greater number of activities.



All homes look out onto a shared and well maintained garden area with spaces for every one to enjoy and use.

Private Gardens

Design Considerations and Awareness

Outdoor private space is important for health and well-being and needs to be designed to be accessible to all occupants and their visitors. Accessible gardens should be provided to all ground level entrance homes, whether houses, maisonettes or apartments, wherever possible. Access to the garden from the home should be level and wide enough for everyone to use easily.

There should be sufficient space for a range of activities for all ages and sizes, for recreation and more functional needs such as drying clothes and/or growing food.

Raised flower and vegetable beds make gardening easier for everyone, as they help avoid stretching and bending. It is helpful if the walls of the raised beds are robust enough to form a seat for the gardener to rest on, or for someone to sit and admire the plants. If raised beds are not possible, large plants pots and hanging baskets can be set at accessible heights to provide everyone with the opportunity to do some active gardening and enjoy plants.

When designing a garden consider adopting the approach of a sensory garden for everyone's enjoyment. For instance, those with visual or cognitive difficulties can benefit from planting which makes different sounds in a slight breeze, highly scented plants, flowers which attract birds and buzzing insects, a small water feature or a hanging wind chime. People with hearing difficulties are also likely to enjoy highly scented plants as well as the varied colour, movement and texture of plants, reflections in mirrors and water. It is helpful if some shade can be provided in the garden, such as a tree or temporary canopy or pergola, for protection from strong sunlight.

UD Home and **UD Home** Guidance

- Provide an access door to the outside space of between 800mm and 850mm clear width with level access.
- Provide an access door to the outside space of at least 850mm clear width with level access.
- © Consider the benefits of a sensory garden approach when choosing plants for the garden.
- Provide a pathway which is 900–1200mm wide, level and slip resistant to the clothes line, and to any shed or storage provided in the garden. The pathway should be level and close-laid, suitable for wheeled vehicles.
- Provide a pathway at a width of 1200–1500mm.
- Provide a paved area against the house of at least 1800mm in depth for the full width of the home.
- Provide a paved area against the house of at least 2400mm in depth for the full width of the home.
- Provide a pergola, canopy or other shading device.
- Provide raised planting beds 300-750mm high that are narrow enough to reach across, ideally with access from both sides with a surround to the raised bed that forms a useful seat.
- Avoid ramps and steps in the garden.
- Ensure planting is low-maintenance if the householder is not interested in or able to do any gardening.
- Provide a variable height rotary clothes line for drying laundry outside.

UD Home **⊕ ⊕** Guidance

Consider:

- Providing tall plant pots that can be accessible from a seated position.
- Installing a laid-down hose with a timed irrigation system in the garden.
- Consider installing a pathway which is 1500–1800mm wide.

Design Tip

Gardens provide a good connection to nature and are seen as an investment in the future – there is an expectation of progression and seasonal patterns which contributes to the well-being of everyone.



Large outdoor living spaces that are easy for everyone to use.



Balconies and Terraces:

Design Considerations and Awareness

All apartments, except those at ground level which have a garden, should have a balcony or terrace providing sufficient space for the whole household to sit and relax around a table, enjoy fine weather, and grow plants.

The balcony or terrace should always have level access from inside, so that it is easy for everyone to go out and enjoy the space. This will mean taking into consideration the need for deeper insulation in a terrace above a habitable room.

The balcony or terrace needs to be drained to avoid staining of the adjacent walls, and spills from one balcony falling onto the balcony below (for instance, when watering plants). It should be lit so that it can be used after dark, but the lighting should not cause a nuisance to neighbours.

A benefit of a balcony is that it can be enclosed by glazed panels as a winter garden to provide a thermal buffer for the home, and to extend its use in all seasons.

UD Home and UD Home Guidance

- Provide balconies and/or terraces to all apartments which do not have a private external space at ground level.
- Provide level access to all balconies and terraces, bearing in mind the need for deeper insulation over any internal rooms below.
- Provide balconies and terraces that are a minimum 1500mm in depth.

- Provide balconies and terraces that are a minimum 1800mm in depth.
- Design balconies or terraces as a minimum of 5m² for a 1-bed home with 2m² added for each additional bedroom (2 bed is 7m², 3-bed is 9m², etc) or as per statutory requirements.
- Provide a light to the balcony or terrace switched from inside.
- Provide visual separation between adjacent properties for privacy
- Provide slip resistant floor surfaces
- Provide easily maintained and effective drainage to all balconies and terraces, ensuring water cannot pool and create a hazard.
- Provide secure railings and balustrade at 1100mm in line with Buildings Regulations, with a continuous top rail that is supported centrally and intermittently on the underside, creating a 75mm gap below the handrail.
- Provide a handrail made from a warm material such as timber or coated metal.
- Provide a clear turning space of 1500mm diameter outside of all furniture.
- Provide balcony doors that open back against the adjacent wall for full unimpeded access to the balcony space.



Communal garden living space that is easy for everyone to use.

UD Home **⊕ ⊕** Guidance

Consider providing:

- balconies and/or terraces that are at least 2400mm deep.
- designing the balcony or terrace so that it may be enclosed by glazed panels as a winter garden in future.





Private patio garden space with level access from the house, making it easy for everyone to use.

Centre for Excellence in Universal Design

Elements and Systems 04





The building elements and systems should create a comfortable home that is easy to manage and understand, and affordable to run. The UD Home should promote well-being and good health, and anticipate the changing needs of diverse occupants, including children and older people.

4.1 Building Construction, Materials and Finishes



A strong load bearing surface has been provided throughout the shower room to allow for firm fixing of handrails wherever they might be required.

Building Construction

Design Considerations and Awareness

The home should be designed and built to provide comfort by optimising insulation, minimising heat loss and providing adequate fresh air, natural light and user control.

Flexibility of design can be achieved by providing 'soft spots' within timber or metal stud walls, where a section of wall is framed to allow easy alteration to create a link between rooms. Therefore non-load bearing partitions should be stud walls and not masonry. This applies particularly between key rooms that may at some point provide a benefit from being linked, such as living/dining/kitchen areas, a downstairs toilet and utility room (to create a larger downstairs bathroom), or between a main bedroom and bathroom.

The location of services, such as electrical sockets and switches, plumbing and drainage, should be carefully considered to ensure they do not create a barrier to

simple future adaptation. Allocated 'soft spots' should be indicated on plans to ensure co-ordination. A hand held device called a 'stud finder' is widely available for determining the location of timber or metal studs.

If stud walls, particularly in bathrooms, are constructed with "hard-spots" strong enough to take fittings and rails, the household will have optimal flexibility to customise layouts to suit their specific requirements over time.

UD Home and **UD Home** Guidance

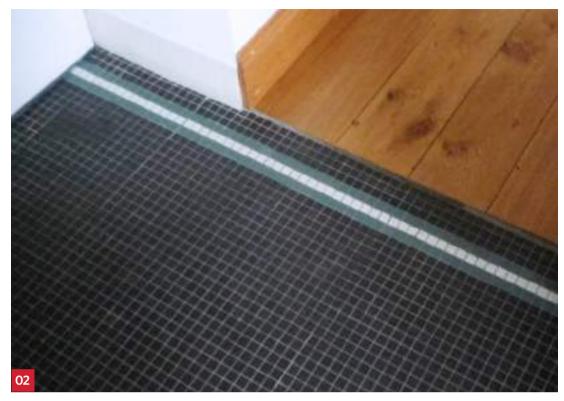
- Use insulated studwork walls for non-load bearing partitions.
- Provide 'soft spots' for future door connections between living spaces if not already connected.
- Ensure all walls and ceilings in bathrooms, toilets and main bedroom are constructed with "hard-spots" strong enough to take fittings and rails.
- Provide a 'soft spot' for a door to be made through from the main bedroom to a bathroom in the future.
- Provide future potential for downstairs toilet and utility to be combined to create a large bathroom.

Technical Sketch:

Flexibility of room lay-out by ease of removal of internal wall, highlighted in red.

Sketch Design Tip

Non load-bearing stud partitions between rooms can provide flexibility, in this case between the 2 bedrooms of an apartment. This might be useful for a couple where one person develops particular bed and medical requirements and the other person can sleep in the same room in a separate bed.



Floor materials are firm, level, securely fixed, easy to clean, visually contrasting with walls, and slip resistant when both wet and dry.

Photo Design Tip

Some people with dementia can find such a strong contrast in floor colours confusing and even prevent them entering the room.

Building Materials and Finishes

Design Considerations and Awareness

The choice of materials can have an impact on adaptability, usability, and health. For example very shiny reflective surfaces can cause discomfort and disorientation, and synthetic fabrics can cause a build up of static electricity.

Surface finishes have a significant and wide-ranging impact on the safety, legibility, and comfort of spaces within the home, in addition to defining its aesthetic characteristics. A key safety issue in buildings is the slip resistance of the floor finish and this is particularly important in wet areas such as bathrooms, kitchens, laundry rooms and garages. Slip resistance characteristics should be maintained when the surface is both wet and dry and when spillages occur.

Visually contrasting materials can aid legibility for a wide range of people. However, there is a need to avoid sharp differences in the colour of floors, especially where dark and light colours are used beside each other, as people with cognitive and visual difficulties sometimes view dark patches or designs on the floor as obstacles.

UD Home and **UD Home** Guidance

- Use low maintenance and non-toxic materials, with a preference for natural materials over synthetic.
- Use firm, durable and securely fixed floor finishes, selected in relation to the likely volume of use.
- Provide good slip resistance in flooring materials to ensure a firm foothold and wheel grip of at least R10 in bathrooms and kitchens.

Design Tip

When specifying a floor construction and material take into consideration that people with hearing difficulties can use vibrations sensed through floors to read the movement of other people. This can be an advantage or disadvantage depending on the situation. For example sprung floors in the house might make it more difficult to sleep if other people are moving around.



Key desirable characteristics of floor finishes for different areas of the home, and situations to avoid, are set out below:

Building element	Desirable characteristics of floor finishes	Things to avoid
Generally	Firm, level and securely fixed. Slip resistant when both wet and dry. Easy to clean. Visually contrasting with wall surfaces and other fixtures. Adequately and evenly illuminated.	Soft, compressible floor finishes, such as deep pile carpet or coir matting. Changes in level between adjacent floor finishes.
Entrances	Hard wearing. Firm, dense and non-directional. Effective in removing and retaining water and dirt from feet and wheels, to avoid transfer to other internal surfaces. Easy to clean. Surface flush with adjacent floor finishes. All edges firmly fixed.	Any form of compressible or directional matting, including coir. Loose-laid mats.
General rooms	Adjacent surface finishes should be flush. Matt or satin finish. Plain, mottled or small patterning with complementary colours. Even level of illumination.	Large areas of shiny or reflective surfaces. Bold patterns and stripes. Shiny or polished surfaces that create glare
Corridors and access routes in apartment blocks	Flush with adjacent surface finishes. Matt or satin finish. Plain, mottled, or small pattern with complementary colours. Even level of illumination. Possible use of colour coding to aid orientation and wayfinding.	Bold patterns and stripes. Large areas of shiny or polished surfaces. Lighting design that causes dark shadows.

Building element	Desirable characteristics of floor finishes	Things to avoid
Stairs and ramps in communal areas of apartment blocks	Greater slip resistance for ramps and inclined floors than for horizontal surfaces. Ramp slope to visually contrast with landings. The top and bottom of a flight of steps to visually contrast with the tread and riser surfaces. Where different materials are used as a warning of a change in level such as steps, the slip resistance characteristics of each to be similar. Floor finish for treads, risers, and step nosings to be consistent throughout a flight. Floor finishes to extend the full width of each step. Step nosings to be firmly fixed and extend to the full width of each step. Matt finish with plain, mottled, or small patterns using complementary colours.	Warning surfaces that have different slip resistance characteristics. Floor finishes that do not extend the full width of a flight of steps, such as carpet runners. Lighting design that casts a shadow obscuring the step edges. Large areas of shiny or reflective surfaces. Bold patterns and stripes.
Lifts in apartment blocks	Similar slip resistance characteristics to landing floor finishes. Light colour or tone that contrasts with lift walls.	Bold patterns and stripes. Dark floor finishes. Surfaces with different slip resistance characteristics to landing floor finishes.
Wet rooms	Non-abrasive. Comfortable underfoot. Easy to clean. Laid to recommended falls (1 in 50) away from circulation routes. Incorporating flush drain covers. Continuing under worktops and base units in kitchens. Provide underfloor heating to wet rooms.	Surfaces that become slippery when wet. Profiled surfaces that can be uncomfortable to walk on or difficult to clean. Channel drains and recessed drains that may present a trip hazard and are difficult to clean.

4.2 Fit-Out Elements

While fit-out elements such as windows, doors, light switches and signage can be retrofitted to suit specific needs, in a UD Home they should all be easy to use in the first instance by the widest possible range of users regardless of age, size, ability and disability.



Photo Design Features

Photo Design Tip

Alarm control and intercom handset should be located between 750 and 1000mm and the lock should be at least 72mm below the handle, or preferably located above.



Use of lever handle that returns back towards the door to avoid catching clothes.

Photo Design Tip

1 Ideally locks should be located above the handle, or at least 72mm below.

Windows, Doors and Ironmongery

Design Considerations and Awareness

Windows should be easy to use, operate and maintain for the widest possible range of people, both standing and seated. Therefore the height of sills and opening mechanisms should be carefully considered. For example lever handles that are easy to identify are preferable, as are hinged windows with restricted opening that keep the handle accessible for closing. It may be desirable to provide a locking mechanism to the window, integrated into the handle or as a separate device. These should also be easy to operate by everyone. Safety catches should be provided to ensure children's safety near windows and while operating them.

Design Tip

The choice of door furniture should not compromise the guidance on clear widths and positioning (see section 2). Lever handles should return back towards the door to avoid catching clothes.

UD Home and **UD Home** Guidance

Window controls should be lever handles capable of being operated by one hand and at a height between 850mm and 1200mm above floor level.

- Window sills in habitable rooms should be no more than 850mm above floor level.
- Provide door handles that are clearly identifiable and contrast with the door background, are within reach and easy to use.
- Provide pull and/or lever handles rather than knobs to doors.
- Position lever handles between 800mm and 1100mm above floor level, preferably at 900mm.
- Use only winged or lever thumb-bolts where necessary for toilets and bathrooms.
- Locate door locks above the handle, or at least 72mm below the handle
- Install low-friction hinges to minimise opening and closing forces.

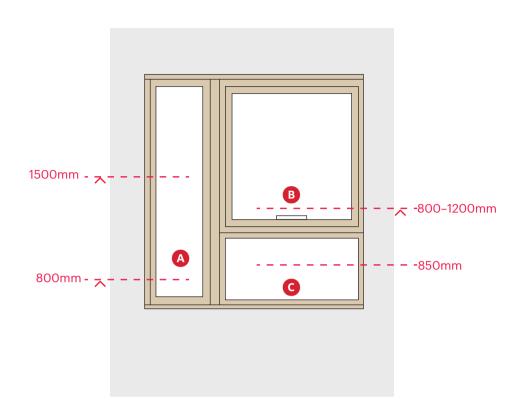
UD Home ⊕ ⊕ Guidance

Consider providing:

- pull handles (to pull a door closed behind the person)
- push plates (for doors which push open)
- kick plates (at the bottom of doors which might get damaged depending on type of daily use).

Technical Sketch:

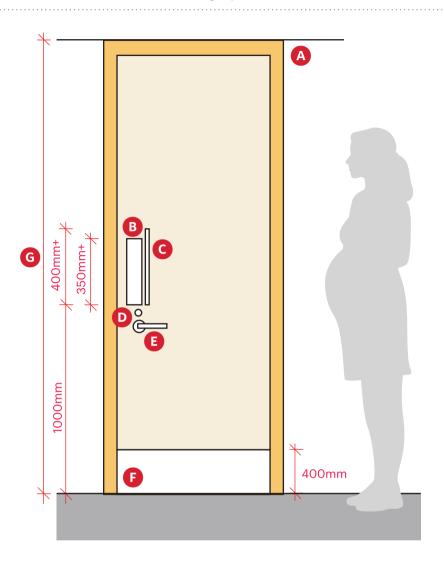
Window elevation dimensions from inside.



- A void window transoms between 800 and 1500mm from floor level for unobstructed views in at least one section of the window
- B Windows should be capable of being opened by one hand with lever handles between 800 and 1200mm
- **C** Window sills no higher than 850mm

Technical Sketch:

Elevation of internal doors and ironmongery.



- A Colour contrast between door, frame and walls
- B Push plate at least 350mm long
- C Pull handle at least 400mm long
- D Lock located above the handle or at least 72mm below
- E Lever handle is preferred for ease of use with handle height at 800-1100mm above floor level
- 6 400mm kickplate at base of door helps prevent damage
- **G** Full storey height door where possible







Data and power connections are provided at 2300mm for future assisted living technologies installations, and adjacent to windows for actuators.

Photo Design Tip



High level power and data sockets will allow for future assistive technology. installations and power supply to actuators by windows for future provision of remote controlled window dressing operation.

Electrical Fittings

Design Considerations and Awareness

Electrical cables, such as incoming electrical mains and parts of equipment emanating electromagnetic fields, need to be located where they will not cause interference with hearing enhancement systems.

The height and functioning of electrical fittings should be carefully considered. Consistency in positioning, visibility, and ease of use are key. For example, light switches should be positioned a consistent distance away from a doorframe throughout a UD Home, and 2-way and 3-way switching will ensure people never have to move through a dark room in order to reach a light switch. This is particularly relevant on stairs.

Dimmer switches can be useful when coming from a dark space into one which is well-lit, or vice versa, as the sudden contrast in lighting levels can be uncomfortable, particularly for people with visual difficulties.

Switches that require gripping or twisting will not be suitable for a wide range of users.

Large rocker switches are recommended as they require less accuracy in using them, and so are suitable for most people, but especially those with little upper arm strength or manual dexterity.





Sockets are provided at a consistent height and level.

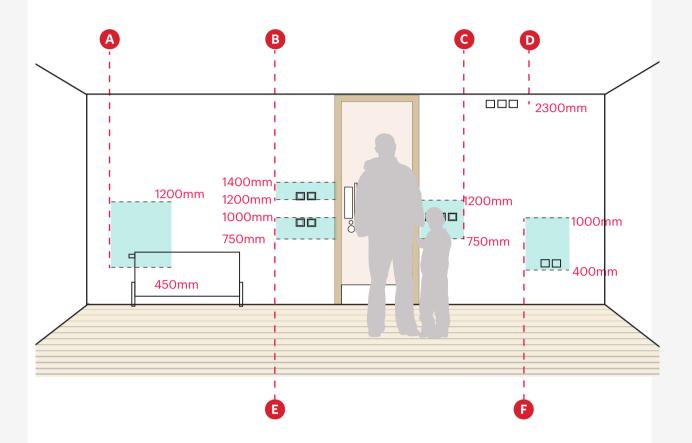
Push pad or rocker switches are easier for everyone to use.

UD Home and **UD Home** Guidance

- Ensure all outlets, switches, sockets and controls are clearly visible and easy to reach and operate using one hand and do not rely on single finger operation.
- Ensure switches, background and mounting surfaces are visually contrasting with surrounding surfaces.
- Use a consistent arrangement, position, style and sequence of fittings throughout the home.
- All outlets, switches and sockets should be installed at a consistent height between 450mm to 1200mm from the floor and at least 500mm away from any internal room corner.
- Avoid locating any fittings less than 500mm from an internal corner.
- Install two- or three-way switching as necessary.
- Provide light switches to the bottom and top of stairs.
- Automatic lights, such as those provided in common stairs and corridors, shall have timers set to suit the needs of all the occupants and their likely visitors. It should be possible to adjust the timing to suit different requirements of the residents.
- Provide all light switches and other switches (such as security systems, heating controls, etc) that are toggle, rocker, or push pad in design.
- Ensure all switches and devices are easy to use and do not require greater than 22Newtons force.

Technical Sketch:

Recommended heights of electrical fittings and controls.



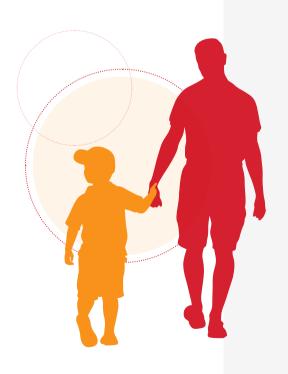
- A Thermostatic radiator valves 450 1200 mm
- B Electricity and gas meters 1200-1400mm
- C Light switches and permanently wired switches 750-1200mm
- Assisted living technologies outlet points for power and data @ 2300mm
- E Switches and controls for intercom, ventilation, heating 750-1000mm
- **■** Electrical sockets, TV and telephone outlets 400–1000mm

Provide power supply to internal doors, above and beside window heads and at skirting level to provide for future automatic devices, such as assisted door openers, ceiling hoists and automatic curtain/blind opening.

UD Home **⊕ ⊕ G**uidance

For ease of use for everyone:

- avoid multi-gang switches as these can be confusing
- incorporate text into 'on' 'off' switches, or where status is identified by coloured lights, as many people have poor colour identification.





Clear large font signage with contrasting yellow colour braille strip below text.

Signage

Design Considerations and Awareness

In the communal areas of housing developments signage should be required for wayfinding and communication of information. Signage should be easy to use for everyone and therefore positioning, accessibility, consistency and visibility should be considered. Information should be concise and use familiar language and symbols. The use of abbreviations should be avoided as these may not be understood by everyone. Arabic numbers (1,2,3 etc.), rather than Roman numerals, should be used only.

Signage used in domestic buildings will include information signs, directional signs, identification signs and mandatory safety signs. In large residential developments it may be necessary to provide a floor plan or map to help people orientate themselves. Signage should not obstruct the movement of any users.

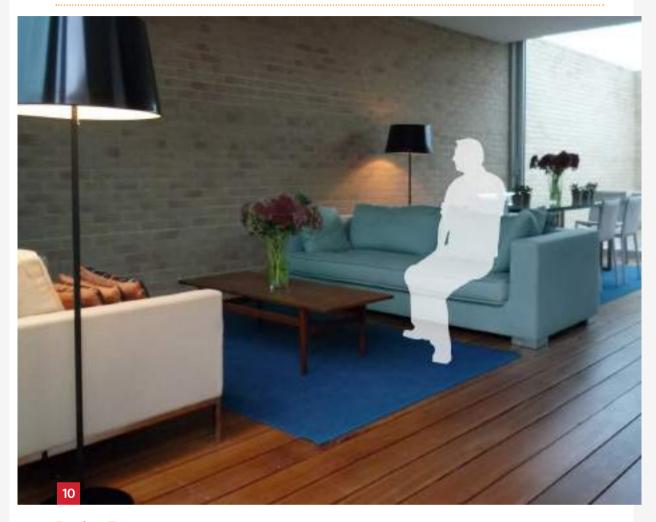
UD Home on and UD Home Guidance

- Incorporate tactile information (Braille) in signage below the related text and within reach of users.
- Ensure all signs are clear, consistent and easy to understand.
- Use a clear, sans serif typeface.
- Use capitals only at the beginning of sentences and names and align wording to the left.
- Keep wording brief and avoid abbreviations.
- Use internationally recognised and/or easily understood symbols and pictoral signs where possible.
- Use large arrows to signal direction.
- Use contrasting colours or shades and avoid glare by using matt or satin finishes.
- Suspended signs should be higher than 2000mm above floor level.
- Ensure signage is properly and adequately lit (see section on artificial lighting below for guidance on illumination levels).

Recommended letter heights in signs:

Viewing distance (mm)	Recommended letter height (mm)
6000	200
4600	150
2500	100
2300	75
1500	50
750	25

4.3 Internal Environment



Design Features:

Photo Design Tip

Manifestations on the glazing will help legibility and therefore safety

Floor rugs could be a trip hazard.



The interior is well lit from two directions (to front and behind camera).

Photo Design Tip

Views of recognisable landmarks can reduce anxiety and disorientation.

Natural Light

Design Considerations and Awareness

The quality and quantity of natural light can have a tangible effect on well-being and mental health, as well as assisting in light/colour definition.

Views onto the external environment help people orientate themselves in the neighbourhood, and also appreciate the time of day or night.

Careful window placement can reduce reliance on artificial light and mechanical ventilation.

UD Home and **UD Home** Guidance

- All homes should be dual aspect at a minimum.
- Achieve an optimal balance between natural light and heat loss in line with Part L (Conservation of Fuel and Energy) and Part F (Ventilation).
- © Sun-shading devices such as blinds, moveable screens, solar control glass and "brise soleil" should be fitted as required to reduce glare from direct sunlight.
- Provide discrete views of recognisable external spaces and features.

UD Home **⊕ ⊕** Guidance

 Where practical, at least one bedroom should have a window that faces east, as this can aid sleep patterns and therefore promote well-being. There are also benefits to placing living spaces to the south and west, service or heat creating spaces to the north, in terms of energy efficiency and well-being.



Artificial Lighting

Design Considerations and Awareness

Good artificial lighting is essential for everyone. It enables people to move safely and independently around a building or external environment at all times and to participate in a wide range of activities. The quality and quantity of artificial light has a tangible effect on well-being, mental health and comfort.

The design of artificial lighting needs to be considered in tandem with natural light and avoid glare, strong shadows and light pooling. The lighting system must allow flexibility for a diverse range of users, be affordable and energy efficient to operate, and easy to understand and use.

Design Tip

Best practice is to bounce light off surfaces and diffuse the light so as to avoid creating a hot spot in the field of vision.

UD Home and **UD Home** Guidance

- Provide a lighting system that can accommodate additional fittings and provide options for various brightness levels.
- Avoid glare by carefully considering the position of lighting sources in relation to areas where tasks may be carried out.
- Provide even task lighting, particularly for kitchen work surfaces, to ensure that people are not working in their own shadow.
- Provide an even distribution of diffused light where possible.
- Avoid creating strong shadows, especially where there are steps.
- Avoid fittings which do not entirely cover the light source, where the light source may be visible and cause glare.
- All lighting installations should be designed to be compatible with other electronic installations and radio-frequency equipment, so that they do not cause interference with hearing enhancement systems.
- Downlighters should be fitted with diffusers.

- Avoid installing uplighters at floor level.
- Light bulbs should be located where they can be changed easily, or using pull-down light fittings where appropriate.

UD Home **⊕ ⊕** Guidance

• Install photocell lighting between bedrooms and a bathroom to assist wayfinding at night.

Recommended levels of illumination in internal environments:

Location in home	Recommended level of illumination (Lux)
Houses:	
Entrances	150
Toilets, shower rooms and bathrooms	300
Switches and controls	100
Counters	300
Communal areas in flat blocks	*
Corridors, passages and walkways	150
Steps, ramps and landings	200
Lift landings and lift cars	200
Lift control panels	100
Signs, maps and information displays	200





A vent is provided in each room to supply a constant flow of fresh pre-heated air. Stale and moist air from bathrooms and kitchens is extracted.

Ventilation Systems

Design Considerations and Awareness

A UD Home should provide a ventilation system, whether natural/dynamic or mechanical with heat recovery, that is easy to use and has optimal user control and flexibility. The system must should be in line with Part L (Conservation of Fuel and Energy) and Part F (Ventilation), and design out draughts and minimise heat loss.

Mechanical ventilation heat recovery (MVHR) units should be located in a utility or other ancilliary space that is accessible. The main unit should be at a height where everyone can change or clean filters, whether seated or standing.

UD Home and UD Home Guidance

- Ventilation strips in windows should be straight forward to use with one hand and located within easy reach of people of different heights, seated or standing, and no higher than 1200mm above floor level.
- Install only flexible and low maintenance ventilation systems that are easy to understand and use, affordable and reliable, with easily replaced parts.
- Select the ventilation system on the basis of the minimal noise impact and low energy consumption.
- Locate MVHR systems in accessible ancilliary spaces, with controls and filters no higher than 1200mm above floor level.



A low surface temperature radiator is provided with the TRV control between 450 and 1200mm above floor level. There is good colour contrast between floor, wall, thermostatic radiator valve (TRV) control and radiator.



A low surface temperature radiator is recessed into a wall to avoid creating an obstruction and narrowing the corridor. There is no colour contrast between the wall and radiator which might make it difficult for some people to locate.

Heating Systems

Design Considerations and Awareness

A UD Home should be designed to reduce heating energy requirements and be energy and cost efficient. Where possible the use of renewable energy should be considered in order to increase resilience to energy crises, help reduce carbon emissions and running costs.

Part L of the Building Regulations lays down mandatory standards for thermal insulation in new dwellings. Technical Guidance Document L - Conservation of fuel and energy (which is currently under revision) has guidance as to how these standards may be met.

In individual cases where the aim is to exceed statutory requirements an innovative approach should be encouraged within specific best practice.

For apartment buildings over 1000m2, the Energy Performance of Buildings Directive, requires designers to carry out a feasibility assessment of alternative energy systems before construction. Guidance and assistance on this is available from the Sustainable Energy Authority of Ireland (SEAI).

Efficiency, affordability and environmental impact, e.g., emissions of CO2 and other harmful gasses, are particularly important in the context of sustainability. It is recognised that natural gas is the most efficient non-renewable source of fuel for space heating. Designers may however wish to consider the possibility of utilising renewable sources of energy such as solar collectors, photo-voltaic, hydropower, wind power, wood pellets, biogas, geothermal sources, or where available local source of waste heat energy etc.

Heating systems must be low maintenance and reliable, with simple instructions and accessible controls. It may be appropriate for controls to be located separately from the heating equipment for ease of access.

The safety, comfort and health of users should be considered. For example underfloor heating and wall mounted radiators have different response times, which can make them more or less suitable for specific people. Also, it is critical to consider the different and often reduced sensitivity to heat for different people depending on factors such as age, physiology and medication. Low surface temperature radiators, or covers, can be provided, but these are not as efficient as standard uncovered radiators.

UD Home on and UD Home Guidance

- \odot Control panels for heating systems shall be positioned between 1200 and 1400mm above floor level, with a clear space of 1100 \times 700mm in front.
- All radiators should be fitted with thermostatic radiator valves (TRVs) and at heights between 450 and 1200mm above floor level.
- Install underfloor heating in wet rooms within a separately controlled zone.

 By providing a flexible heating distribution system with a combination of underfloor heating and radiators, a UD home can accommodate a wide range of preferences. Underfloor heating can provide efficiently distributed heat and radiators can provide a fast response time.



Sound

Design Considerations and Awareness

Environments which are acoustically-balanced are beneficial for everyone, particularly people with hearing difficulties and for those who have cognitive, mental health or visual difficulties.

UD Home and **UD Home** Guidance

- Ensure that quiet rooms within the home, such as bedrooms, are located away from any source of external noise, such as a road outside, or communal lift.
- Ensure adequate sound proofing glazing is provided when locating a home near to busy transport infrastructure.
- Use bathrooms and lobbies as a buffer zone between quiet areas and noise generating areas, for example between a communal stair and a bedroom.
- Use planting/fencing to help reduce noise pollution where necessary and practical.
- Ensure there is adequate acoustic separation between dwellings to exceed Part E (Sound) by 3-5dB.
- **©** Ensure adequate sound proofing between rooms and floors within a dwelling.



4.4 Technology Systems

Smart home services for security or entertainment enjoyed by everyone in their homes can also work for the integration of assistive technologies for people with a disability, or for older people living alone.

Safety and Security Systems

Design Considerations and Awareness

Alarm systems should be easy to use. They should provide flexibility in order to meet the requirements of any occupants or visitors with visual or hearing difficulties.

Loud noises from alarms can induce disorientation and anxiety in everyone. They can also mask sounds which people with visual difficulties rely on to aid orientation including verbal communication. Similarly certain frequencies of flashing light can exacerbate or induce some mental health conditions or epilepsy.

Locations and maintenance of heat and smoke detectors must be in line with Fire Authority guidance and the Department of Environment, Community and Local Government leaflet 'Fire Safety: Be on your guard', available at www.environ.ie.

Locations of sensors for intruder alarm systems should be designed on a case by case basis. Please refer to An Garda Síochána Crime Prevention Information Sheet 'Home Security: Intruder alarms' available at www.garda.ie.

For guidance on access controls and intercoms please refer to Section 2.

UD Home and **UD Home** Guidance

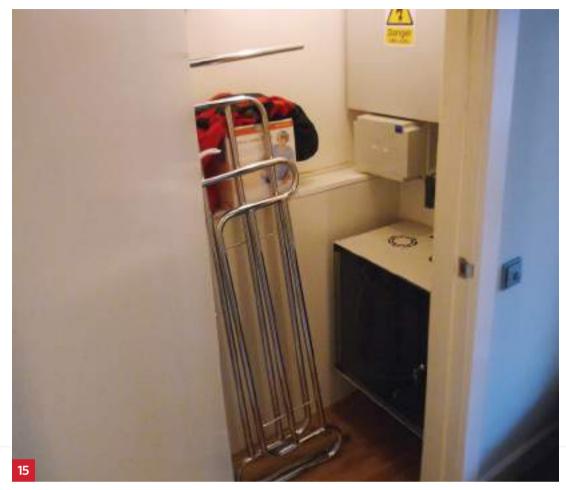
- All alarm systems should allow for future adaptation to both audible and visual signals.
- Install alarm control boxes and panels at between 750 and 1000mm above finished floor level.
- Install a heat detector in the kitchen, rather than a smoke detector, to avoid false alarms when the toast is burnt.

- Alarms should not exceed 120dB. Install multiple quieter alarms to achieve an even distribution of the signal.
- Install carbon monoxide / gas detector alarm unit in the kitchen and/or adjacent to any gas appliances.
- visual alarms should use flashing lights between 2 and 4 Hz.

UD Home **⊕ ⊕** Guidance

• For specific cases where a person may have hearing and visual difficulties, smoke alarms that activate vibrating pads are helpful. Vibrating pads can be located under seats or a pillow, for example, in order to alert a person with hearing difficulties.





A hub of interface devices is located in an accessible and ventilated cupboard accessed from the entrance hall.

Assisted Living Technologies

Design Considerations and Awareness

Assisted living technologies in the home are supported by power and data circuits or wi-fi, and other core electrical infrastructure. They should be designed and installed in a co-ordinated manner to ensure optimal flexibility, efficient adaptation and ease of use.

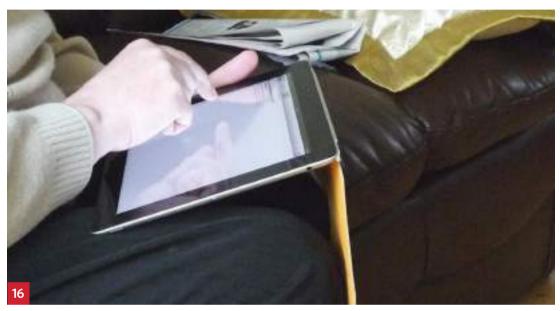
Assisted living technologies can provide social connectivity, activity monitoring to assess general well-being, health support, and smart control of utilities in an integrated system. The infrastructure and integrated system should allow efficient response to the changing needs of an individual and the variety of needs within a family.

The infrastructure should optimise flexibility and efficient adaptation, providing the capacity to add on devices in any location with little or no disruption to the building fabric or finishes.

Power cabling circuits should be flexible and allow additional spurs to enable additional devices to be installed in any location with no disruption.

A designated and accessible space is required for a hub (intelligent control) of interface devices including the communications protocol hub, data network (wired and wireless), mains power network, and services (gas, water etc.). If this is a store accessed off a fire compartment it must be fire-rated in line with Building Regulations.

Speakers or amplification loops can be built-in to homes to allow some people to hear better without having to increase the sound input from the source. Alerting devices for hazards such as fire, burglary, flood or even visitors, are also useful.



Communication devices like iPads and PCs can be used to control and manage health, security, indoor environment and entertainment for a resident.

Assisted Living Technologies: Health

With the right infrastructure in place, new telehealth and monitoring equipment can be added almost anywhere in a UD home. For example, it will be possible to monitor an illness remotely so that a resident can live independently for longer. Sensors can be fitted to help with safety and security, falls and fear of falling, and many health related conditions. Devices that can be installed include pulse oxymeters, glucometers, asthma monitors, fall detectors, and many others. The monitoring can provide information and comfort to residents, health services, family and friends.

Each UD home can adapt to the changing needs of a resident once programmed to sense any changes in movement or physiology so that assistance can be activated if and when needed.

Assisted Living Technologies: Environment

The infrastructure can facilitate devices that provide easily accessed information on environmental conditions internally and externally, such as temperature and weather. Heating systems can use this information to regulate internal temperatures, taking into account external conditions, making them easy to use and with cost and health benefits

Control of the internal environment can be improved for people with less mobility and dexterity. Home automation functions can be installed including remotely controlled light and heating, as well as opening doors and windows.

Monitors can also communicate how much electricity and other utilities are being used, enabling residents to better manage consumption in a cost and energy efficient way.

Assisted Living Technologies: Communication and Entertainment

The infrastructure can also enable provision of easy-to-use communication and entertainment devices. This can connect people to friends, family and carers on a 24/7 basis, as well as providing TV and internet services. At various stages in the lifecycle, technology can help people to maintain their autonomy and social connectedness while at the same time increasing a sense of safety, motivation and self-confidence.



UD Home and **UD Home** Guidance

- Install CAT6 data communication cable (or higher specification), and power cabling around all habitable rooms to allow for additional spurs to be created in any location. Provide blanked off connections at key locations such as windows and doors, and in all rooms at 2300mm for future technology installations.
- Provide an integrated system that allows devices and systems to synchronise their operation, delivering optimal functionality, robustness and efficiency.
- Provide an accessible ventilated cupboard space with a power supply to house the hub (intelligent control) of interface devices.
- Install a smart meter or electrical energy monitor device (In-Home Display) with visual display to communicate how much energy is being used, and at what cost, at any moment in time. Use a flexible unit that can be fitted at any height.

l	Universal Design Guidelines For Homes in Ireland		

Appendix A: Summary of Stakeholder Consultation Process





Appendix A Summary of Stakeholder Consultation Process

The aim is that these Guidelines will inform national policy and be used in practice by all stakeholders – those who design, build, provide and occupy homes – so early consultation in informing the approach to developing the Guidelines was critical. This Guidelines document is informed by: distilling existing research undertaken by the National Disability Authority's (NDA) Centre for Excellence in Universal Design (CEUD); a literature review of international guidance; and a consultation process with stakeholders by the MCO/PRP team. MCO/PRP gratefully acknowledges the participation of all those who engaged with us in the consultation process. This was invaluable to us in preparing the Guidelines with CEUD.



Slide from stakeholder workshop presentations

The development of these Guidelines builds upon earlier work and consultation by the CEUD, most recently for the NDA's revised *Buildings for Everyone: A Universal Design Approach* published in 2012. The open consultation process engaged key stakeholders from umbrella organisations representing groups relevant to Universal Design (size, age, ability, disability), Local Government, Government Departments and State Agencies, research and development groups, and representative bodies for the construction industry and related design professions.



Slide from stakeholder workshop presentations

Stakeholder Consultation Meetings:

The process involved initial one to one consultation soundings and meetings, and stakeholder workshops. At the outset, 113 individuals in 97 organisations were contacted by MCO/PRP to request initial consultation by one-to-one telephone soundings or meetings. A high response rate of 76% to the initial letter and phonecalls was achieved, with over 72% engaging in one-to-one soundings.



Slide from stakeholder workshop presentations

To provide consistency in approach and documentation of information shared, all stakeholders were invited to respond to the following four key areas for discussion:

- 1. Key issues and priorities for universal design from the perspective of your organisation.
- 2. Existing national or international research or guidelines relevant to universal design for homes and your organisation.
- 3. Barriers and opportunities in relation to achieving universal design in homes.
- 4. How you might like to engage further in this consultation process.

An understanding of the challenges and opportunities for UD Homes emerged as well as detailed contributions on key design features, what works well, and what needs to work better in practice for quality home design for everyone. Key Considerations for the Guidelines were informed by the consultation, including the need to:

- Promote a shared understanding of Universal Design
- Establish a consensus in approach to UD Home guidance
- Produce guidance that responds to diverse user and constituent group needs
- Avoid duplication with existing guidance or conflicts with existing regulations

Stakeholder Workshop 1:

The first stakeholder workshop on Universal Design Home Guidelines was convened on the 14th March 2012. in the Radisson Hotel. Dublin.

The aim of the workshop was to:

- Facilitate participation and inputs to shaping the Guidelines
- Share with the diverse stakeholders the high level findings from the Initial Consultation
- Inform the development of the Guidelines document
- 'Test' a draft format, structure, and content of the Guidelines
- Assess any issues of concern and agree how best to engage stakeholders in the final stages of development of the guidelines



The workshop was facilitated by Eve-Anne Cullinan of MCO Projects with presentations from Lesley Gibbs of PRP and Philip Crowe of MCO Projects, and contributions from the client Ger Craddock and Neil Murphy of the CEUD. Each discussion table was moderated by an MCO team member to record the stakeholder views.

Stakeholder Attendance:

The workshop included 38 people representing over 30 organisations. The consultation process sought to engage stakeholders that are reflective of the

target audience for the guidelines – home occupants, designers and providers. Attendance on the day interestingly reflected a balance of these different key constituent groups, such as organisations representing groups relevant to universal design, Government Departments, National and Local Authorities, Housing Agencies, representatives from professional design institutes, and the construction industry. A mix of stakeholders was also encouraged across the 5 tables for discussion to raise awareness and better understand the different perceptions across the stakeholders about Universal Design Homes.





High level Outcomes:

- 1. There was strong engagement and level of interest evident from the stakeholders. The inputs were very constructive and feedback was positive on the:
 - a. Concept of Universal Design Homes and format of the workshop
 - b. Diverse mix of stakeholders attending
 - c. Presentation and information provided
 - d. Level of engagement of stakeholders in the discussions
- 2. It was noted by CEUD that a focussed working group would inform the development of the guidelines in detail and that all stakeholders would be issued the guidelines for feedback before completion.

- The stakeholder engagement process to date was presented and no gaps were identified or concerns expressed. Participants were invited to contact MCO following on from the workshop with any further thoughts for consideration.
- 4. The process, proposed approach, structure and content of the document were presented and feedback taken through facilitated table discussions.

The summary key issues and impacts for the Guidelines document were recorded based on the frequency of themes communicated across the discussion tables. Feedback from the discussion tables was then summarised under:

- a. Purpose and Use of the Guidelines in Practice
- b. Impact on document content, structure, formatA record of the Workshop Findings was circulated to all Stakeholders for feedback, including all those who did and those who did not attend the workshop.

Stakeholder Workshop 2

The second workshop was held with a Working Group in the National Disability Authority's Centre for Excellence in Universal Design (CEUD), on 28th March 2012.

Purpose of the Workshop:

The purpose was to convene a working group of people from different constituent stakeholders (home providers, designers and occupants) to:

- 1. Review progress with the Drafting of the Guidelines as informed by the initial consultation and the previous Stakeholder Workshop;
- 2. Respond to how the developed proposals for the content and structure of the Guidelines responds to the Consultation process to date;
- 3. Assist the team shape the final stages of development of the Guidelines in advance of issue to all stakeholders.

The format for the workshop meeting facilitated by MCO Projects was:

Presentation of revised Guidelines in Practice

- Overall Purpose and Key Principles
- Proposed Approach to the Guidelines Rating System
- Content and Structure of the Guidelines
- Facilitated Round Table Discussion on the Guidelines
- Navigating the guidelines and Level of Information
- Text, Drawings and Format

High Level Outcomes:

- The progression of the Presentation of the Guidelines in Practice was evident, and was considered to reflect the findings from the previous workshop of 14th March. Specifically, the Purpose, Context and Key Principles responded well to the feedback from consultation.
- There were different viewpoints at detailed level in relation to the Guidelines Rating System, but the Working Group recognised that this project was a first step in relation to thinking differently about Universal Design Homes, and should not duplicate existing standards and regulations (eg Part M)
- Though many of the ideas and suggestions from consultation (for raising awareness through the web, taking a branded quality mark approach, regulation) were worthwhile and would be considered by CEUD in the future, they were beyond the scope of this specific project. The Working Group were of 'one mind' in relation to what this specific project can achieve and the key issues were summarised and fed back to the group by the Facilitator at the meeting (detailed below).
- It was agreed that all project stakeholders be requested to complete a short survey for immediate feedback to inform the final stages of the Guidelines preparation.

Key Issues re Guidelines in Practice

- The Guidelines are a first step towards changing perceptions and the quality of housing in Ireland. In the future this might progress towards integration with policy and regulation.
- 2. The Guidelines present the opportunity for Universal Design Homes in Ireland, and work alongside existing regulations and Guidance.
- 3. The focus is on ease of use, flexibility and future adaptability for everyone. Universal Design Homes are about really good practical design quality that is affordable.
- 4. The big picture ambition is to mainstream Universal Design Homes in the future. The Guidelines are one project that will include the consumer audience as well as the provider and designer technical audience. There are future potential projects that could help drive demand and influence that are not part of this specific project, such as web based information.
- 5. This is an opportune time and the Guidelines are a start to help change mindsets about future planning for lifestyle, lifecycle and lifetime patterns. The key is to inspire people to think about what is the smart thing to do, and not just what they have to do.

6. However, the specific project is to provide:

- a. Guidance for Universal Design Homes for home occupants, providers and designers; and to inform integration with policy at National and Local Government level in the future
- b. A Quality System to illustrate and promote Universal Design
- c. Drawings and sketches to communicate concepts and details
- d. Photographs, to engage consumers and designers, that communicate what works and what could work better.
- 7. The cost/benefit study to be undertaken as a separate project will influence the final guidelines to be adopted. This is beyond the scope of the current project but will provide important case studies and an evidence base for the shift to universal design thinking in the future.
- 8. Other stakeholder suggestions are also outside the scope of this current project, such as detailed:
 - a. Guidelines for retrofitting and adaptations of existing homes
 - b. Consumer guides or checklists for home buyers
 - c. Checklists for planners
 - d. A web resource for home occupants, providers and designers

The Guidelines Text, Images and Drawings should be developed to:

Be **user friendly,** with a focus on communicating a lifestyle, lifecycle and lifetime 'story' in **design** and not just about spatial issues and measurements

Be relevant to all types of homes including apartments.

Use non-institutional, desirable images in home design and should highlight exemplars / best practice models

Distinguish the general consumer section in content from the technical sections but *all within one document*

Make use of 'Design Tips' to communicate where there are contradictory or challenging aspects for different needs

Make use of **checklists** for the quality system

Not be prescriptive but **use inspirational language** to raise awareness:

Present *more than one design option* to help overcome prescription

Use **sketches** in relation to design details for ease of application.

Avoid setting minimums but propose *ranges* for dimensions

Report and Stakeholder Survey

At each stage of the process stakeholder consultation was documented and issued in reports to stakeholders for feedback. In April 2012 a report was issued for feedback to all Stakeholders invited to engage in the project and comprised:

- report of findings from the stakeholder workshop of 14th March.
- the key outcomes of the Working Group meeting held 28th March;
- updated presentation of Guidelines reflecting consultation;
- on-line Survey re key outcomes of the consultation.

The survey was completed by 26 stakeholders, representing a balance of constituent groups, designers, occupiers and providers. The survey sought to re-affirm the consensus achieved in the workshops on key aspects of the approach to the Guidelines. Whilst the limitations of the survey are acknowledged, the response is indicative of strong consensus among stakeholders on key issues. There was also strong interest from stakeholders in further consultation on the actual Guidelines.

Stakeholder Feedback relating to issues outside the Brief of these Guidelines:

Throughout the consultation process, common themes emerged that are outside of the brief for these Guidelines and relate to the wider strategic implementation context for universal design. These include:

- The need for integration within a social, cultural and community context;
- The impact of 'Vision for Change' and the role out of a new care services model;
- Person-centred budgeting and planning;
- Existing housing stock and retrofitting;
- Education/training at 2nd and 3rd level, and within professions;
- Opportunity for 'live' resource and continual promotion of 'what works'.
- Consumer choice, marketing of UD Homes Guidance.

Additionally stakeholder suggestions for further work towards the practical delivery of UD Homes were received. Detailed reports of all stages of the consultation process have been provided to the CEUD for review and consideration towards the implementation of UD Homes.

Decision re Status of the Guidelines informed by Consultation:

The CEUD considered the outcomes of the consultation process. It is evident that the Guidelines are one step in the process of raising awareness and inspiring people to think differently about the benefits of Universal Design Homes.

The CEUD upon considering the outcomes of the Stakeholder Consultation Process, decided to prepare Guidelines and that they would remain in Draft until such time as the proposed Cost/Benefit study to be undertaken by CEUD as a separate project is completed.

This is in response to the view of stakeholders that the Cost/Benefit study will be a key influencing factor in how the Guidelines are embraced and used by all sectors in practice.

The CEUD will be engaging Stakeholders in further consultation on the Guidelines as part of the Cost/Benefit Analysis process before the National Disability Authority/CEUD adopt the Guidelines for Universal Design Homes for Ireland.

We gratefully acknowledge the time and in-puts of all the stakeholders who have engaged with us and participated in the process to inform the development of these Guidelines.

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Appendix C: Terminology





Appendix C Terminology

Accessible

With respect to buildings, or parts of buildings, means that people, regardless of age, size, ability or disability, are able to both access and use the building and its facilities.

Acoustics

Characteristics relating to sound.

Actuator

A type of motor for moving or controlling a mechanism such as automatic door opening devices, or automatic blinds on windows.

Assistive Technologies

technological devices (equipment or systems) that are used to increase, maintain, or improve functional capabilities of individuals.

Bathroom

A room comprising a bath, WC, washbasin, and associated accessories.

Building

A permanent or temporary structure of any size that accommodates facilities to which people have access. A building accommodating sanitary facilities may include a toilet block in a public park or shower facilities at a campsite. A temporary building may include portable toilet facilities such as those provided at outdoor events.

CAT6

A data communication cable standard for Gigabit Ethernet cable.

Clear width

The width between handrails.

Communal

An area that a group of individual people will share for a common purpose. A communal changing area will be a room for people to change and will typically comprise an open area with minimal privacy.

Designated car parking

Car parking spaces reserved for the use of car users with disabilities, whether as motorists or passengers.

Dog-leg/Switch back stairs

Configuration of stairs between two floors of a building, often a domestic building, in which a flight of stairs ascends to a half-landing before turning 180 degrees and continuing upwards. The flights do not have to be equal, and frequently are not.

Door ironmongery

A collective term for components including hinges, handles, locks and self-closing devices, which are used to facilitate the correct functioning of a door. May also be termed 'architectural ironmongery' or 'door furniture'.

Dropped kerbs

A lowered section of kerb between a pavement and carriageway forming a level or flush crossing point. Also referred to as dished kerbs.

Electrical Energy Monitor

A widely available device that monitors electrical usage in the home. A wireless visual display can be conveniently located in the home to communicate how much energy is being used, and at what cost, at any moment in time.

Going

The horizontal portion of each step that is stepped upon. Also referred to as the tread.

Handrail

Component of stairs, steps or ramps that provides guidance and support at hand level.

Homelift (or Platform lift)

An enclosed lift on all sides with solid or glazed panels, rising in a dedicated shaft, but not needing a machine room or pit. It is suitable for someone standing or in a wheelchair. It can travel larger distances than a through-floor lift, so is therefore suitable for three-storey dwellings or more.

Laid to falls

Paving and drainage that relies on fall to carry away water. Fall may also be referred to as slope or, more correctly, gradient. By making one part of the pavement higher than another, gravity will cause the water to move in a preferred direction.

Leading edge

The opening edge of a door adjacent to the handle.

Matwell

Entrance Door Matting Systems set into a frame in the floor.

M^2

Metres Squared.

Multi-gang switch

A combination of 2 or more switches housed within one fitting or plate, and controlling different devices.

Nosing

An edge part of the step tread at the top of the riser beneath in a flight of stairs.

Passenger lift

A conventional motorised lift enclosed within a structural shaft and rising one or more storeys within a building. Lift and door movement is automatic.

Path

A pedestrian route that has no adjacent vehicle carriageway and includes paths in countryside locations as well as paths in urban and residential environments.

Pavement

A pavement is the part of a roadway used by pedestrians and is adjacent to the vehicle carriageway.

PIR

A Passive Infrared (PIR) sensor-activated light fitting.

Ramp

n inclined plane 1:20 or steeper from the horizontal and intermediate landings that facilitate access from one level to another.

Refuge area

Areas within a building separated by fire-resisting construction and provided with a safe route to a storey exit, where people with mobility difficulties can await assistance for their evacuation.

Reverberation

The reflection of sound within a room or space.

Riser

The vertical portion between each tread on the stair.

Setting-down point

A designated area close to a building entrance or other facility where passengers can alight from a car or taxi.

Shower room

A room comprising a shower, WC, washbasin, and associated accessories, such as en-suite facilities in residential accommodation.

Soffit

The underside of any construction element, the underside of a flight of stairs.

Stairlift

A device mounted on a support rail that follows the incline of a stair and incorporates either a seat with footrest (chairlift) or standing platform and perch (perching stairlift). Stairlifts are designed for domestic use only. Also termed chair stairlift and domestic stairlift.

Step nosing

The leading edge of a step or landing.

Storey height door

A full height (from floor to ceiling) door.

Street furniture

Items located in street and other pedestrian environments such as lamp posts, litter bins, signs, benches, and post boxes.

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Stretcher wheelchair

A wheelchair that allows a person to recline to a lying position.

Tactile paving surface

A profiled paving or textured surface that provides guidance or warning to pedestrians with visual difficulties.

Through-floor lift

A simple one-person lifting car, suitable for someone standing or in a wheelchair, which can be easily installed in most homes. Travel distance is limited to between two floors only. It is usually self-supporting, motored by a free-standing vertical track, , and open above the car. The floor space on the upper level is closed by an infill lid attached to the lift car.

Transfer arrangement

The technique adopted by wheelchair users to transfer from a wheelchair to a WC or shower seat and back. The technique will depend on individual preference and the layout and size of the toilet or shower compartment. Common terms for describing transfer arrangements include lateral (side) transfer, angled (oblique) transfer, frontal, or rear transfer. Transfer may be assisted or unassisted. A left-hand transfer means that a person transfers to their left when seated in a wheelchair.

Tread

The part of the stairway that is stepped on.

Ventilation Strips

vents integrated into a window frame that are in the shape of a bar or strip, and that can be controlled by opening or closing the aperture within the vent to different extents.

Vision panel

A fixed, glazed panel set into a door that enables people to see through from one side of the door to the other. May also be termed 'viewing panel.'

Visual contrast

Colour and/or tonal contrast between surfaces and fixtures, designed to improve visual clarity.

Wayfinding

A collective term describing features in a building or environment that facilitate orientation and navigation.

Wet room

A shower room in which the floor and walls are all waterproof. The shower area can be accessed without crossing a threshold or stepping into a shower tray.