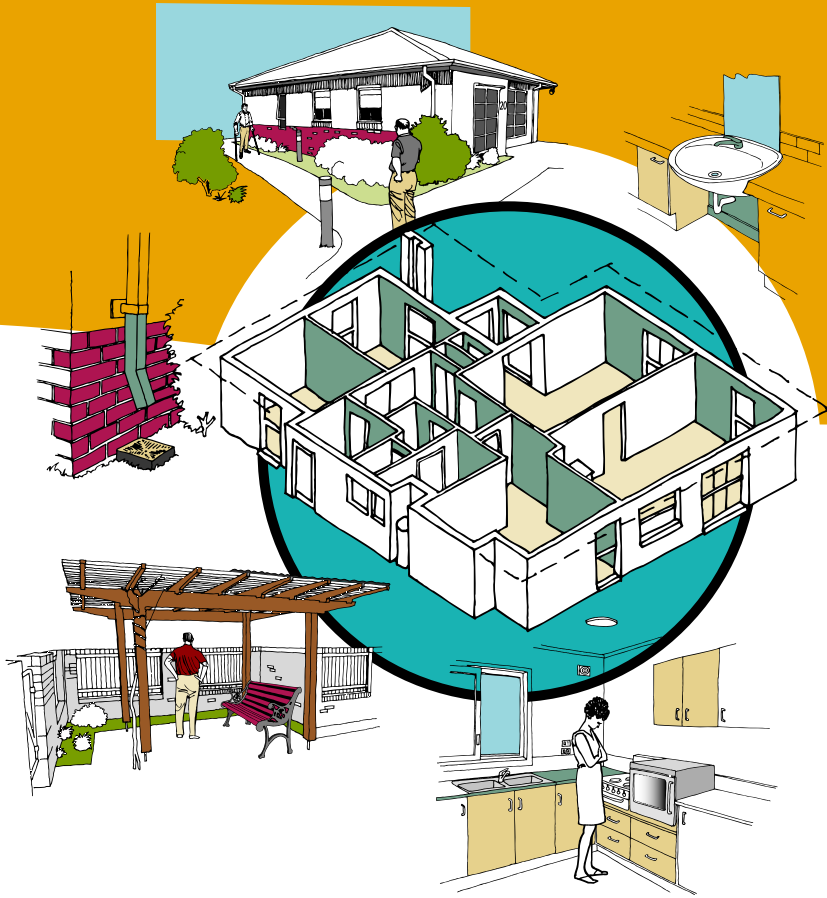


# HOUSING FOR LIFE



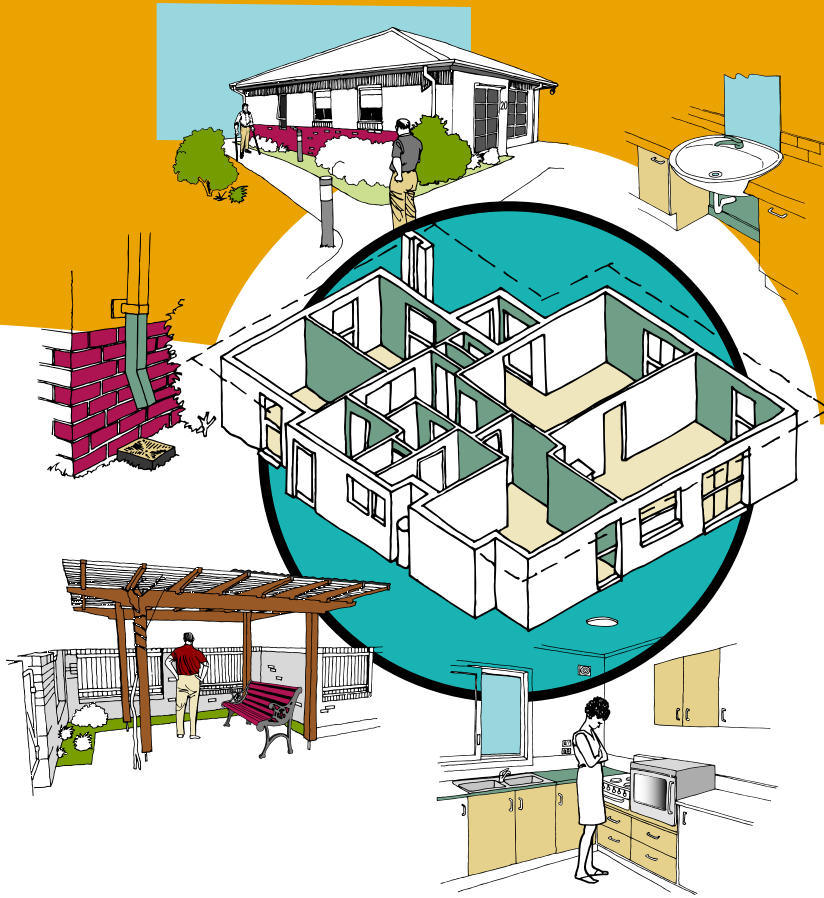
Designed for Everybody

**Welcome to the digital version of 'Housing for Life'.**

When viewing the contents of this publication, please note that the graphics will appear inferior if viewed as a full page layout in Acrobat Reader. This is not a true representation.

Enlarge the illustrations using the magnifying tool on the tool bar in Acrobat Reader to see a clear view of the graphics. It is this quality of detail that can be reproduced by your printer.

**Click on the blue circle to the left to go to the contents page.**



## Designed for Everybody

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All care has been taken in compiling the information contained in this guide. MBA ACT believes it to be correct and current at the time of publication. However, MBA ACT, its officers, employees, contributors and consultants take no responsibility for the accuracy of the contents.

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**Metric measurements are used in this guide. At the end of the guide, you will find diagrams that convert metric measurements to imperial measurements.**

**Feedback:** The publisher of this guide welcome constructive comments on its contents and/or suggestions on how future publications could be improved.



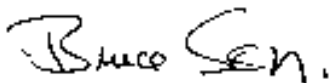
## Foreword

Most members of the veteran community want to continue living in their own homes as they grow older. A few home modifications can help them to do so for longer. This guide contains information to help veterans and their families modify their homes or to build new homes that will continue to meet their needs as they grow older. It contains building information about standards and specifications that, to date, have not been readily available to the general community.

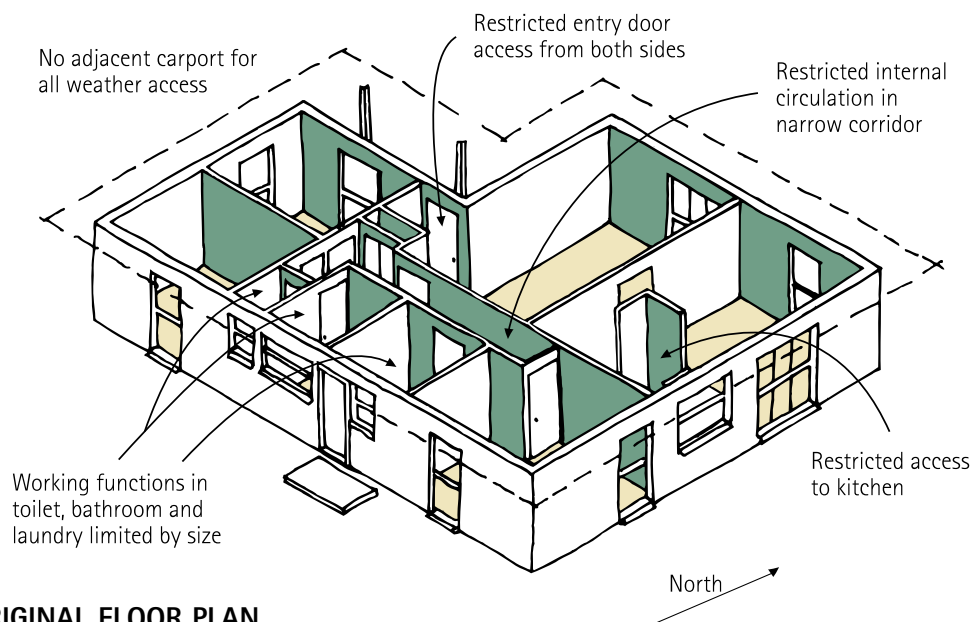
The Master Builders Association (MBA) of the Australian Capital Territory has developed this guide with funding provided under the Commonwealth Government's Veteran & Community Grants scheme operated by the Department of Veterans' Affairs. The insights provided by about 700 veterans, war widows/widowers and carers in a survey of needs of the veteran community have helped the development of the guide. I would like to thank those who participated in the survey for their valuable input.

The Australian Repatriation system has been operating for more than 80 years. It is one of the most supportive in the world and one in which all Australians can take pride. The Government is committed to continuing to develop both the quality and type of services provided. I commend this initiative for the valuable assistance it will provide to the veteran community.

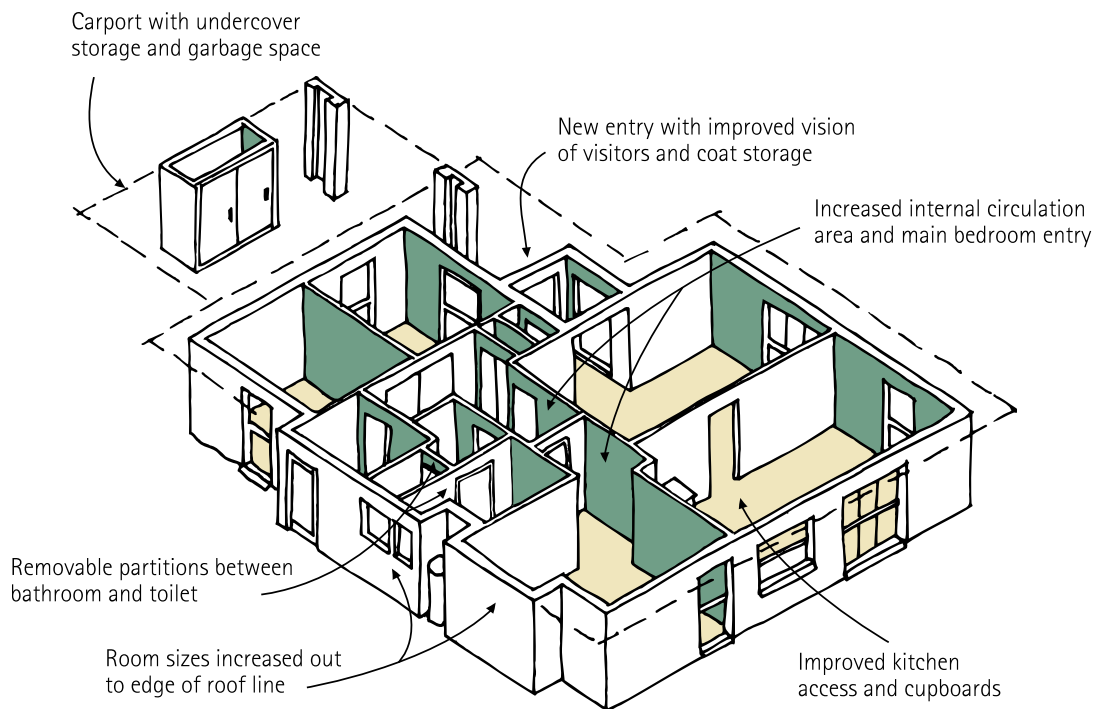
**Bruce Scott**

A handwritten signature in black ink that reads "Bruce Scott".

**Minister for Veterans' Affairs  
Minister Assisting the Minister for Defence**



### ORIGINAL FLOOR PLAN



### ALTERATIONS TO AN EXISTING HOUSE FOR IMPROVED ACCESS AND CIRCULATION

may + russell  
architects



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# Introduction

This guide is designed to help people who want their houses to be homes for life. In particular, it will help those who are:

- thinking about alterations or modifications to their home;
- deciding if they should stay in their current home or move to a more suitable home; or
- looking to build a new home.

This guide contains the minimum building design requirements to help people live in their homes comfortably, safely and securely for as long as possible.

It is directed towards the veteran community. But all Australians should use it because it contains basic information to meet future personal needs that may arise because of age, a disability or changing circumstances - such as a temporary period of recovery from an accident or illness.

Many of the ideas canvassed in this guide also are practical for the growing family. Some, such as grabrails, are reversible. This is ***Housing for Life***, a home that is just good design and common sense for everybody, a concept that should become standard design/construction practice.

When the ideas outlined are thoughtfully incorporated into a house, while still maintaining its homely feel, its capital value can increase. Good design and construction eliminate the need to change homes and the personal and economic costs associated with social dislocation.

## Adaptability and accessibility

***Housing for Life*** is based on the concept that housing can be adapted to make it accessible to everybody, irrespective of age, level of mobility or condition of health. 'Adaptability' is the term used to describe a structure that is capable of being modified, at minimum cost, to suit the changing needs of its occupants. The functions of a house don't change. But the lifestyle and the needs of those who spend their private lives there will change over time. Living in an adaptable home that can be modified to suit those needs ensures them that they will not need to move to more accessible accommodation.

## Taking the first steps

This guide will enable readers to determine the need to consult with a designer or builder for further advice on how to alter their homes. Before any financial commitment is made, estimates should be sought to clarify the costs involved. People providing the estimates should have experience in this type of work and be:

- members of an appropriate trade or design association;
- familiar with individual design requirements; and
- aware that there may be special requirements which do not appear in this guide.

If moving is the most sensible option, the new home should be near shops, health services, public transport and, most importantly, close to family and friends. Essential points to be kept in mind are the terrain (a hilly area can be tiring), traffic levels and footpath conditions. Most of all, all occupants of the new home should feel safe in the area.

## This is only a guide

This guide is not a complete reference on the issues covered. Building trade jargon and complex issues have been kept to a minimum and simplified. Building designers and contractors should read this guide in conjunction with both the *Building Code of Australia* and the current edition of the Australian Standard available on the subject, for the complete and detailed requirements. The latter two will take precedence. At present, the Australian Standards covering most of the issues in this guide are not mandatory for detached/single residential houses.

## The illustrations

Illustrations have been selected to help people understand the minimum requirements of a **Housing for Life** home and to make the guide more enjoyable to read. They were selected to best represent some of the more common questions raised.

Sections of the guide have been colour-coded to enhance its readability. Coloured number buttons in the left hand column adjacent to individual points link those points to the accompanying illustrations identified by larger corresponding coloured numbers. Referencing has also been kept to a minimum. Throughout the guide the diagrams illustrate a number of issues, some of which are not referred to until later in the guide.

## Where the information came from

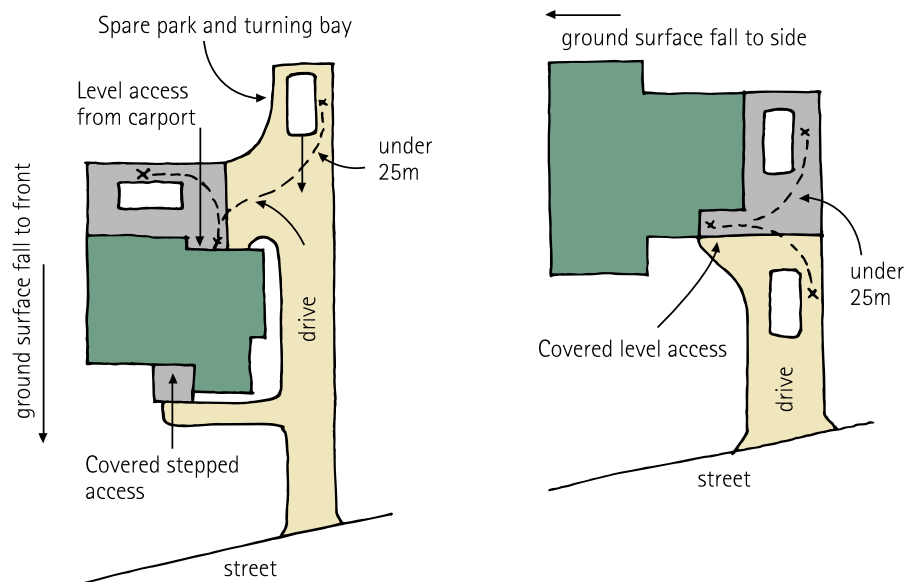
Most of the information in this guide has come from Australian Standard 4299 – 1995 '*Adaptable Housing*' and the Australian Standard suite 1428 – 1998 '*Design for Access and Mobility*'. A survey of the Australian veteran community helped in highlighting what type of information readers would like to see in this guide. Reference material from around the world, particularly Canada, New Zealand, the United Kingdom and the United States of America also assisted in the development of this guide.

This Part outlines the minimum requirements for the owners, their families and visitors to move around the site with the least amount of difficulty, particularly between the site entry or car park/garage and the house.

### OBJECTIVE 1.1

## Essential

Limit this distance to under 25m.



### 1 MINIMISE DISTANCE BETWEEN CAR AND LEVEL ENTRY



## OBJECTIVE 1.2

**All walkways on the site should be safe for use in any weather conditions.**

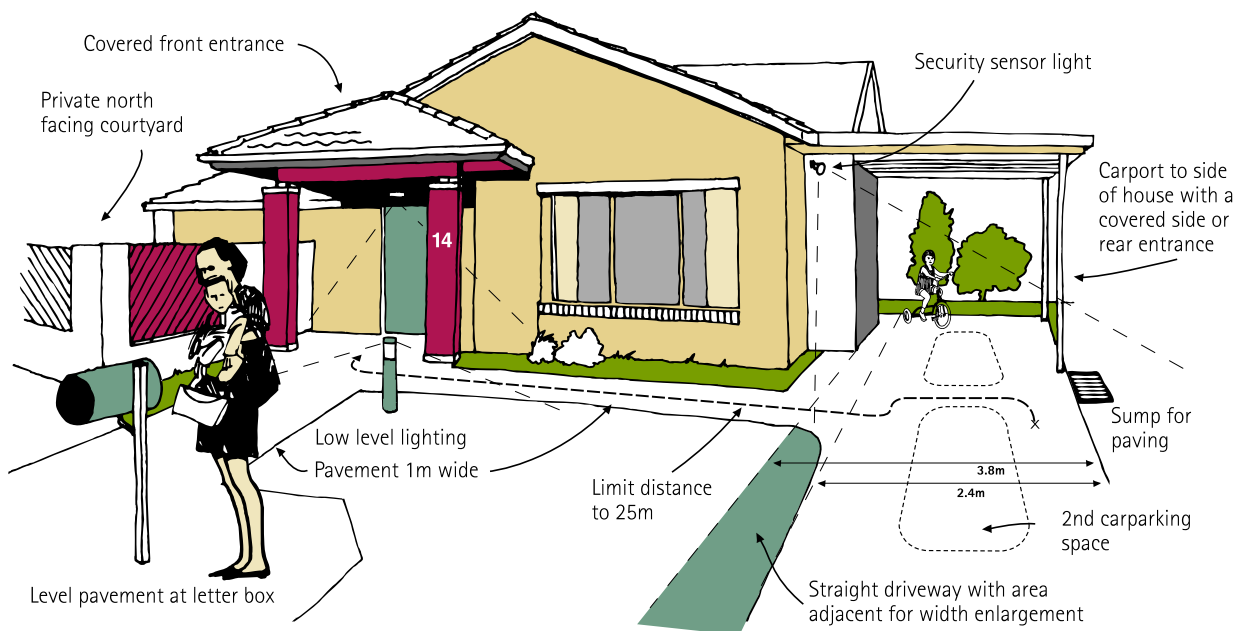
### Essential

2

All walkways must:

- be free of steps
- have a non-slip surface, especially when exposed to water and frost;
- be reasonably flat, with adequate drainage;
- have a smooth transition between different surfaces or slopes;
- have no overhead projections within a vertical height of 2m (ie. branches); and
- have good even lighting that is not directed at persons using the walkway.

Level paving should be provided to the rear of the mail box for easy access.



2

## WALKWAYS AND PAVEMENTS

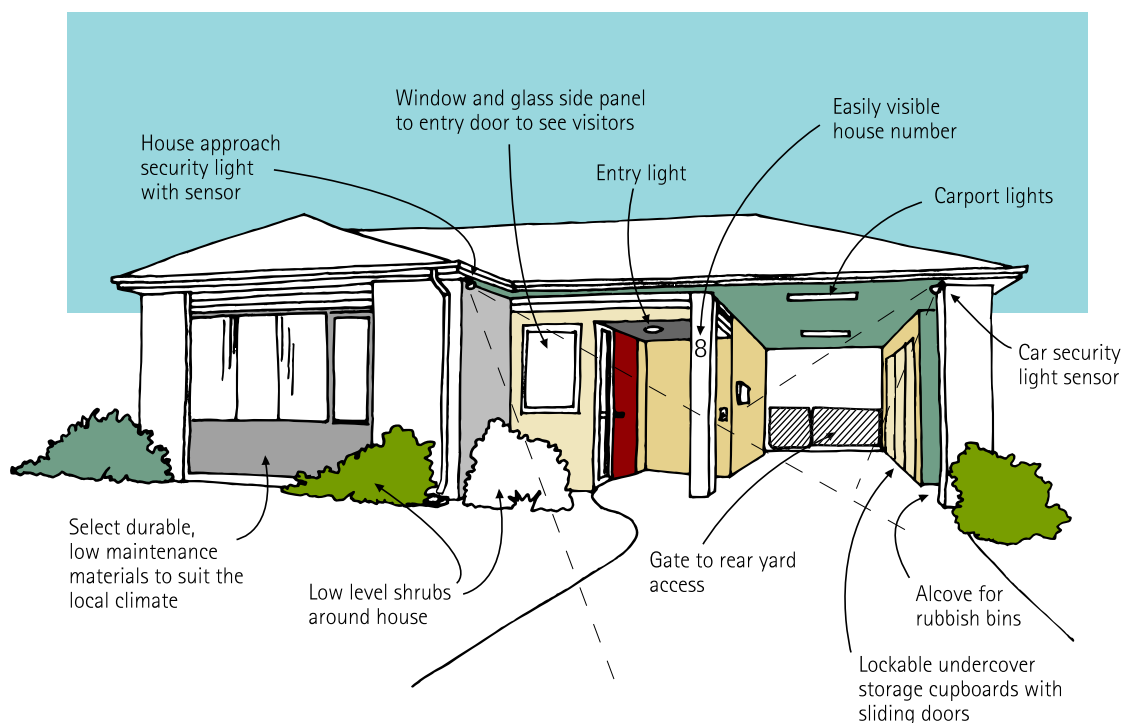
## Recommended

All walkways should have:

- a high contrast finish with the adjoining ground surface or have well defined edges;
- a minimum width of 1m;
- a slope no greater than
  - 1:20 if between 9m and 14m in length or
  - 1:33 if between 14m and 25m in length; and
- a maximum cross-fall of 1:40.

3

Cover the walkway to the main house entry to prevent accidents in wet weather. Generally this can be achieved by having the garage and/or the carport under the same roof line of the house.



### UNDERCOVER ACCESS TO ENTRANCE FROM SIDE CARPORT

3

## OBJECTIVE 1.3

**The approach to the entry should be as level as possible. This minimises the need for ramps and steps. However, ramps and steps sometimes will be required.**

4

### Essential

If ramps are required they must:

- have a slope no greater than
  - 1:8 for ramps up to 1.5m long or
  - 1:14 if between 1.5m and 9m long;
- be provided with a landing at the top
  - 1m wide by 1.33m long for ramps with a 1:8 slope or
  - 1.2m long for 1:14 ramp slope;
- have a smooth transition between all landings and ramps/walkways; and
- be fitted with handrails at a height between 865mm and 1m.

If steps are required they must:

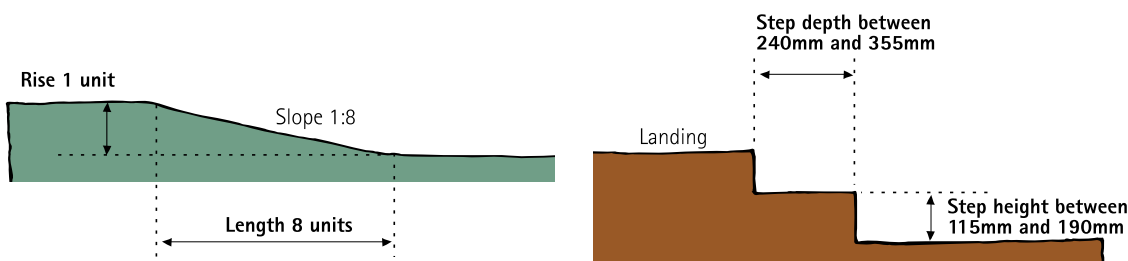
- be between 115mm and 190mm in height;
- have a step depth of between 240mm and 355mm;
- be uniform in size;
- have a step width of 1m;
- be fitted with handrails on each side; and
- have a landing 1.2m long.

### Recommended

Avoid ramps and steps whenever possible. Consider relocating walkways on the site to eliminate the need for ramps and steps.

If a ramp is required try to locate it under cover.

In addition to a required ramp, adjacent steps also may be necessary for people who use walking frames. These steps should be 355mm deep, and their edges should be clearly defined with a contrasting colour.



4

HOW A SLOPE IS MEASURED

HOW STEPS ARE MEASURED

## OBJECTIVE 1.4

**Provide adequate car parking with cover over at least one space.**

### Essential

The recommended internal width of a carport or garage is 3.8m with a ceiling height of 2.5m and an internal length of 6m.

The additional car parking space must be:

- a minimum size of 2.4m x 6m with provision for enlargement to 3.8m wide; with
- a surface slope not exceeding 1:40 in any direction.

### Recommended

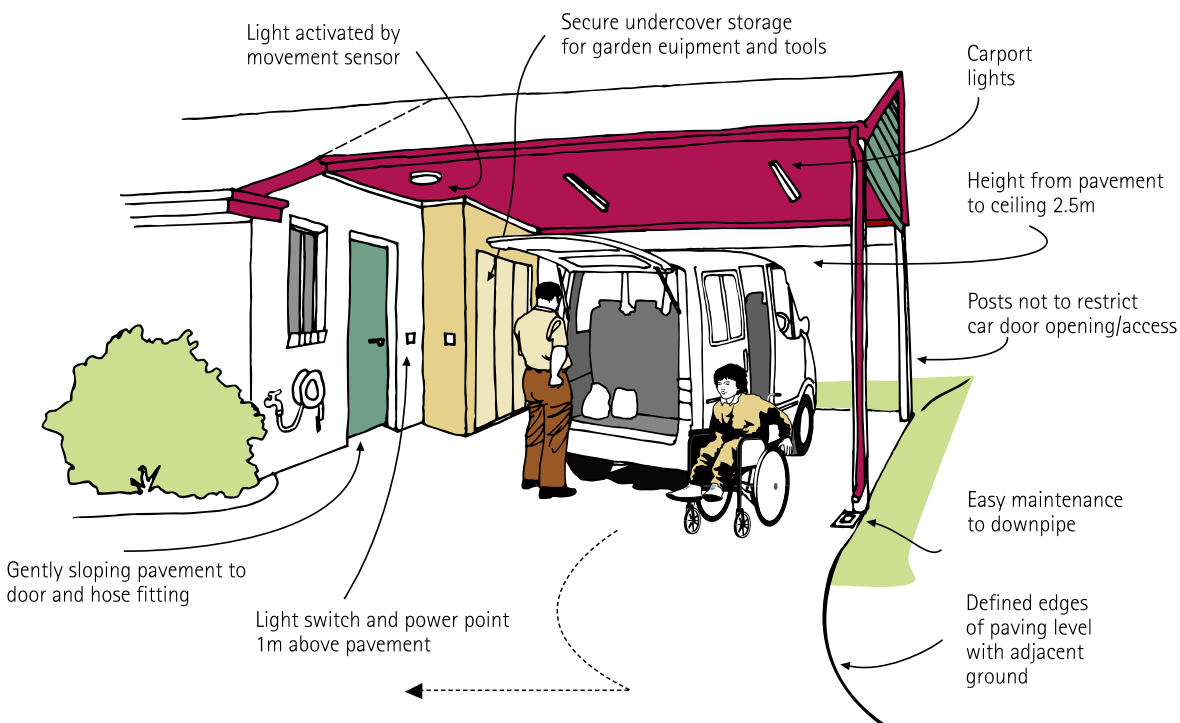
5

If a carport is provided, its posts should not obstruct the opening of the car doors.

If a garage is provided its vehicle access door should be electrically operated. Attached garages with internal house access and deadlocked doors are particularly recommended for improved personal safety/security.

Avoid bends in driveways where cars are required to reverse or where there are areas of limited vision, especially when moving out onto the street.

Locate stormwater sumps to the side of walkways and regular paths of travel. If this is unavoidable in a paved area like a car space, or in a driveway, its drainage slots should be at right angles to the direction of any pedestrian travel, with a maximum slot size of 13mm wide x 150mm long.



5

## CARPORT ADDED TO REAR OF HOUSE FOR LEVEL ACCESS ON A SLOPING SITE

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## 2

## P A R T

## The Entrance

This means the main entrance of the house that is usually visible from the street or central parking area.

As a minimum, this entrance should comply with the criteria below: All other entrances and access doorways to balconies, courtyards, garages, etc, also should comply, to provide safe and convenient movement for everyone. Apart from ease of access, factors such as safety and security at entrances are very important. This part, therefore, should be read in conjunction with other relevant parts of this guide.

### OBJECTIVE 2.1

**The entrance to the house should be safe and accessible.**

6

#### Essential

The entrance must:

- be protected from rain and adverse weather conditions
- have lighting so that
  - anyone outside the door is clearly visible by a person within the home and
  - the house number is clearly visible to visitors;
- have an adequate area outside the door for a wheelchair, walker, pram/stroller or trolley to manoeuvre with a maximum cross-fall of 1:40;
- have a doorway with a clear opening of 800mm between the face of the open door and the opposite door frame;

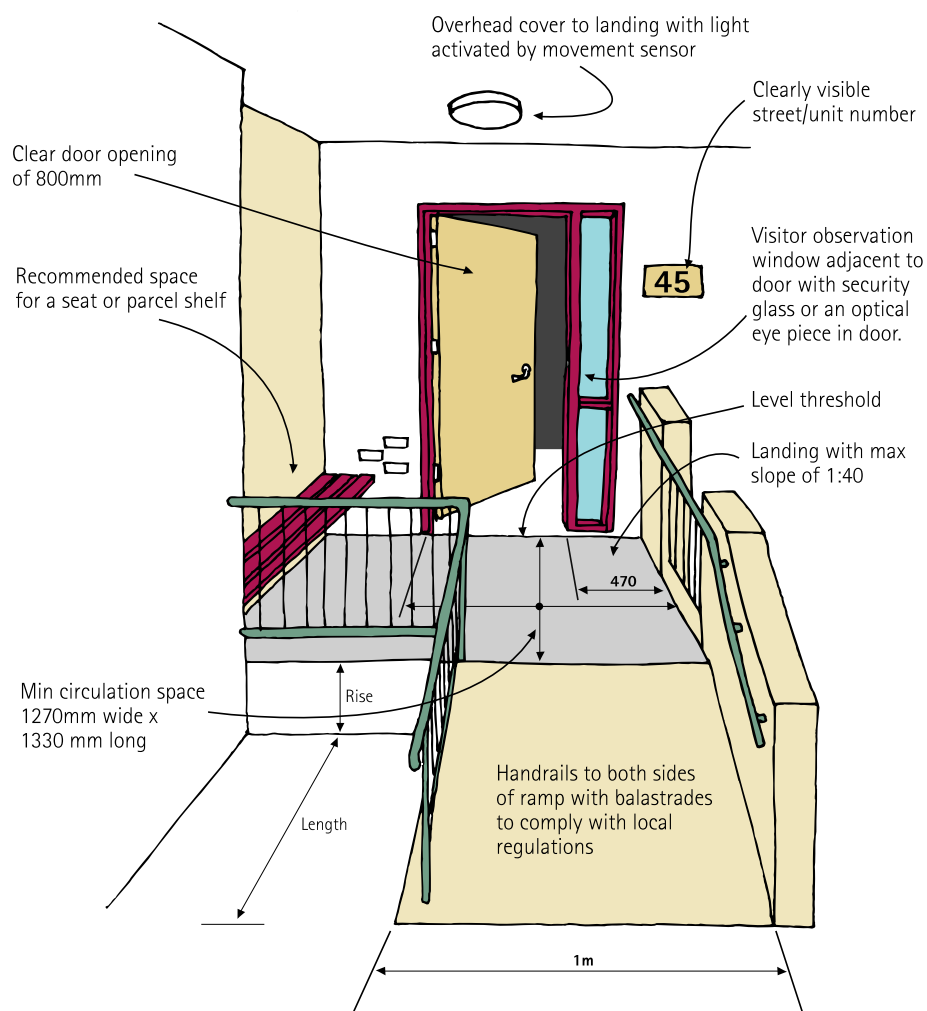
#### NOTES:

- Door handles are not considered an obstruction in this width.
- Consider increasing the clear doorway opening above this minimum size.

- have a low profile threshold that allows smooth movement of a wheelchair, walker, pram/stroller or trolley;
- be fitted with a security screen door or a latched hatch (refer to SECURITY); and
- have lever handles fitted between 900 and 1100mm above the floor.

## Recommended

Consider providing a shelf adjacent to the main entrance door to hold parcels while the door is being opened. Covered seating also should be considered near the main entrance door.



6

## RAMP TO ENTRANCE

## 3

## P A R T

## Internal Circulation

Combined with Parts 1 and 2, internal circulation completes the basics that make a house accessible. Therefore, those thinking of modifying or buying a home should give high priority to the size of the rooms and the distances between specific elements as outlined below. The type of construction used in the house also should be investigated because this will determine the cost effectiveness of carrying out future alterations to meet occupants' changing needs.

In the diagrams accompanying this Part, some specific dimensions are given, but the actual room sizes are not shown. Room sizes vary considerably, depending on the size and layout of furniture, as well as the specific needs of both present and future occupants of the house. Circulation spaces adjacent to doors in corridors also can vary, depending on the direction a wheelchair approaches and the swing of the door. The *Australian Standard 1428.1* must be consulted before any design or construction work commences.

### OBJECTIVE 3.1

**Wheelchair/walker users should be able to freely access all the essential areas of the house without assistance.**

#### Essential

If the house is more than one level it must:

- incorporate all the areas required by a person in a wheelchair, at the main entry level; or
- provide access to the other levels that have these facilities, via ramps or lifts.

7

Access between areas of the house must have:

- a minimum clear corridor width of 1m; and
- clear doorway openings of 800mm measured between the face of the open door and the opposite door frame.

**NOTES:**

- It is desirable to keep the length of corridors to a minimum.
- Consider increasing the width of the corridor to 1.2m.
- Consider increasing the clear doorway opening above this minimum size.
- Door handles are not considered an obstruction in this width.

A minimum unobstructed area, free of furniture, must be provided in:

8

- living areas, 2.25m diameter;

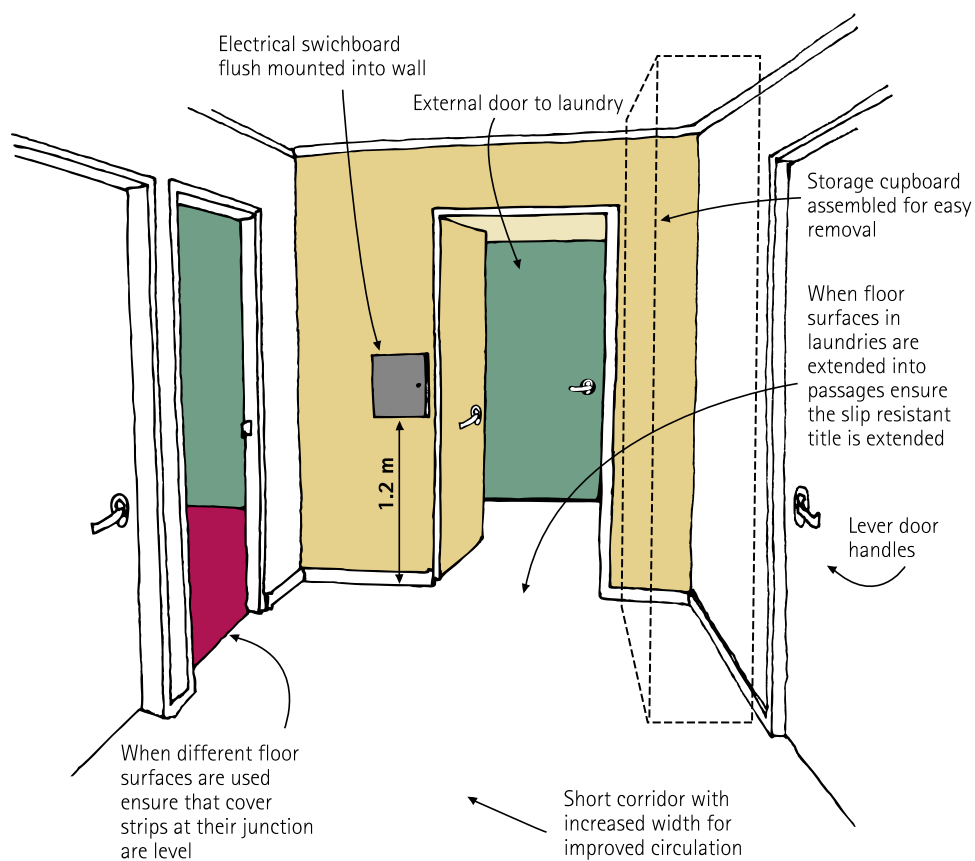
9

- at least one bedroom, 2.07m x 1.55m;

10

- laundry and kitchen 1.55m between opposing faces of cupboards.

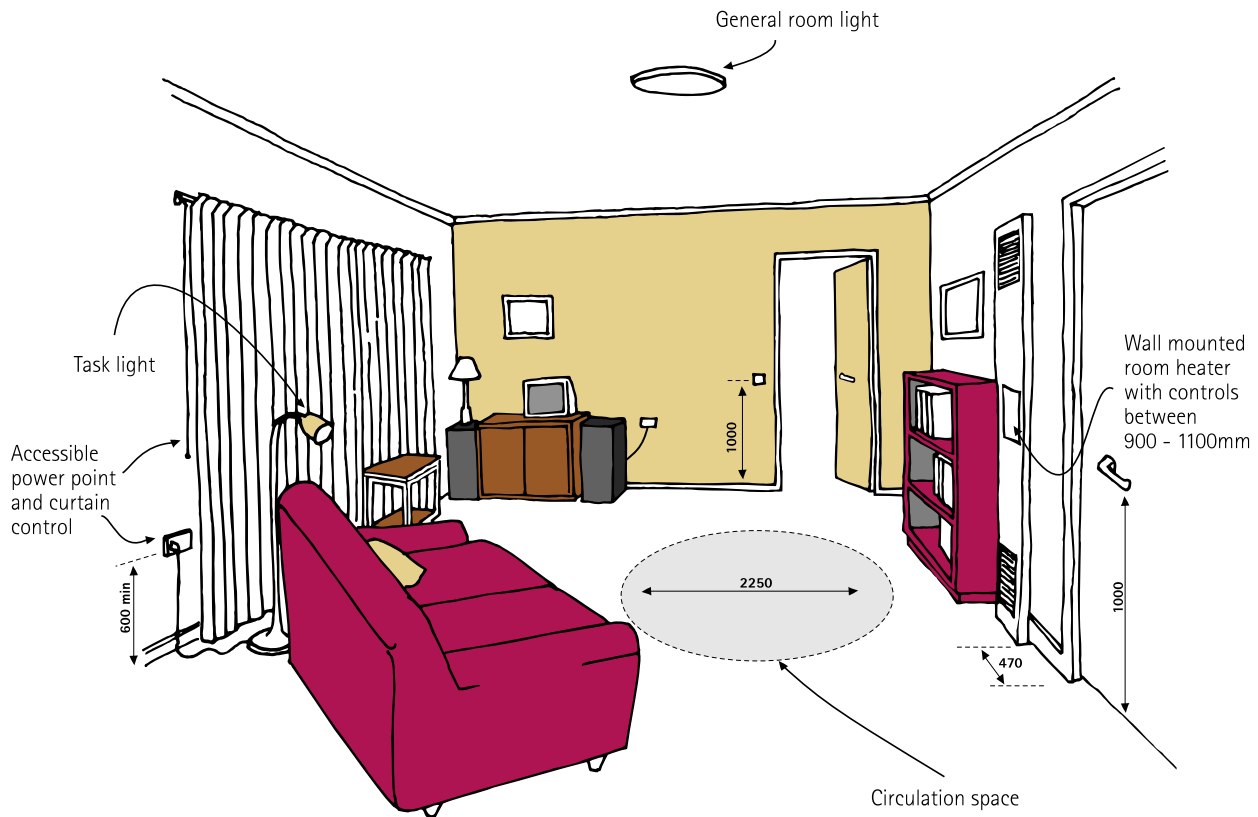
The opening edge of a bedroom door should be no closer to the corner of the room than 470mm with a bedroom circulation space of 1.35m x 1.27m adjacent to the closed door.



## 7

## CORRIDOR CIRCULATION SPACE

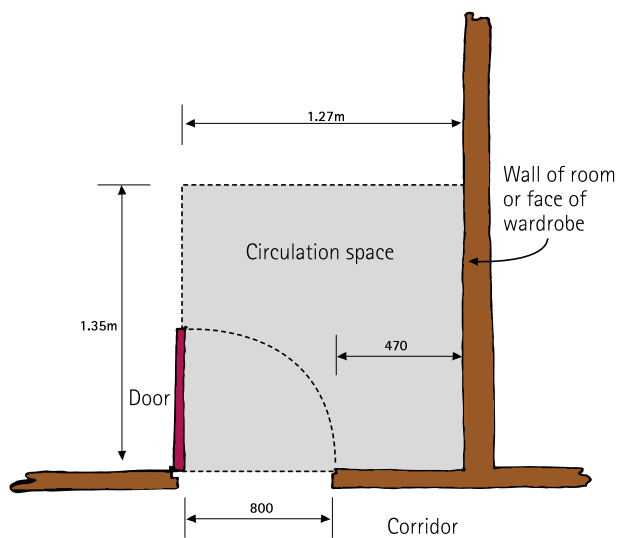




## 8

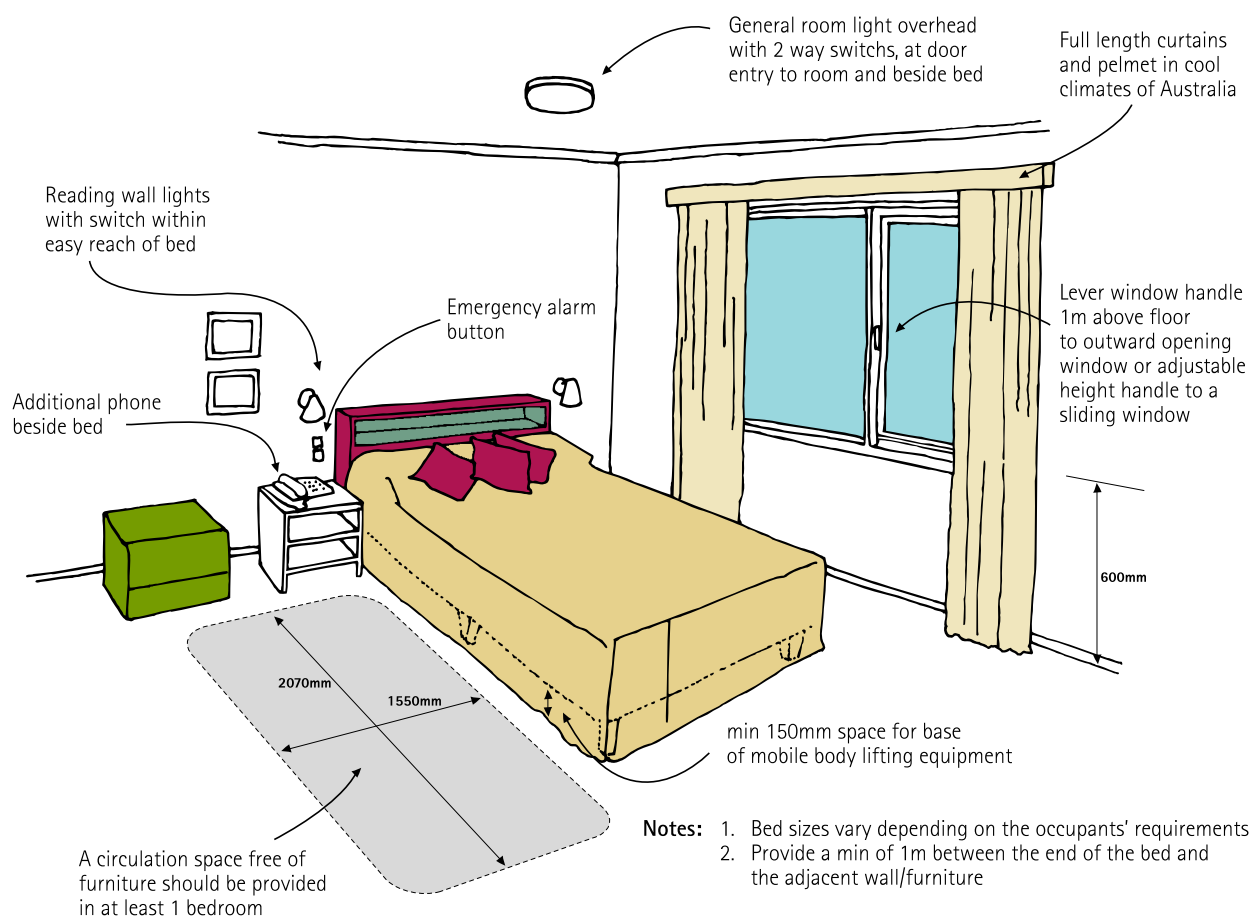
## LIVING ROOM CIRCULATION SPACE

**Note:**  
This circulation space should be applied to all inward opening doors



## 9

## BEDROOM CIRCULATION SPACE



## BEDROOM CIRCULATION SPACE

10

## 4

## P A R T

## Adaptability

The term 'Adaptability' is used to describe a structure that has the ability to be modified at minimum cost to meet the changing needs of those in the house. Some may wish to run a business from home; others, as they grow older, may want to look after their grandchildren, or may need assistance either from mechanical aids or carers. Either way, living in an adaptable home assures them that they will not need to move if they can easily modify their existing home.

### OBJECTIVE 4.1

**Design or modify the house so that the size of each area allows for multiple usage.**

#### Essential

Room sizes are critical to the success of an adaptable house. The design must allow for families with children and for future circulation spaces, especially those referred to in Part 3.

### OBJECTIVE 4.2

**Construct the house so that future modifications can be carried out at minimum cost.**

#### Essential

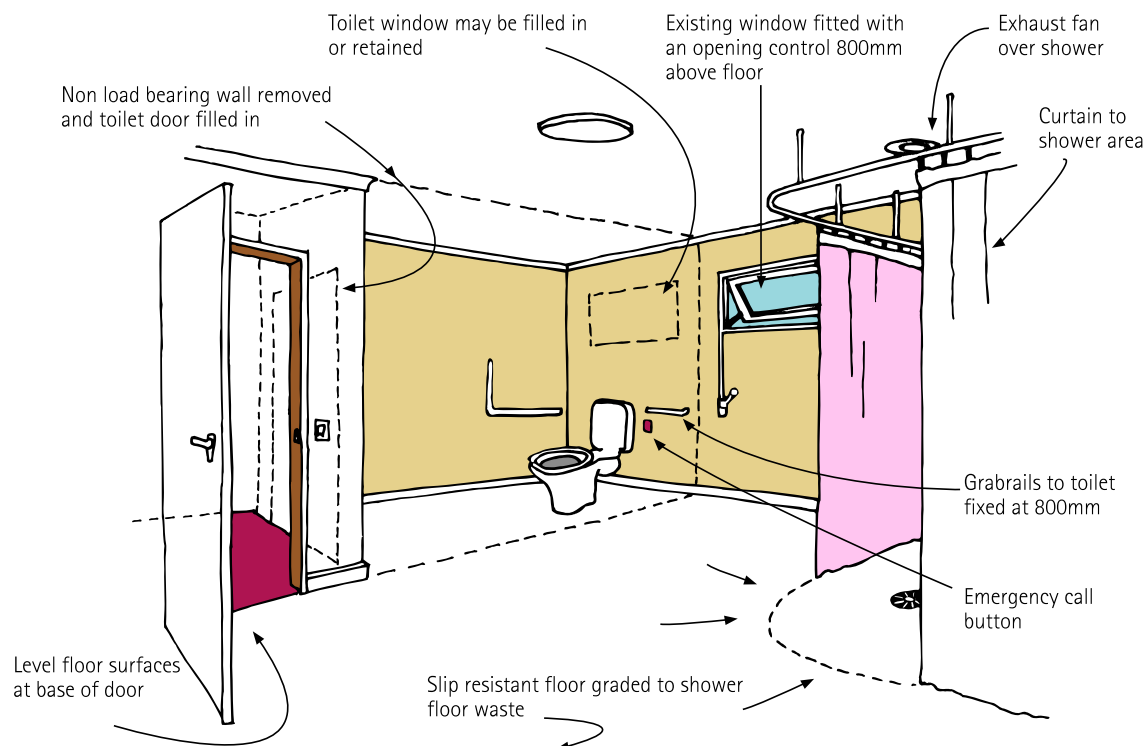
The dividing wall between the bathroom and toilet must not:

- support any structural load; or
- contain any electrical or plumbing services.

11

If this existing wall is to be removed, permission may be required from the local government authorities, landlord or body corporate and advice should be obtained from suitably qualified tradespeople and/or a designer.

During construction it is preferable to add this wall, as a removable partition, after the floor, walls and ceiling, including cornices and skirtings, have been finished.



## BATHROOM/TOILET WALL REMOVAL

11

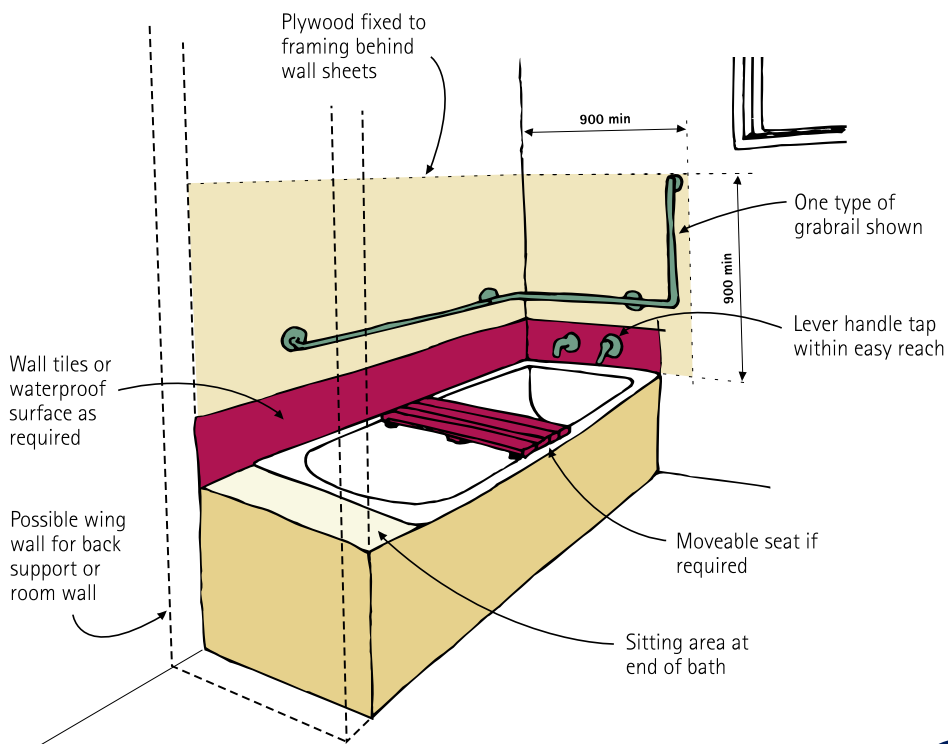
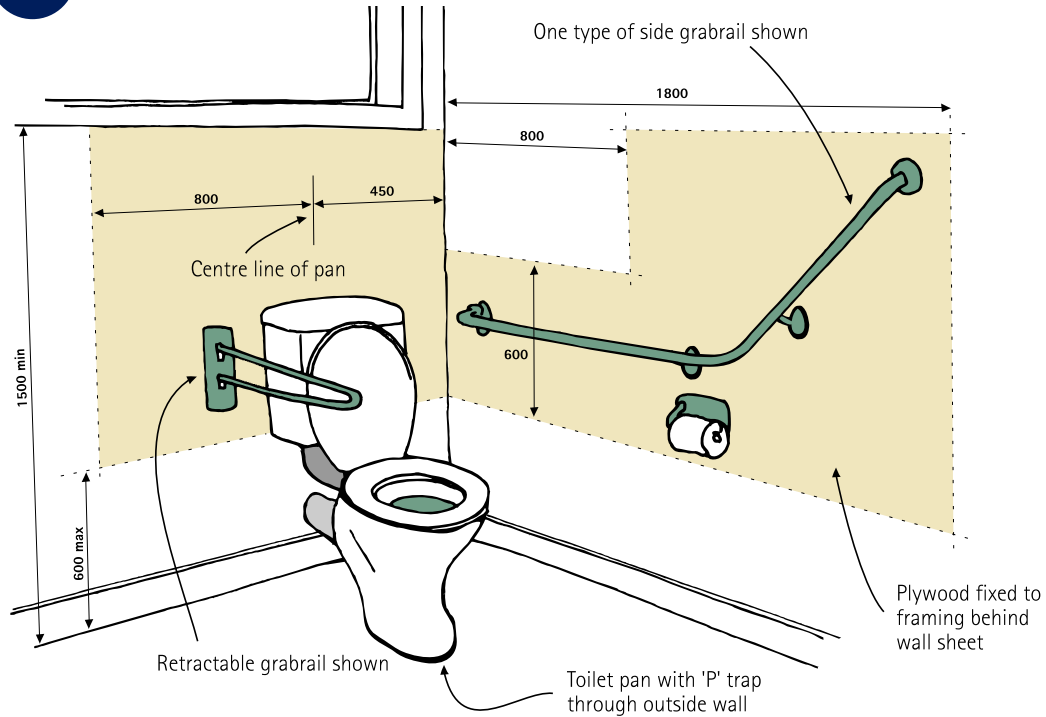
### NOTE:

Remember, this guide has been written for people who are either considering modifying or buying a home and for people who are planning to build a new home. It is good industry practice to group the water supply and drainage service areas, to reduce construction costs. As this is an essential part of energy efficient housing, the guide assumes that the toilet and the bathroom are adjacent to each other. This layout shown in the above diagram is the most common.

Provide a bathroom floor with access to the shower without a step down or raised 'hob' to step over. Waterproof the entire bathroom floor irrespective of whether a shower screen is fitted. The floor tiling should be graded to the shower floor waste to prevent the ponding of water.

## 12

## REINFORCED WALLS OF TOILET FOR FUTURE GRABRAILS



## REINFORCED WALLS TO BATH FOR FUTURE GRABRAILS

## 13

- 12** Securely screw-fix 12mm structural plywood to the wall framing of the shower recess, bath and toilet before fixing finished wall sheets. This is to allow for the possible fitting of grabrails. All such fixtures must be securely fixed to the plywood with suitable screws or purpose-made anchors.

**13**

Do not position a cavity sliding door beside a toilet pan because it is difficult to fix grabrails onto that wall.

**14**

In the toilet install a 'P' trap, instead of an 'S' trap, to the toilet pan. This allows for easy relocation of the pan further out from the wall (provided there is adequate space), if required for a wheelchair user.

**NOTE:**

A 'P' trap to a toilet pan is where the waste is flushed through the wall as opposed to the 'S' trap where the waste is flushed down through the floor.

**15**

Install the kitchen cupboards after the floor surfacing has been finished right through to the perimeter walls of the room. Construct cupboards so that sections below the bench top can be easily removed to provide leg space for a person in a wheelchair and provide for height adjustment in at least one bench top for food preparation.

**16**

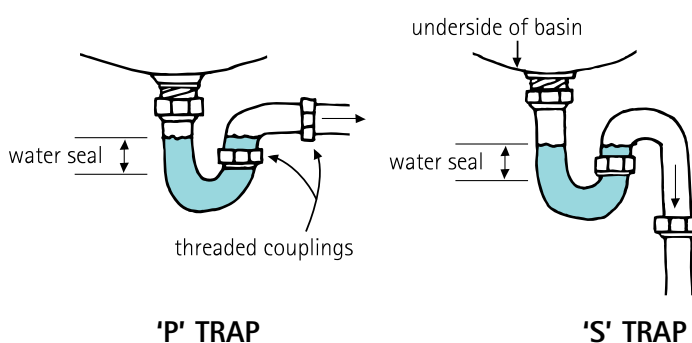
**NOTE:**

If an adjustable bench top is not practical, incorporate a pullout bench top into a cupboard at the required height. Avoid using these tops in areas that also serve as walkways.

**17**

Fit appropriately sized semi-recessed wall hung basin/vanity units. Some cantilevered or suspended basins have a 'P' trap water seal incorporated within the unit. These provide greater legroom for wheelchair users.

Incorporate electrical conduits with draw wires into selected walls for the installation of an additional phone, security services, an intercom system, computerised systems, visual alarms, or similar appliances. Keep accurate records of the location of these conduits for future reference.



**Note:** The principle shown in both of these basin diagrams also applies to toilet pans.

**14**

## PLUMBING WATER SEALS

## Recommended

Fix the toilet pan directly over the finished tiled floor with a bonding sealant and suitable screws/expanding bolts, not with cement bedding to a section of cutaway tiles. This preferred method enables easy relocation of the pan without the need to relay and match a section of tiling.

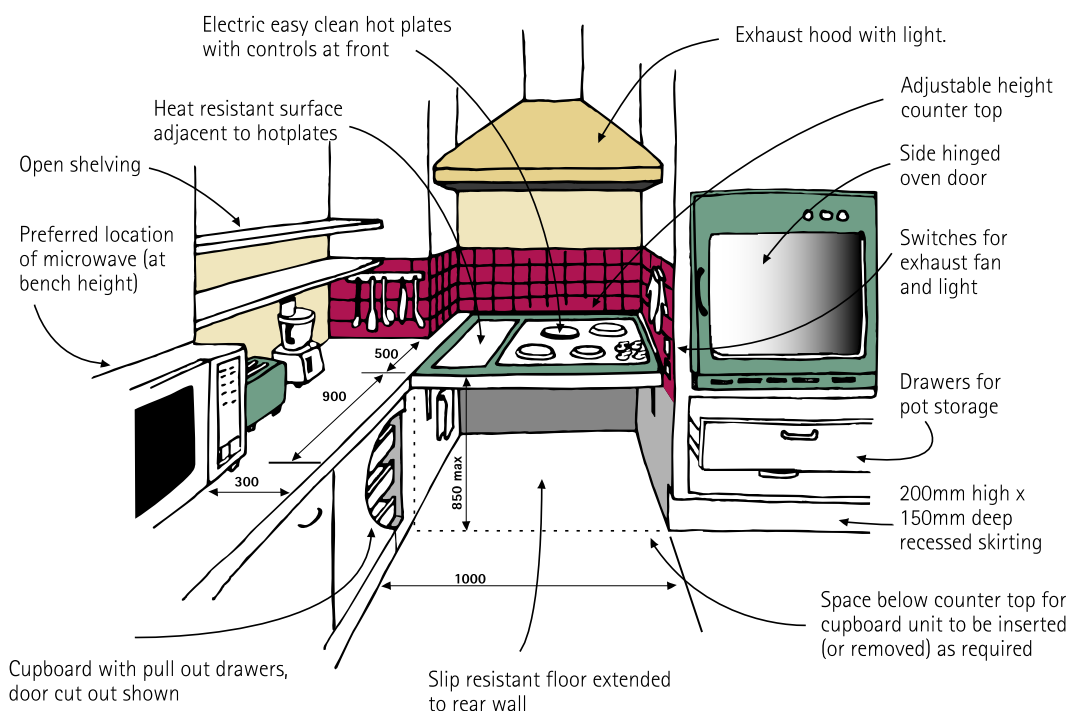
18

Wherever possible, install adjustable shelving, pull-out baskets and adjustable-height hanging rails that can be accessed from a seated position, especially in wardrobes.

Avoid locating overhead cupboards above cooktops, corner benches and sinks. However, if there is limited space, these cupboards can be provided as long-term storage units, depending on occupants' ability to reach them. If they do exist, they need not be used.

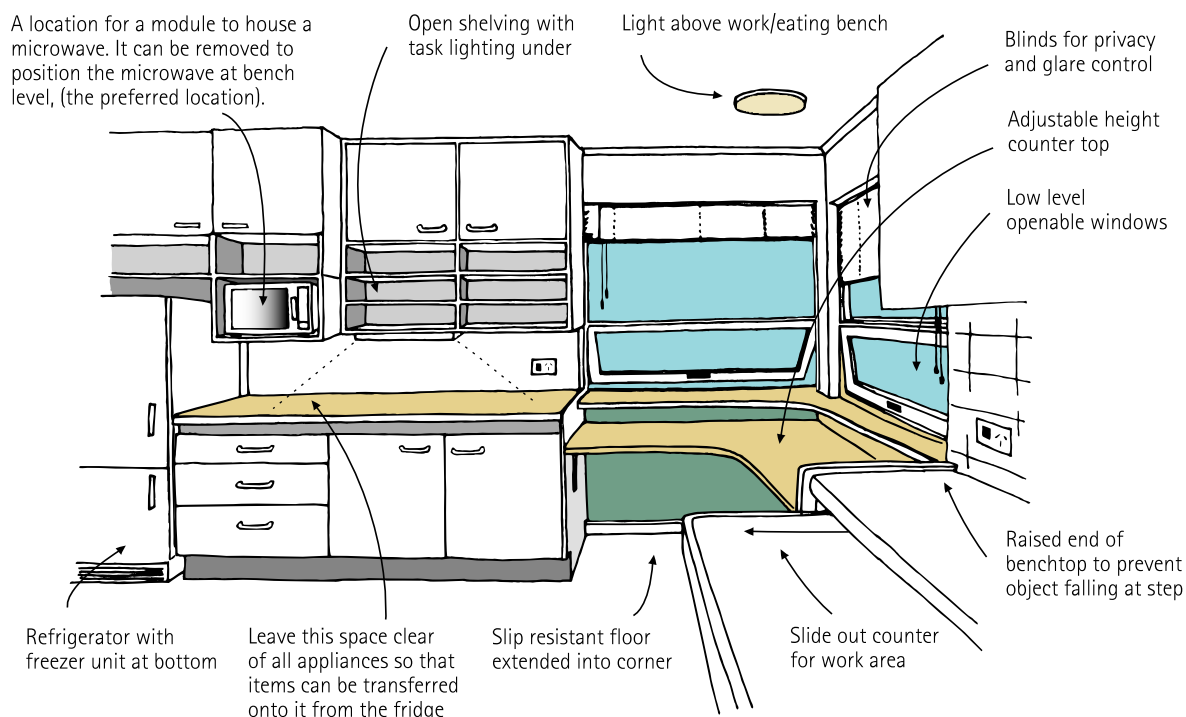
In the bathroom install a mirror that can be used by persons either seated or standing. This can be achieved by either tilting the mirror to suit a seated user or by extending the mirror down to the basin which then doubles as a splash back to the wall.

Install storage cupboards, with sliding doors, in corridors so that they can be removed later to increase the circulation space if required.



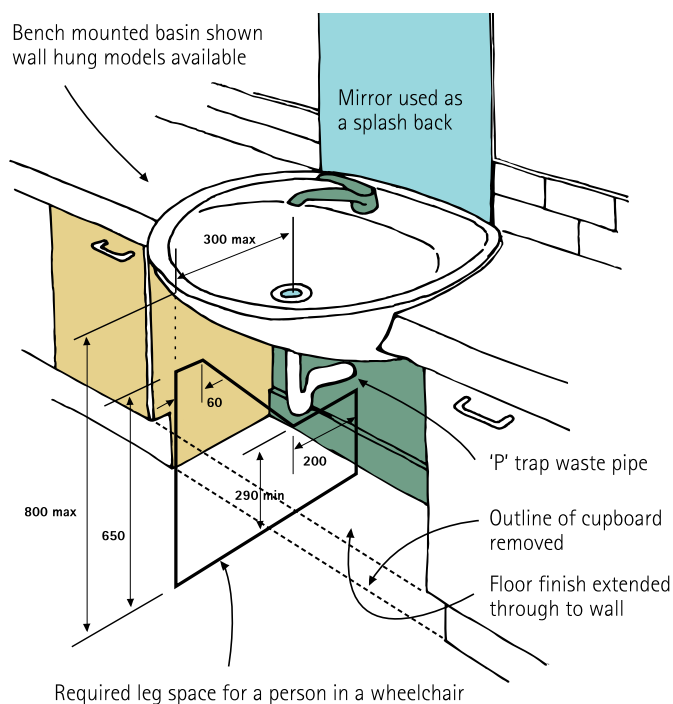
15

## REMOVABLE CUPBOARDS BELOW BENCHTOPS



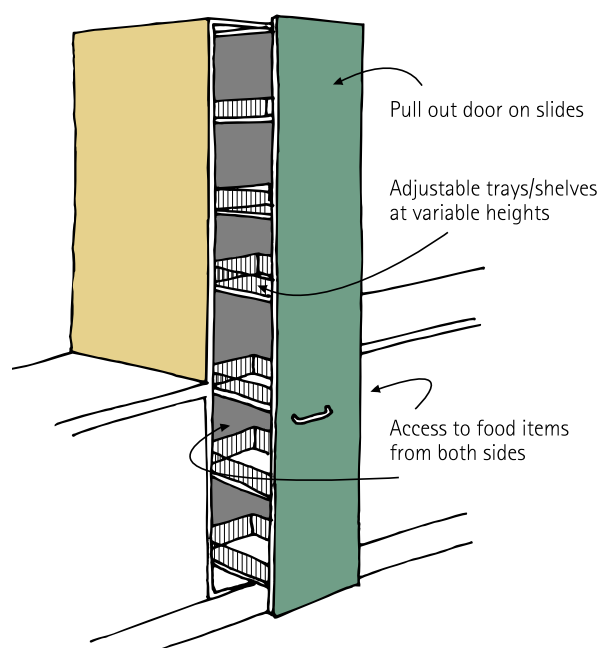
## HEIGHT ADJUSTING AND PULL OUT BENCHES

16



17

**CLEARANCES UNDER BASIN AFTER  
PART VANITY IS REMOVED**



**PANTRY UNIT**

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## 5

## P A R T

## Bathroom, Toilet and Laundry

These areas require specific, if not specialised, equipment and fixtures for present and future needs. It is in this area that most alterations and modifications are required. Therefore, this Part should be read in conjunction with Parts 3 and 4. As with all the diagrams in this guide, dimensions are shown as an aid for the homeowner. Designers and builders must check these dimensions with those specified in the latest edition of the *Australian Standard 1428.1 and 4299*.

### OBJECTIVE 5.1

**Design these areas for the unrestricted access and convenience of wheelchair users. Take care to preserve the home atmosphere.**

#### Essential

In these areas:

- fixtures, appliances and their controls must be of a type and a height that permits easy operation for any user with a disability;
- floor surfaces must be slip resistant; and
- hot water must be delivered through a lever handle tap at a temperature not exceeding 50°C.

19 a+b

For ease of access, the shower must not have a hob (a raised section of tiles to step over) or a step down to avoid falls in wet slippery conditions. For similar safety reasons, a shower should not be installed over a bath. A bath also has a limited level surface for standing and maintaining balance.

Select either outward opening swing doors or curtains to shower compartments.

#### Recommended

Recess soap holders in shower compartments.

Position laundry taps to the side of the tub(s) for ease of access.

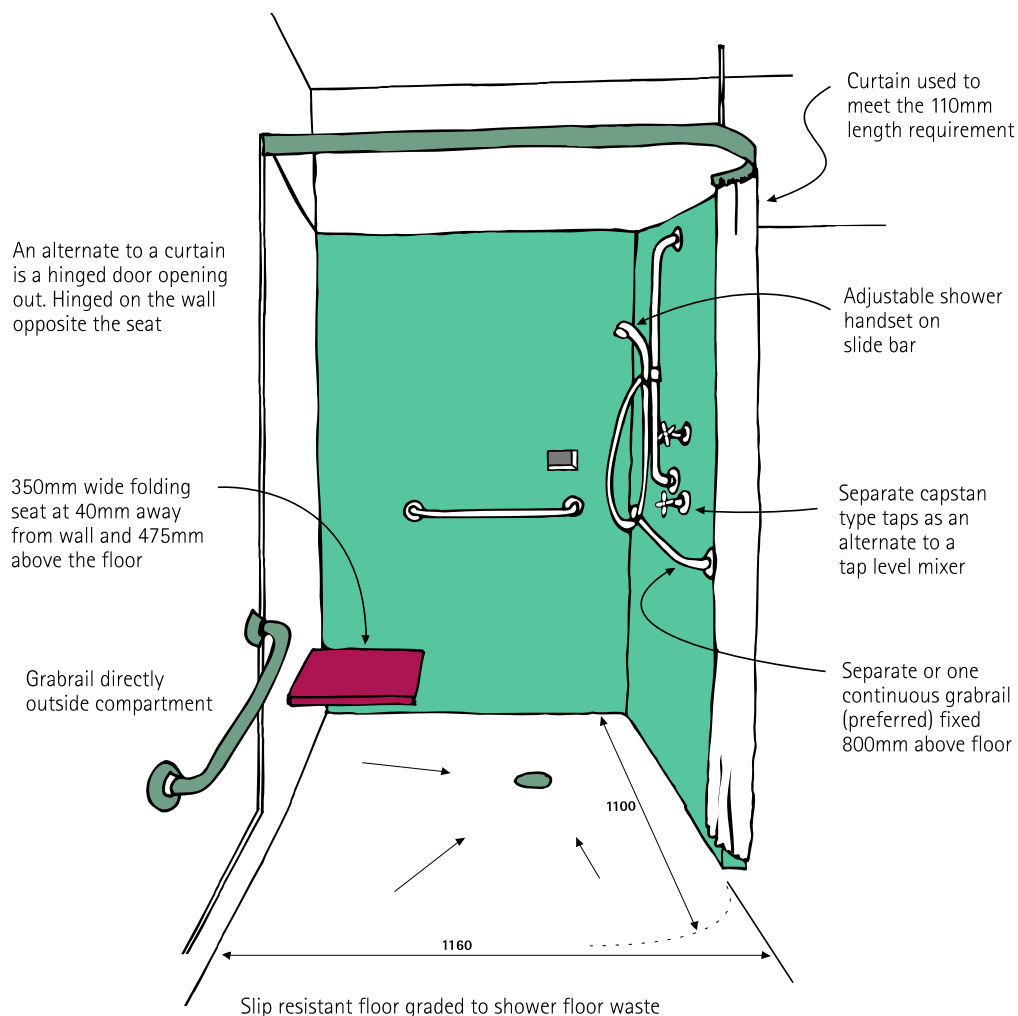
Select front-loading clothes washing machines and driers, installed on low level platforms for easy access.

Locate a clothes line with height adjustment within close proximity to the laundry.

Install an adjustable-height fold-down ironing board.

Install hand-held/height-adjustable showerheads on a flexible hose.

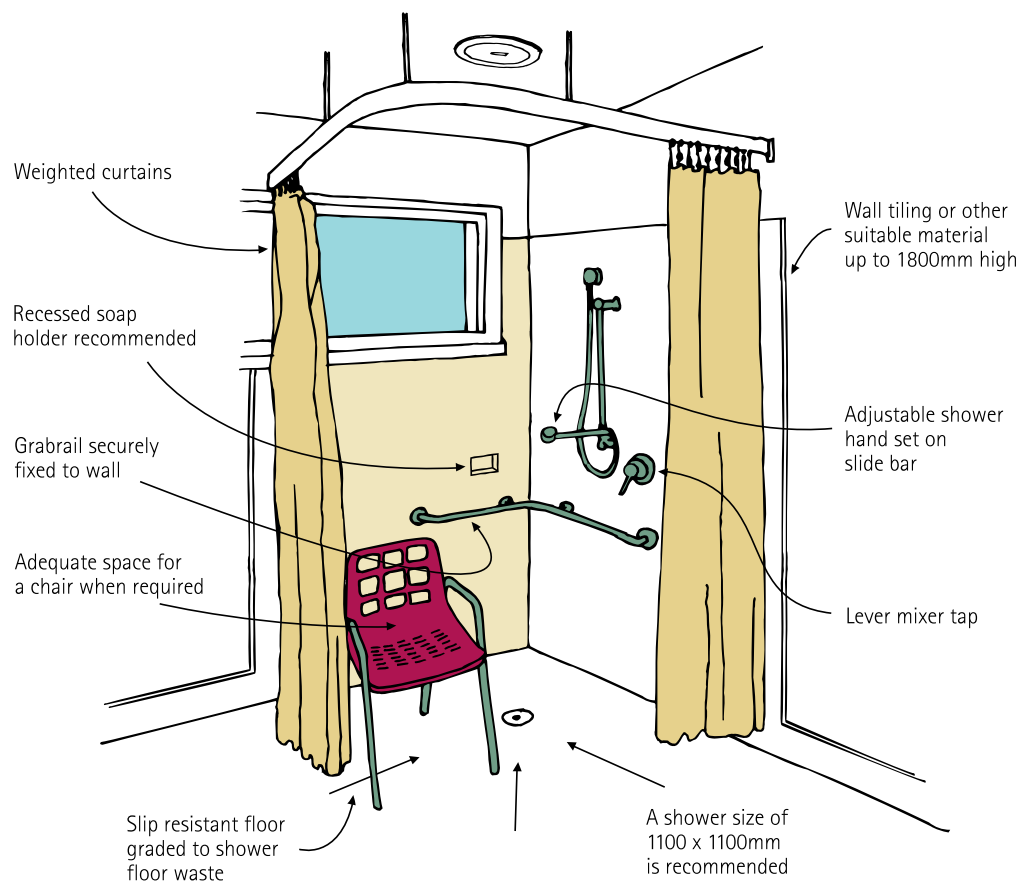
- 20 a+b** If the house has a single toilet compartment, no door swing or basin should encroach into an area that has a width of 0.9m and a length of 1.2m measured from the front of the pan. If an inward opening door does encroach on this area it must be capable of being removed from the outside. Alternatively, install an outward opening or a sliding door



## SHOWER ENCLOSURE BOUNDED BY THREE WALLS

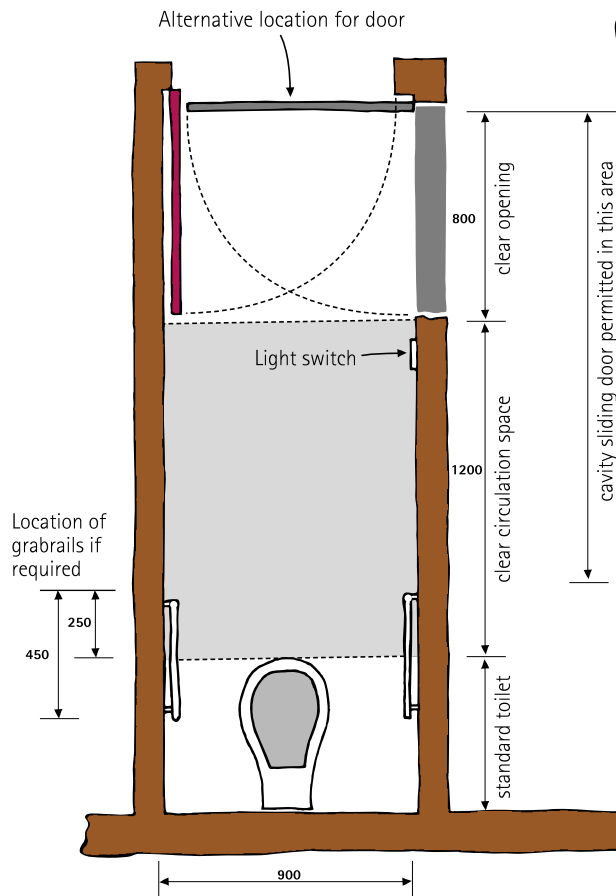
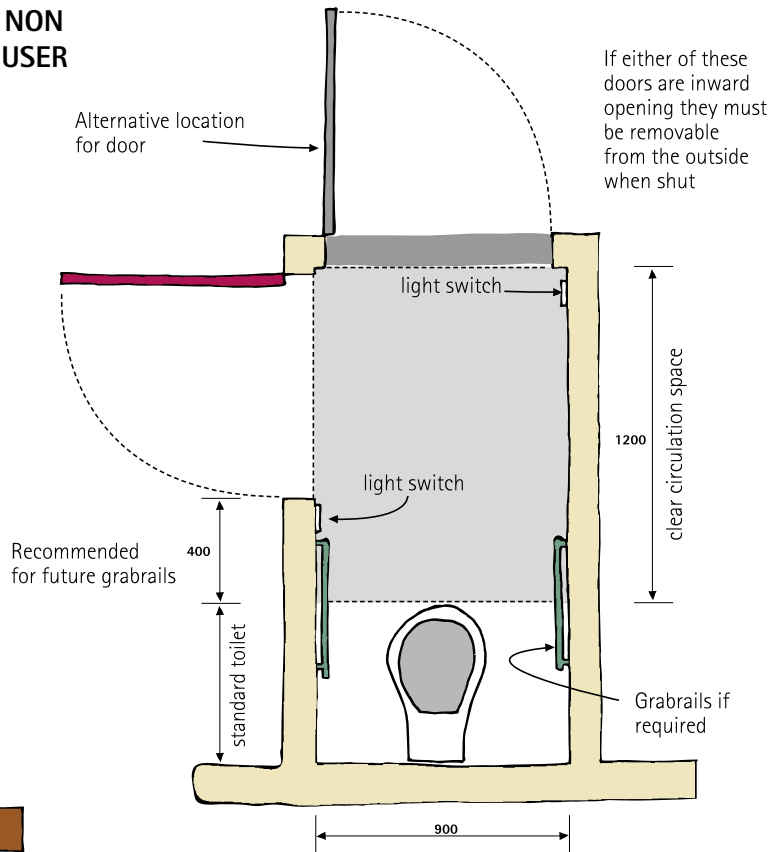
**19**

**a**

**19****b SHOWER ENCLOSURE IN CORNER OF ROOM**

20

**a TOILET FOR A NON  
WHEELCHAIR USER  
Option 1**



20

**b TOILET FOR A NON  
WHEELCHAIR USER  
Option 2**

## 6

## P A R T

## Thermal Comfort

In the past, personal comfort usually was resolved by using mechanical equipment to warm or cool the house. Because of rising fuel costs and many associated environmental issues, house designs now are climate responsive without relying on this equipment. The three main benefits are:

- the house will be more comfortable for the people who live there;
- energy bills will be reduced; and
- the capital value of the house will be increased because potential buyers are willing to pay more to obtain the first two benefits.

The main principles of Energy Efficient Housing are highlighted here. This is not a comprehensive guide to the subject.

### OBJECTIVE 6.1

**Incorporate all the principles of energy efficiency into house design.**

#### Essential

Principles that must be included are:

- solar access, building placement and orientation;
- windows, type, size and orientation - appropriate to climatic region;
- insulation - appropriate to climatic region;
- thermal mass - appropriate to climatic region;
- natural ventilation;
- energy efficient services and appliances; and
- landscaping - to enhance passive solar design.

## 7

P A R T

## Security

It is necessary to take precautions against house burglary and to protect the occupants within the house. The following guidelines provide an improved level of security. The effectiveness of these measures will be further improved if the homeowners follow the recommendations of organisations like Neighbourhood Watch. Homeowners should become involved with these groups, chat regularly with their neighbours and try not to be too predictable in their movements. But, while being unpredictable may deter burglars, it may not always be desirable to be too unpredictable to neighbours.

### OBJECTIVE 7.1

**Incorporate into the house design and construction, fittings and features that provide a high level of security for the occupants.**

#### Essential

Locks to all external doors of the house and the internal door from the garage, must be:

- keyed the same;
- of the type that permits the unlocking and opening of the door with one hand;
- of the type that can be deadlocked from the inside; and
- easily opened in an emergency from the inside.

**NOTE:** It is important that the people in the house are shown how deadlocks work. If there is a deadlock on any door and the occupants are not sure how they operate advice should be sought immediately.

All external doors and window frames must have provision for future fitting of security screens.

**NOTE:** As security screen doors can present difficulties for wheelchair/walker users, entrance doors should incorporate a security hatch in their manufacture, fitted at an appropriate height for the user. If a separate security screen is used, it should be fitted with a delayed-action closing device that has a hold-open function located at the door's mid-height. Entrance doors should not be relied on for ventilation.

All windows must be fitted with window locks that are keyed the same.

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Ensure there is a clear line of sight between the well-lit parking space/vehicular drop-off point and the entrance to the house.

All front doors must be provided with:

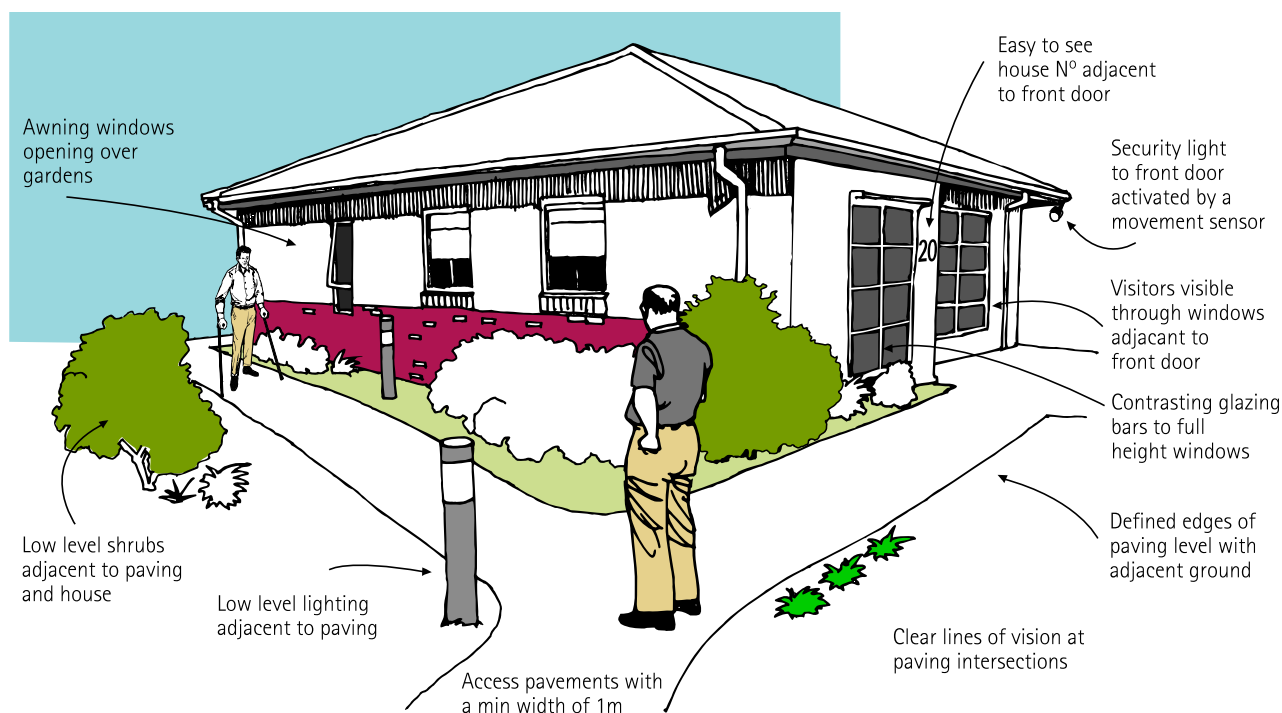
- a clear view of any visitors, by means of either an adjacent window, a view panel, an optical eye piece or electronic surveillance; and
- a safety device, like a chain, that restricts the door from being forced open from the outside.

## Recommended

If circumstances permit, install an audible/visual 'emergency alarm system' with the buttons located within easy reach of the bed and just inside the main entry. Alternatively, during construction, install wiring (or a conduit with a draw wire) for future connection to a security system.

Obtain a cordless phone or install a second phone located within easy reach of the bed, with preset emergency and other personal contact phone numbers.

Provide a secure area, with battery recharging facilities, for the storage of an electric wheelchair.



21

## SITE VISIBILITY

## 8

P A R T

## Personal Space

Everybody needs personal space. With large houses this issue usually is not a problem; smaller, older houses and units in a larger development can be.

### OBJECTIVE 8.1

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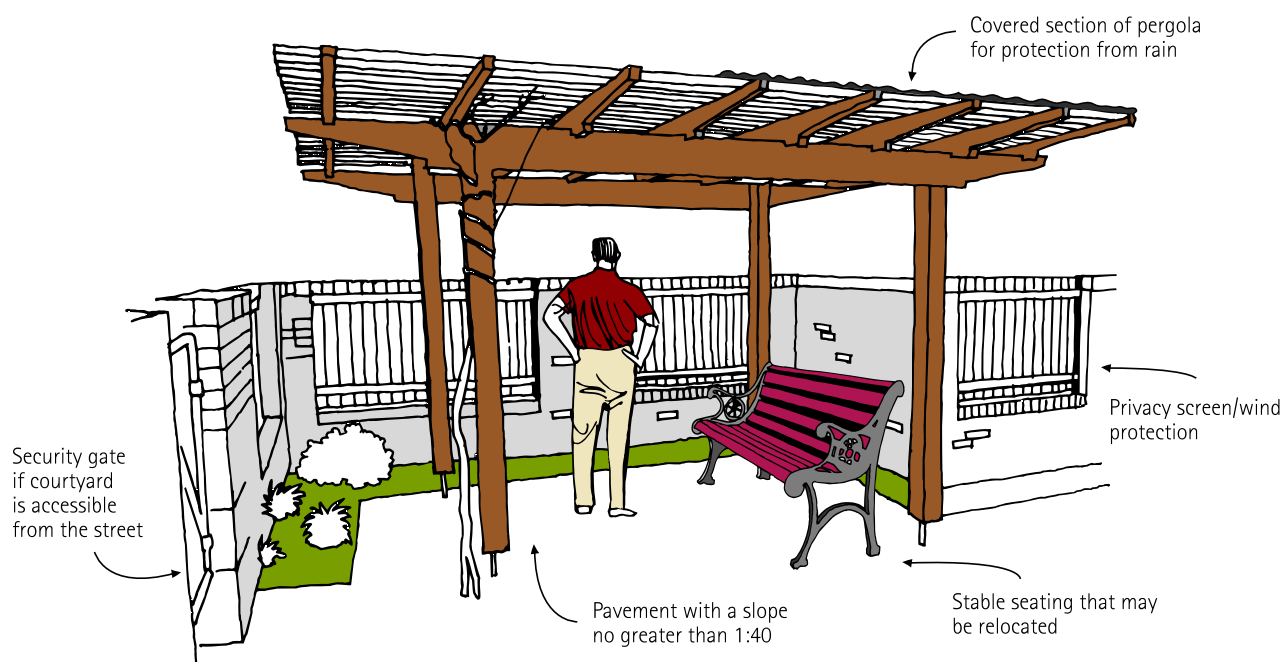
**Provide in the house design, areas of privacy, other than a bedroom, within and outside the house.**

#### Essential

Provide a sunny courtyard, or other appropriate space, with:

- protection from inclement weather conditions;
- privacy from the public;
- supervision from within the house; and
- sound barriers that reduce excessive street noise.

A separate sunny area should be available as personal space within the home, where an occupant can retreat from the family or loved ones.



PERSONAL SPACE

22

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## 9

## P A R T

## Lighting

Sight often diminishes with age and the elderly depend more on good sources of light. Natural light is the preferred option, but it can be troublesome if it produces excessive glare/reflection. Standard houses often have badly shadowed areas that should be illuminated for the safety of all occupants, even during the daytime. Good lighting improves the general amenity of the home both for those with good vision and those with impaired vision.

### OBJECTIVE 9.1

**Provide sufficient lighting for the safety and operational needs of all the occupants.**

#### Essential

Provide an adequate level of light in internal circulation areas. More than one light may be required in any one area for users with vision impairment.

Select light fittings that allow for simple bulb/element replacement and give even light distribution.

Locate all light fittings directly above work surfaces where specific tasks are performed.

Install two-way light switches

- at each end of corridors;
- in living areas that have more than one entry; and
- in bedrooms, with the additional switch located alongside the bed.

Provide outside sensor lights directed at a visitor/intruder for improved night-time security. These lights do not need to be of high wattage as their activation alone will deter most intruders.

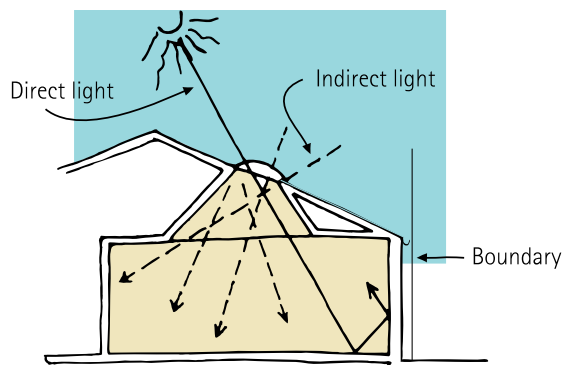
## Recommended

Install dimmer controls to light fittings in areas where occupants may have to perform multiple tasks.

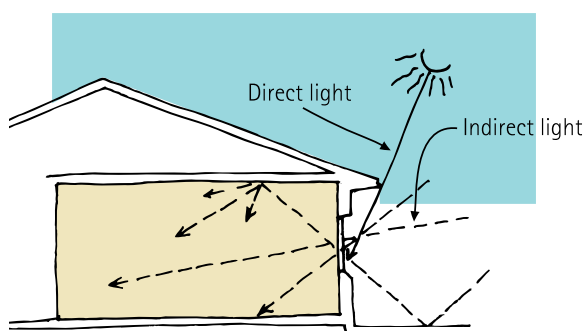
Provide an adequate level of external lighting (preferably at low level so it is not directed at the user) to illuminate the ground for a distance of 1m on each side of the walkway.

23

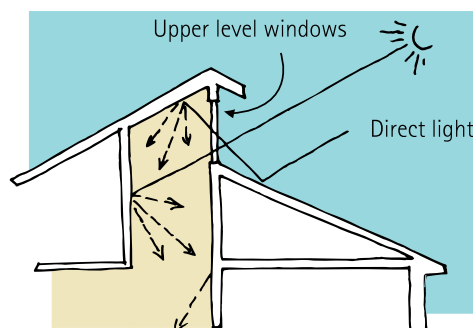
Natural lighting is preferable in all service areas and corridors.



**A** Skylight with splayed shaft



**B** Depth of room proportional to window size and placement



**C** For lighting (and ventilation) of internal rooms and corridors

23

## EFFECTIVE USE OF NATURAL LIGHT FOR UNIFORM LIGHTING

## 10

## P A R T

## Windows

Light, views, ventilation and energy efficiency should be considered when selecting the type, size and placement of windows. The window sill should be at a height to satisfy all possible eye levels of the occupants, from children to adults either standing, seated or reclined.

### OBJECTIVE 10.1

**Select windows for maximum security and safety while maintaining the above basic functions.**

#### Essential

Avoid windows that open outwards and project into paths of travel.

For the safety of all home occupants, all full height glazed windows and doors must incorporate either:

- a rail between 600mm and 730mm above the floor; or
- adequate markings on the glass (at the above height) with a high level of contrast to the viewed background.

#### Recommended

Provide windows with a maximum sill height above the floor of:

- 600mm in bedrooms; and
- 730mm in living areas.

**NOTE:** These preferred dimensions give occupants a reasonable line of vision whether lying or seated.

Careful consideration should be given to the design and orientation of large windows because in some climate zones of Australia extreme temperatures and radiation can make areas adjacent to windows unbearable.

# 11

P A R T

## Safety

Accidents in the home can be reduced with thoughtful design and construction. Use of the most appropriate fixtures, fittings and materials may involve a small increase in the original cost of the house but in the long term, they increase the value of the property.

### OBJECTIVE 11.1

**Provide the safest possible environment for everyone moving between areas or performing tasks within the house or around the site.**

#### Essential

All external walkways and ramps must:

- be slip resistant:
- have firm surfaces (gravel is not suitable); and
- not be located
  - under trees that drop large quantities of leaves that conceal the path or
  - in shady areas on the south side of the house that are often damp and/or slippery.

If an external doormat is required, use only a low profile type with a non-slip backing.

Provide slip resistant floor surfaces in the kitchen, laundry, bathroom and toilet with the laundry and bathroom floors graded to floor wastes to prevent the ponding of water. When a shower has been designed for unrestricted access without a fixed screen, the entire floor must slope towards the shower floor waste.

Hot water supplied to all sanitary fittings must not exceed 50°C.

Install grabrails in the shower recess, adjacent to the bath and the toilet, or make provision for their future fixing as outlined under 'Adaptability'.

If the house has steps, handrails or grabrails may be required. This can be a temporary measure (before having a level walkway or ramp installed) or be more permanent depending on the ability of the people in the house.

Enclose or eliminate by design all projecting sharp edges and insulate all hot water pipes that occupants can touch, especially under wash basins and sinks.

Avoid using highly reflective or polished floor and bench surfaces to eliminate glare.

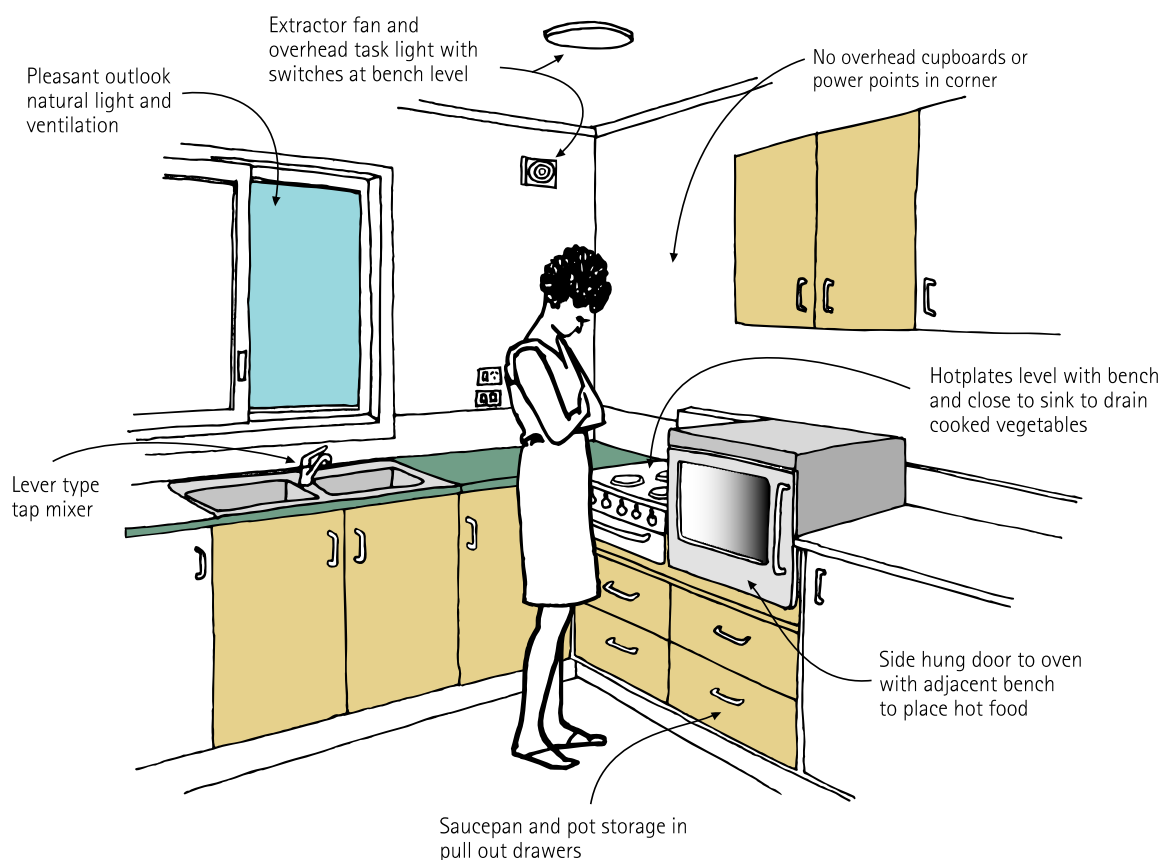
Provide similar texture floor finishes to both the kitchen and dining areas. Any changes in floor surfaces can contribute to accidents - for instance when food and/or drinks are carried between these rooms.

Design kitchen benches with contrasting top and adjoining front surfaces.

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Install a cooktop with staggered electric hotplates that are easy to clean with the controls located at the front. Locate the hotplates near the sink to reduce accidents when transferring pots for draining hot water after cooking.

Select ovens with hinged doors that are hinged on the far side from the adjoining work surface.



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## RELATIONSHIP BETWEEN SINK AND HOTPLATES

**NOTE:** Conventional oven doors that pull-down mean the user may need considerable strength to transfer heavy food to or from the adjacent work surface because of the reach required over the opened door. Resting food on these doors is not a solution to this reaching/weight problem, even if the manufacturer claims that food items can be placed on the door when it is open. However, one advantage of pull-down doors is that they can protect the legs of a person in a wheelchair if hot food is accidentally spilled.

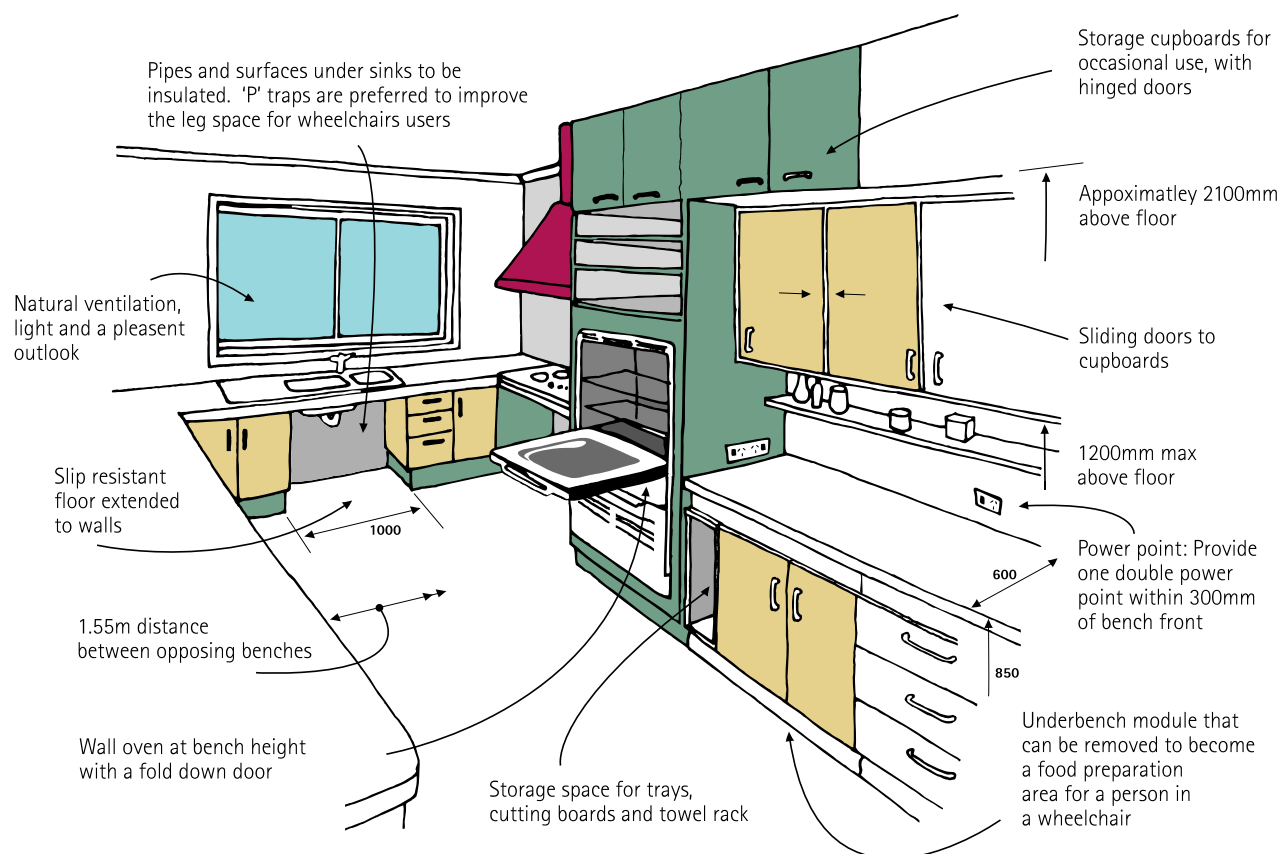
## Recommended

25

Incorporate sliding doors to all mid-height overhead cupboards in kitchens and laundries to prevent head injuries which may occur if hinged doors are left open.

Avoid all loose carpet pieces, rugs and runners. If used they must:

- be securely fastened to the floor for their full perimeter;
- have a low pile height; and
- not be fitted on top of an existing carpet.



## 12

P A R T

## Operating Controls

All household appliances and devices have been considerably improved to make them more user-friendly. Install appliances with fittings and operating controls that have been designed with users' ability **or inability** in mind.

Issues that should be considered before installation are:

1. easy recognition of operation prior to use;
2. parts of the hand required to operate fittings and controls;
3. strength required and the direction of force needed;
4. size of controls;
5. finish of controls and their contrast with adjoining surfaces;
6. location of fittings and controls;
7. implications of misuse;
8. type of energy, ie. gas or electric.

### OBJECTIVE 12.1

**Ensure that all controls are easy to operate by anybody with finger or hand disabilities.**

#### Essential

26

Fit lever handle taps or separate, capstan handle taps with a central spout to all basins, sinks and tubs.

If separate taps are provided, place the hot tap on the left, as the first choice, or above the cold tap only if horizontal fixing is unachievable.

Select external door hardware that permits the door to be unlocked and opened with one hand.

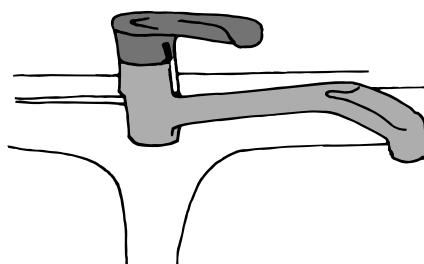
27

Fit all doors with lever handles, preferably 'D' shaped, fixed approximately 1m above the floor.

Fit sliding doors with 'D' handles, not recessed pulls, and ensure that an adequate clearance is provided between the handle and the door frame when doors are fully open or shut.

Mount the electrical switchboard flush on an internal wall adjacent to a circulation space at a height of 1.2m between the floor and the bottom edge of the panel. Select a panel that has a device which prevents children from obtaining access, but still permits easy access for users who have hand disabilities.

Locate window operating controls and locking devices approximately 1m above the floor.



LEVER HANDLE TAP

26

## Recommended

Place all electrical switches and power points approximately 1m above the floor and no closer than 500mm to an internal corner. Powerpoints may be positioned 600mm minimum above the floor.

Provide a minimum of one double power point in the kitchen no further than 300mm from the front edge of the work surface.

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Install large rocker type toggle switches or ones that incorporate push pads.

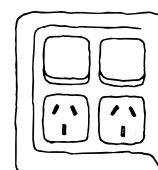
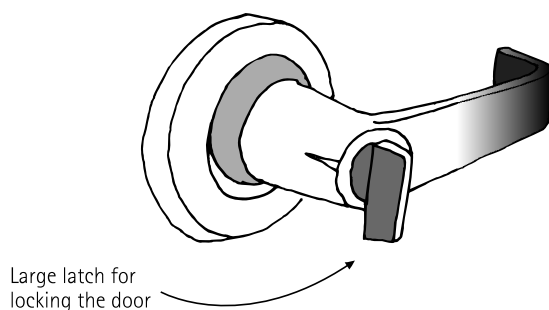
Select fittings that have a high contrasting colour when viewed against their surrounding backgrounds.

Use rod type controls on curtains and blinds in preference to cord types. The rods should be easily accessible from a seated position.

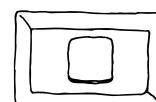
Select smoke alarms that incorporate reset buttons in a high contrasting colour to the body of the unit. This feature permits the alarm to be reset after false alarms by using a broom handle or similar object. Alternatively, locate a remote reset control about 1m above floor level.

27

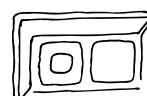
## 'D' SHAPED LEVER HANDLE



Double power point  
with large rocker  
action switches



Light switch with  
large rocker action  
control



Emergency call  
button with light

LARGE ELECTRICAL SWITCHES

28



## 13

## P A R T

## Maintenance

Maintenance is time consuming and can be expensive. It is not restricted to external exposed materials of the house but also covers internal finishes, fittings and appliances.

Good house design and selection of materials appropriate to the local environment can almost eliminate external maintenance. The same can be said for the garden. With careful planning, a low-maintenance garden can be developed and is an asset to any home.

However, fittings and appliances are subject to daily wear and tear, requiring periodical repair and eventual replacement. Selecting durable products is the best solution. Products that have a longer life expectancy - such as compact fluorescent, energy-efficient light fittings - will save money and inconvenience in the long run.

### OBJECTIVE 13.1

**Incorporate good design with correct building material selection to eliminate the need for maintenance and reduce day-to-day upkeep that requires special skills or ability.**

#### Essential

Avoid high ceilings with light fittings that are accessible only with the use of tall ladders. A combination of wall lights and stand/table fittings are preferred because changing light globes is easier. Moveable fittings enable different uses or tasks to be carried out in the area.

Extend overhead kitchen cupboards up to the ceiling where practical to prevent accumulation of dust and fat on the cupboard tops. The extension should not be a storage space at a high inaccessible and unsafe level. An infill panel or bulkhead should seal off this space.

Avoid excessive use of carpets in high-use areas, or areas that can be soiled. As an alternative, use easy to clean surfaces such as strip-timber flooring, cork tiles, ceramic tiles, sheet linoleum, etc.

Locate all windows so that the glass can be easily cleaned inside and outside without the use of ladders.

Minimise painting on all external surfaces by using pre-coloured metal fascia, gutters, downpipes and windows.

During construction, install leaf guards on gutters that are close to existing or proposed trees and provide cleaning access at the base of downpipes to the stormwater system, by either:

29

- a sump with a removable grate separated from the downpipe; or

30

- a stormwater fitting connected to the downpipe, with a removable screw cap, above ground level.

Avoid use of timber external cladding and windows in areas that are exposed to extreme weather conditions.

Where required, install flyscreens that can be removed and replaced easily, without the use of tools.

## Recommended

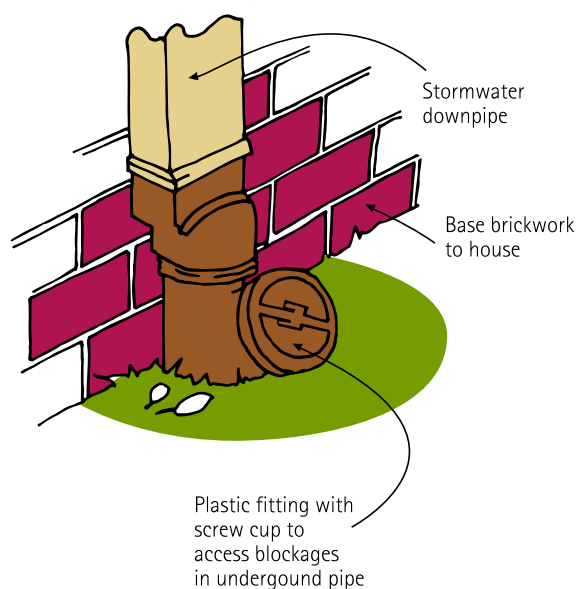
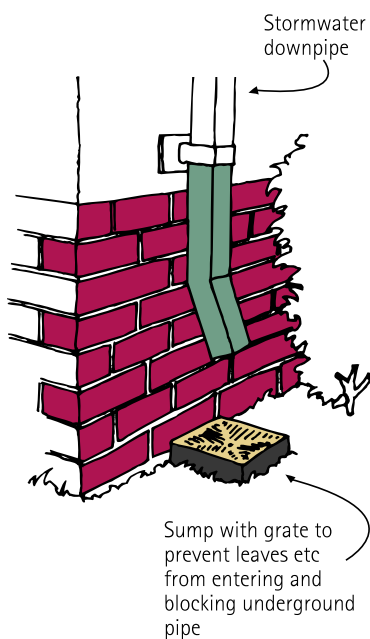
31

Incorporate one or more raised garden beds into landscaping adjacent to the house for easy access by the occupants.

Avoid planting large trees close to paving because their roots can disturb pavement surfaces, requiring expensive repairs

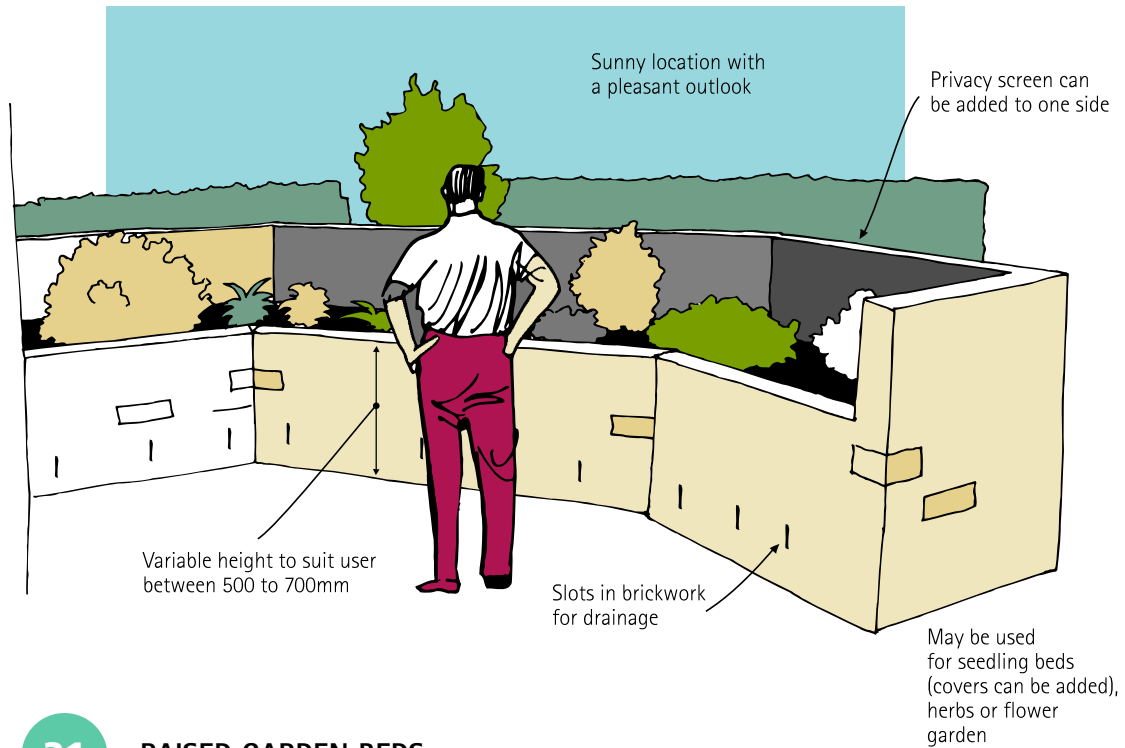
29

### CLEANING ACCESS TO BASE OF STORMWATER DOWNPIPE



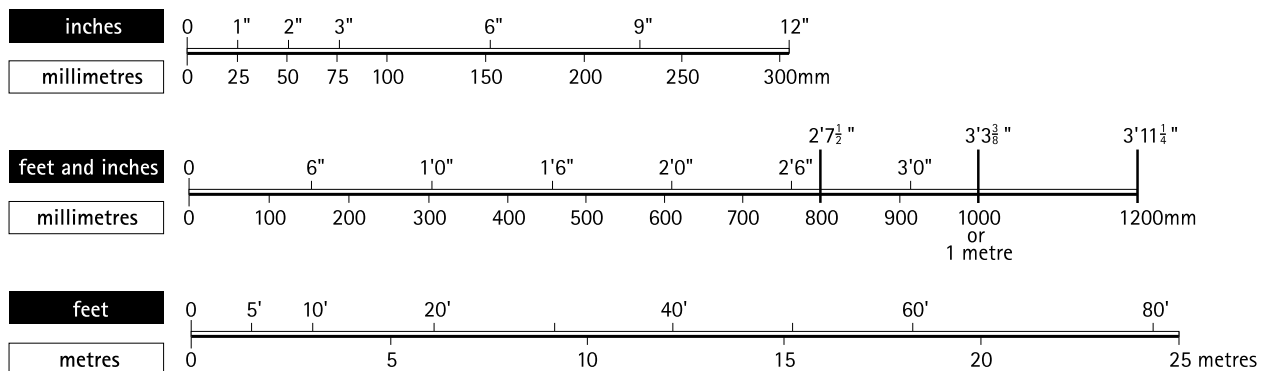
### ACCESS TO STORM WATER DRAIN

30



## 31

## RAISED GARDEN BEDS



## METRIC IMPERIAL CONVERSION

10 millimetres (mm)	=	1 centimetre (1cm)
25 mm	=	1 inch (1") approximately
305 mm	=	1 foot (1'0") approximately
1000 mm	=	1 metre (1m)