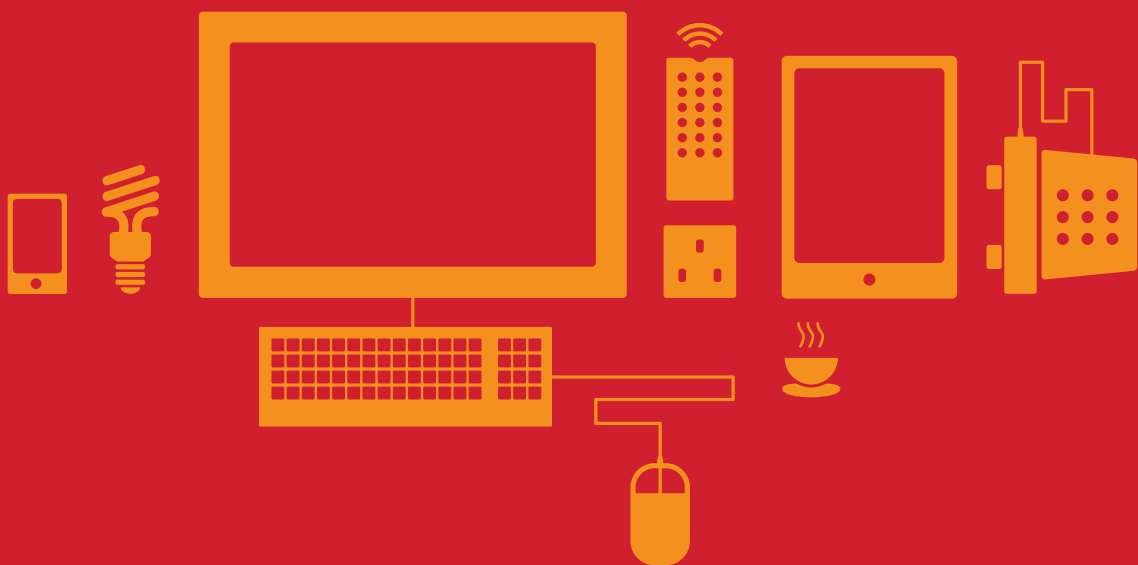


Elements and Systems 04



 UD Home Guidance

 UD Home Plus Guidance

 Houses

 Apartments

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



01

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. Where soft spots are required for load bearing walls blockwork with lintels can be used for ease of removal. 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.
.....
-  Use a stronger board than plasterboard for wall linings, for example a gypsum fibreboard, throughout the home.
.....
-  Provide future potential for downstairs toilet and utility to be combined to create a large bathroom.
.....

Design Tip

-  Non load-bearing stud partitions between rooms can provide flexibility, i.e 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 vision difficulties and with dementia can find such a strong contrast in floor colours confusing and even prevent them entering the room as they think there may be a step.

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.
.....
-  Avoid the need for loose-laid mats at the entrance.
.....
-  Avoid shiny or reflective finishes.
.....
-  Provide visual contrast between floor and wall surfaces.
.....

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

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

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

- Light switches are provided between 750 and 1200mm above floor level.
- Lever handles are used with good colour contrast with doors.
- Lever handles are between 800 and 1100mm above floor level.
- Full height doors will allow very tall people to move easily around the house, increase the sense of space, and make it easier to manage large objects.

Photo Design Tip

- ↑ Colour contrast between alarm control, doors and walls should be better.
 - ↑ 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

- ⬆️ 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 the safety catches.

Design Tip

- ⬆️ Bay windows provide a wider field of view, and the projecting ceiling acts as a physical eyeshade to reduce daylight glare.
- ⬆️ Doors should also be easy to use. The height, width and position of doors should be carefully considered (please see sections 2 and 3). Many elements of door ironmongery have a direct impact on ease of use and comfort. For example the position of handles should be easily identifiable and they must be easy to use in terms of height and functioning. Most people find pull and lever handles much easier to use than knobs.

- ⬆️ Door locks should be located for ease of use for everyone. Bathrooms should be fitted with winged or lever thumb-bolts that can be opened from outside the room in an emergency.
 - ⬆️ 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.
 -  Provide handles that use a material such as timber or plastic-coated steel for increased comfort.
 -  Provide full height doors to allow very tall people to move easily around the house, increase the sense of space, and make it easier to manage large objects.
-

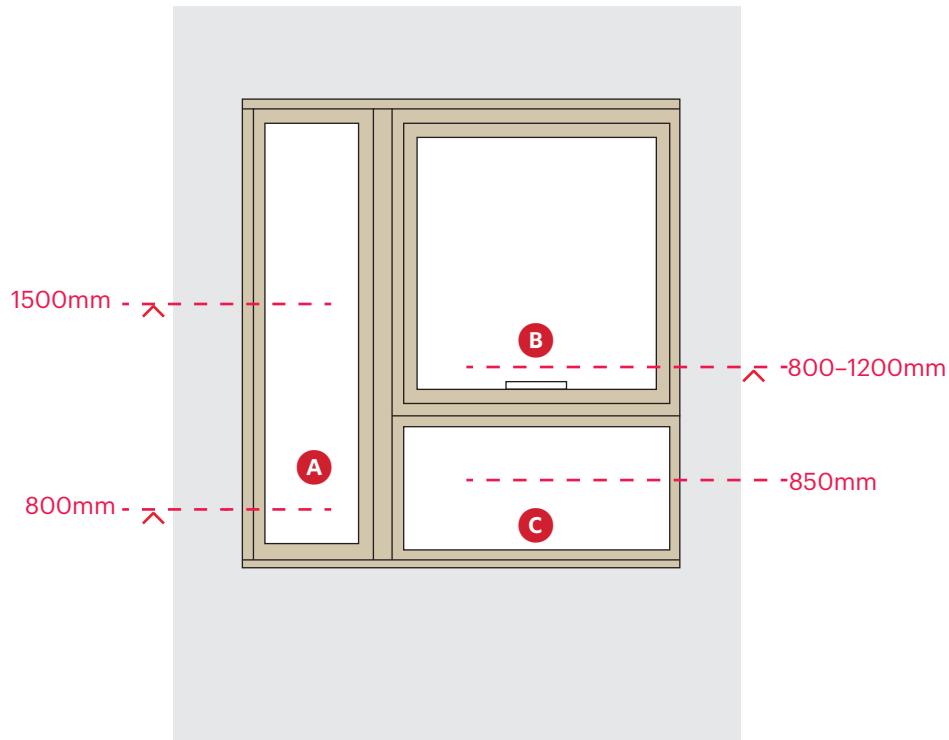
UD Home Guidance

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:

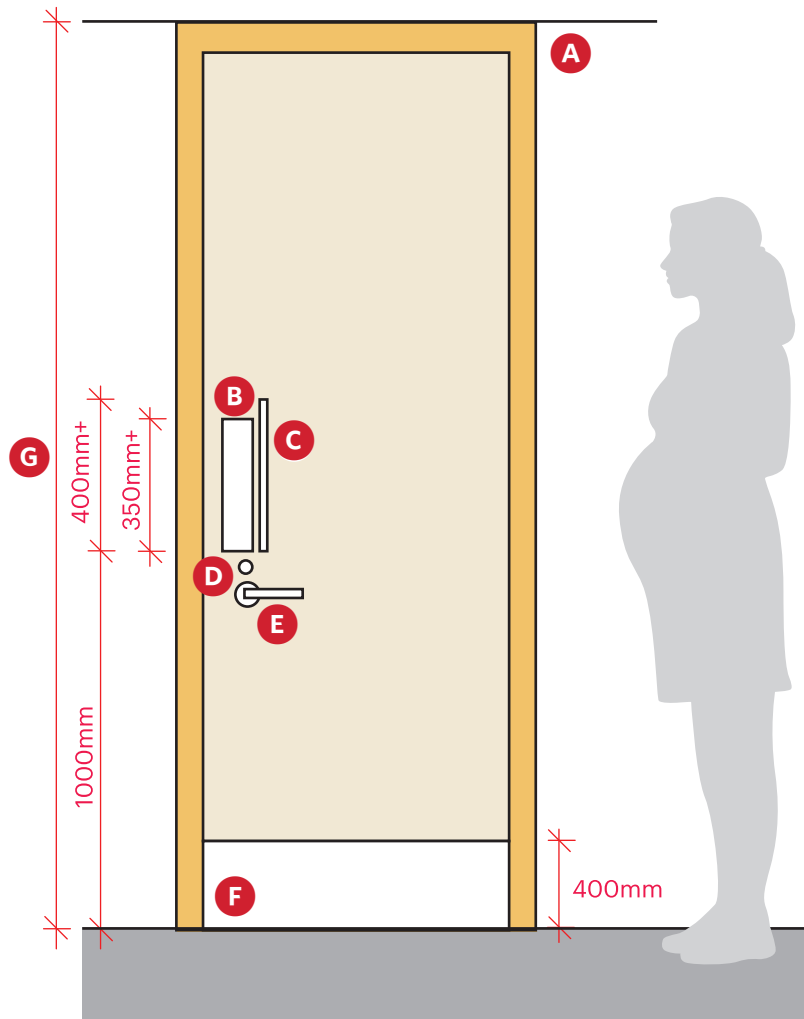
Window elevation dimensions from inside.



- A** Avoid 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.
.....
- F** 400mm kickplate at base of door helps prevent damage.
.....
- G** Full storey height door where possible.
.....



Sockets are provided between 400 and 1000mm above floor level and at consistent heights and level, at least 500mm from any corner.



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.













07 Sockets are provided at a consistent height and level.



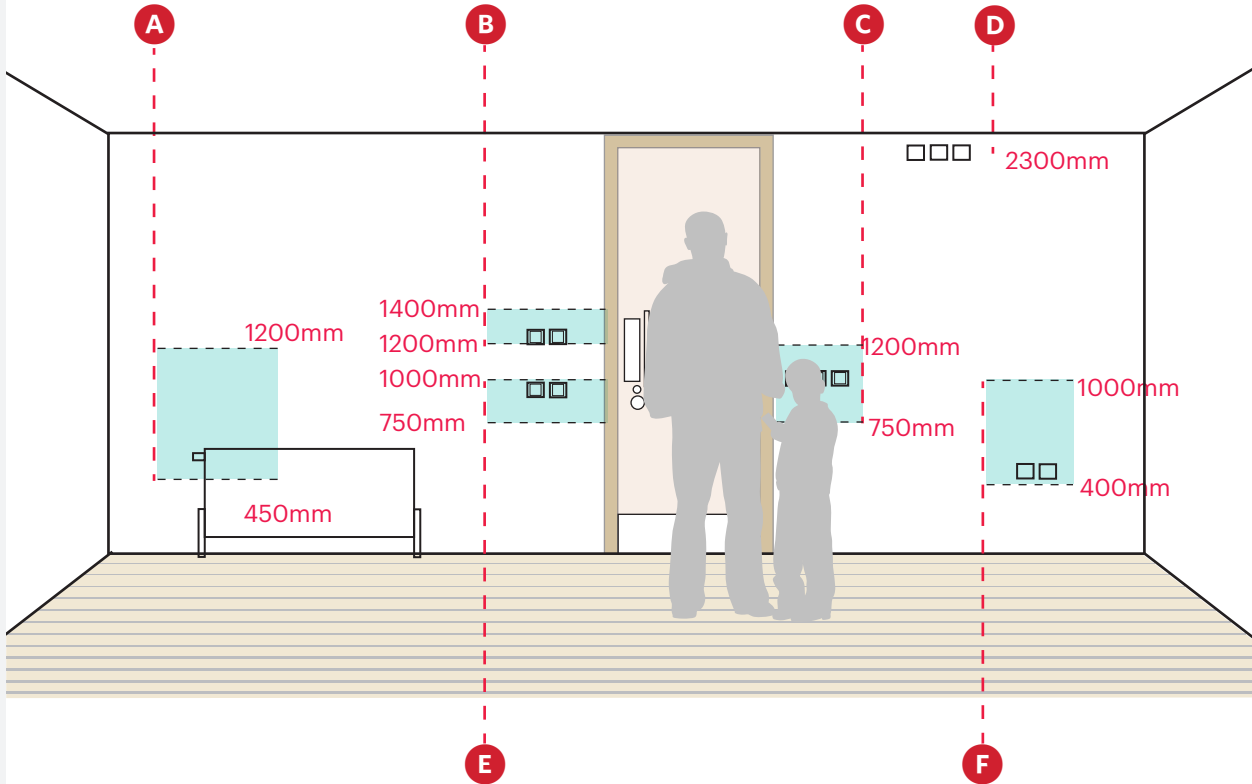
08 Push pad or rocker switches are easier for everyone to use.

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.



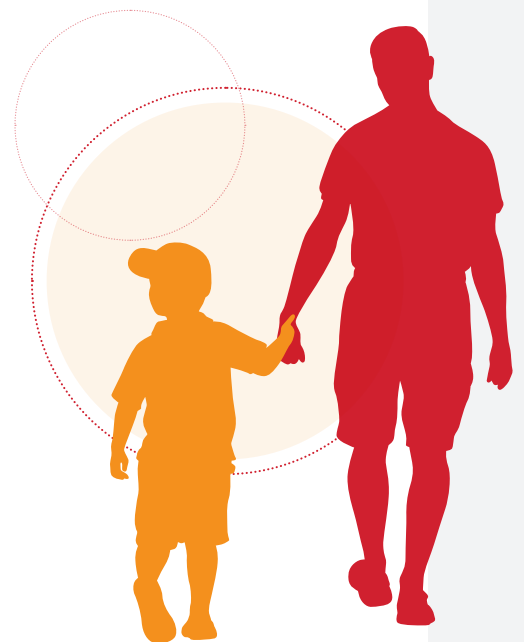
- A** Thermostatic radiator valves 450–1200mm.
- B** Electricity and gas meters 1200–1400mm.
- C** Light switches and permanently wired switches 750–1200mm.
- D** Assisted living technologies outlet points for power and data @ 2300mm.
- E** Switches and controls for intercom, ventilation, heating 750–1000mm.
- F** 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.
- Wall mounted lighting switches should incorporate 20mm deep switch housings in lieu of 10mm, to allow for potential future installation of remote control switches.
- Use embossed symbols and text for tactile reading of remote switch controls such as for washing machine, dish washer, tumble dryer, cooker, microwave, boiler, immersion cylinder.

UD Home ++ Guidance

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 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 pictorial 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:

- ➔ High levels of natural light.
- ➔ Use of natural materials that are low maintenance and non-toxic.
- ➔ Low glare and low reflectivity of surfaces.
- ➔ Provision of controlled ventilation system providing fresh air (not visible).
- ➔ Highly insulated and airtight construction (not visible).

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

- ⬆ The floor is too reflective and is causing some glare which could be countered with blinds or voile curtains.
 - ⬆ Maintaining a regular body clock is important and therefore an east facing bedroom can be beneficial in protecting and promoting positive mental health.
 - ⬆ 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 **UD** and UD Home **+** Guidance

- UD** All homes should be dual aspect at a minimum.
.....
- UD** Achieve an optimal balance between natural light and heat loss in line with Part L (Conservation of Fuel and Energy) and Part F (Ventilation).
.....
- UD** 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.
.....
- UD** Provide discrete views of recognisable external spaces and features.
.....
- +** Design the home so that different rooms receive sunlight throughout the day, giving people a sense of time passing.
.....

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

- ↑ Poor quality fluorescents have a low frequency and flicker which can exacerbate mental health problems in some people.
 - ↑ 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 an even distribution of 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.

- UD Avoid installing uplighters at floor level.
- UD 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 meet Building Regulations Part L (Conservation of Fuel and Energy) and Part F (Ventilation), provide adequate ventilation and design out draughts and minimise heat loss. Technical Guidance Documents (TGD) L and F provide guidance on achieving compliance with Part L and Part F.

Mechanical ventilation heat recovery (MVHR) units should be located in a utility or other ancillary 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 straightforward 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 ancillary 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 (TGD L) - Conservation of Fuel and Energy provides guidance as to how these requirements may be met.

In individual cases where the aim is to exceed statutory requirements an innovative approach should be encouraged within specific best practice. TGD L also provides guidance for efficiency of heating systems, heating controls and requirements for renewables.


For apartment buildings over 1000m², the Recast 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). www.seai.ie


Efficiency, affordability and environmental impact, e.g., emissions of CO₂ and other harmful gases, are particularly important in the context of sustainability. It is recognised that natural gas has the lowest carbon dioxide emissions of available fossil fuels for space heating. Designers may however wish to consider the possibility of utilising renewable sources of energy such as solar collectors, photovoltaic, hydropower, wind power, wood pellets, biogas, geothermal sources, or where available, a 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 and UD Home Guidance

-  Control panels for heating systems shall be positioned between 1200 and 1400mm above floor level, with a clear space of 1100 × 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.

-  Install on-site micro-generation (such as Solar Electric Panels, Micro-Hydro, Micro Combined Heat & Power, Wind Power) as additional power to existing utilities to provide hot water and/or electricity directly to the home or development beyond requirements of Part L (Conservation of Fuel and Energy). See www.seai.ie/Renewables/Microgeneration/

-  Install low surface temperature (LST) radiators throughout.

UD Home Guidance

- 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.

-  All alarm systems should provide both audible and visual warnings from the outset.

-  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.

- UD Alarms should not exceed 120dB. Install multiple quieter alarms to achieve an even distribution of the signal.
- UD Install carbon monoxide / gas detector alarm unit in the kitchen and/or adjacent to any gas appliances.
- UD Visual alarms should use flashing lights between 2 and 4 Hz.
- ⊕ Facilitate the provision of interactive monitoring and support services in consultation with a specialist service provider. This will reduce reliance on reactive alarm services.

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.





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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.

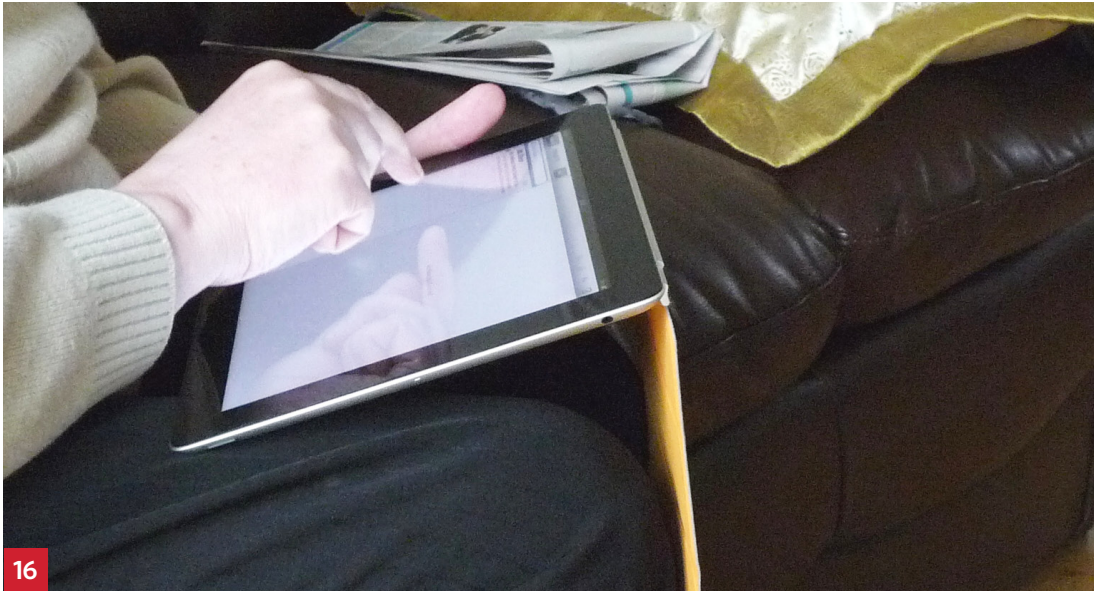
Assisted living technologies can provide social connectivity, activity monitoring to assess general well-being, health support, and smart control of utilities in an integrated system. The infrastructure and integrated system should allow efficient response to the changing needs of an individual and the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



16 *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

-  Consider future proofing with regards to hard wired systems in the home e.g the installation of CAT6 data cabling for media, entertainment, internet use and security 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.
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-  Provide an integrated system that allows devices and systems to synchronise their operation, delivering optimal functionality, robustness and efficiency.
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-  Provide an accessible ventilated cupboard space with a power supply to house the hub (intelligent control) of interface devices.
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-  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.
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-  Install an actuator on the power and data circuit to entrance doors to provide for future remote opening.
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-  Install actuators to all windows and doors for optimal flexibility in fitting remotely controlled door opening and window dressing control devices.
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-  Consider installing an appropriate range of assisted living technologies from the outset in order to make the home easy to use and provide the required support for independent living.
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