

# the adaptable house

The term 'Adaptable' is used to describe a structure that has the ability to be modified or extended at minimum cost to suit the changing needs of the people in the house. Thoughtful design can provide the flexibility for these needs to be met without requiring expensive and energy intensive renovations.

The functions of a house don't change: we eat, sleep and spend our private lives in them. What does change over time is our lifestyle and needs.

Some of us may wish to run a business from home, and as some grow older they may want to look after their grandchildren. Others may need assistance either from mechanical aids or carers. Therefore, we should design and build housing to be 'Adaptable' so that it can be used by everybody, irrespective of the users' age, level of mobility, health or lifestyle.

An Adaptable house is not a separate issue in house design. It is a concept that contributes to a package of principles, which collectively contribute to good design.

## DESIGN CRITERIA

### EXTERNALLY

**When you site your home** on the block, consider possible future additions.

**For convenience and safety** an adaptable home should provide adequate car parking space with overhead cover to at least one space. The distance between the residence and any on-site car parking should be under 25 metres.

**On-site parking** is not intended to encourage car use but to provide adaptability in situations where the use of a car is necessary. [See: Transport]

**Avoid bends in driveways** where cars are required to reverse and areas of limited vision, especially where cars move out onto the street.

**Carports and garages** should have a minimum internal width of 3.8m with a ceiling height of 2.5m and an internal length of 6m. This size permits a wheelchair user access and use of a vehicle. Carport supporting posts should not obstruct the opening of car doors.

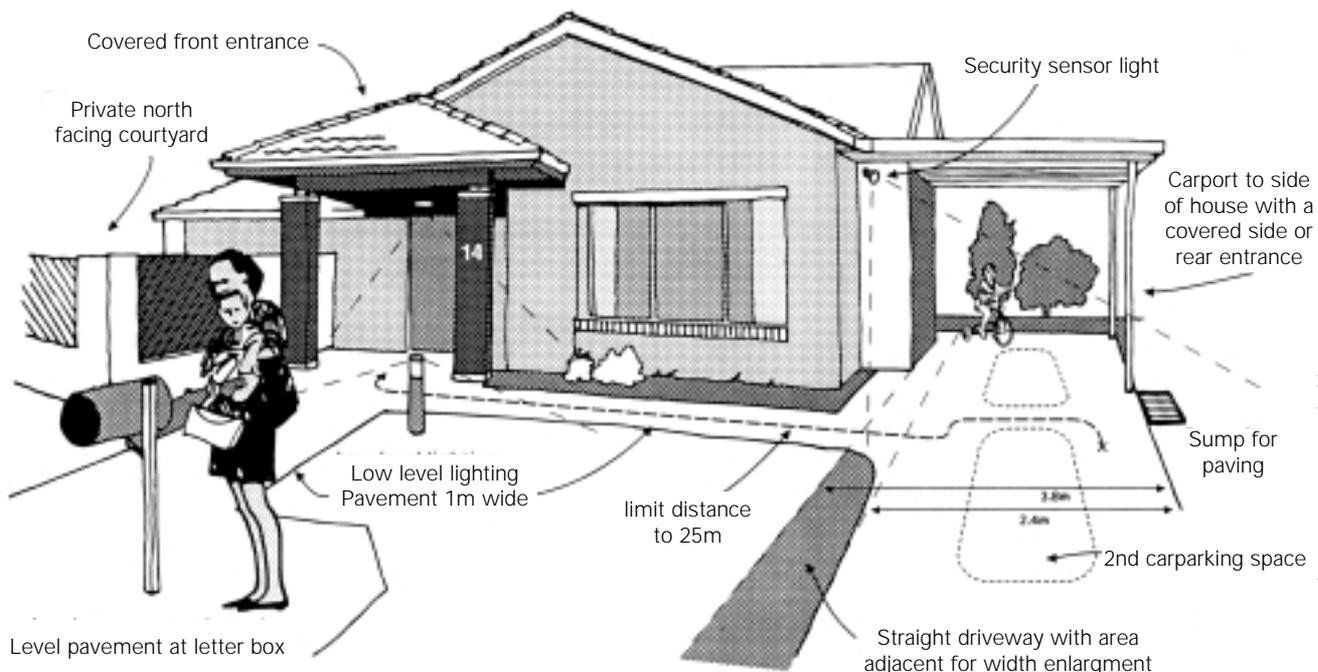
**Outdoor parking spaces** should have a minimum size of 2.4m x 6m with provision for width enlargement to 3.8m. All car parking spaces should not have a surface slope exceeding 1:40 in any direction.

**Minimise the need for ramps and steps** especially to the main entrance by integrating the house with the site. Building access should be as level as possible. This can usually be achieved by gently sloping elevated walkways.

### INTERNALLY

**Provide** a safe and comfortable home suitable for any occupants irrespective of age and level of ability (or inability). It is important to avoid creating an institutionalised atmosphere through over-use of grab rails and similar features. Take care to preserve a home atmosphere, especially within the bathroom.

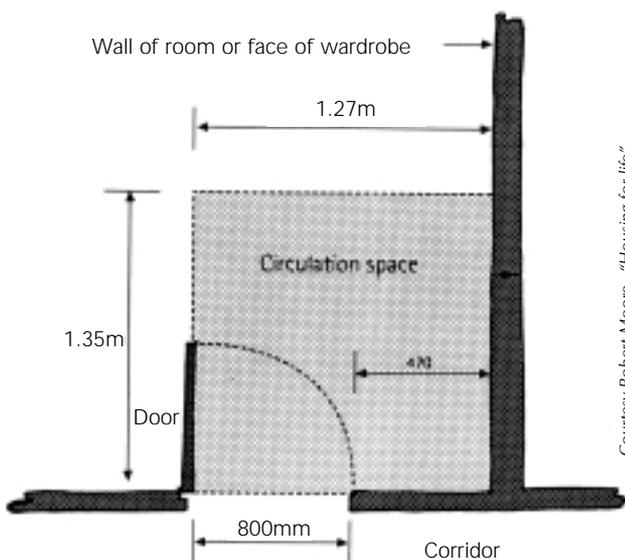
**Plan the layout** of the house so that the size of each area allows for multiple usage. Room sizes are critical to the success of an adaptable house and they can vary considerably, depending on the size and layout of furniture.



**Design for the needs** of the present owners, without being too specific or inflexible in the design or form of construction. Plan for modifications that will help to suit the needs of people who may wish to buy the house in the future.

**Reversibility** is another benefit of 'Adaptable' housing. As the occupants of the house change so do the functions and lifestyles in and around the house. Modifications should be simple to carry out and become very cost effective when they are planned into the initial design of the house.

**Wheelchair users** should be able to freely access all the essential areas of the house without assistance. If the house is more than one level it should 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.



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

**Allow for wheelchair circulation space** adjacent to all doors. This space varies depending on the swing of the door and the direction a wheelchair approaches the door. The Australian Standard 'Design for Access and Mobility' (currently AS1428.1 1998) should be consulted for these circulation spaces.

**Corridors** between areas of the house should be kept as short as possible and have a minimum clear width of 1m (1.2 is recommended).

**Doorway openings** of at least 800mm are recommended, measured between the face of the open door and the opposite door frame. Door handles are not considered an obstruction in this width. Consider increasing the clear doorway opening above these minimum sizes, particularly for external doors.

**Always allow** for a minimum unobstructed area, free of furniture, of 2.25m diameter in living areas, 2.07m x 1.55m in at least one bedroom and a distance of 1.55m between opposing base cupboards in the laundry and kitchen.

#### BENEFITS OF AN ADAPTABLE HOME

Living in an 'Adaptable' home may also assure that the occupier does not need to move to a more accommodating residence, often at great cost. It extends the owner's life in their home, increases the value of their asset and the longevity of the house. The latter directly relates to 'Sustainable' design and construction.

#### CONSTRUCTION

Construct the house so that future modifications can be carried out at minimum cost. The following are some of the methods that can be used to achieve the objectives of 'Adaptable' housing.

#### BATHROOM AND TOILET

To simplify a possible future modification the dividing wall between the bathroom and toilet should not support any structural load or contain any electrical or plumbing services. If you plan to remove this existing wall, permission from the local council may be required 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 have been finished, including cornices and skirtings.

The bathroom floor should not contain a step down or raised 'hob' to step over to gain access into the shower. Waterproof the entire bathroom floor irrespective of whether a shower screen is fitted. The floor tiling of the entire room should be graded to the shower floor waste to prevent puddling of water.

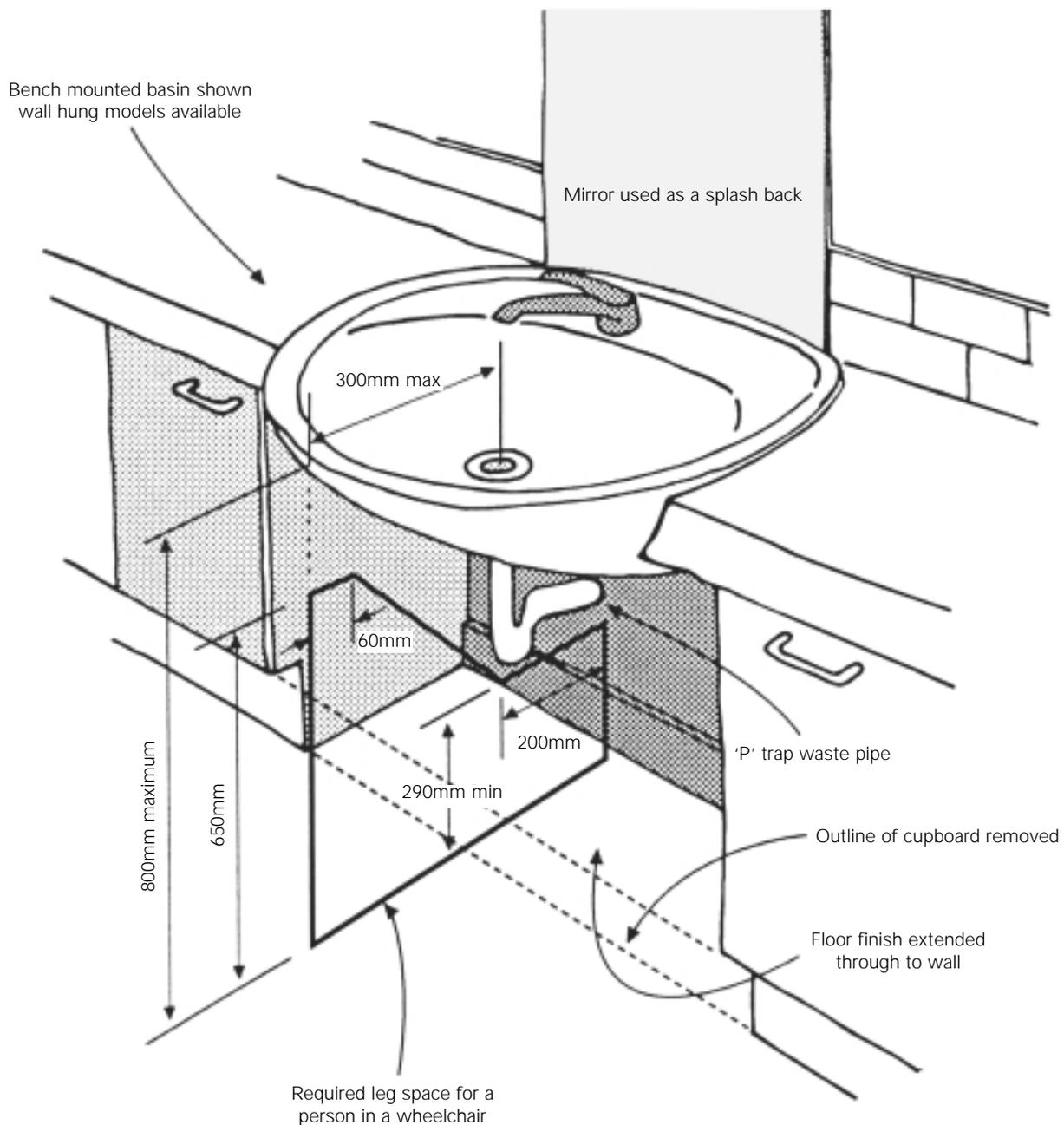
Securely screw-fix 12mm structural plywood to the wall framing of the shower recess, bath and toilet, before fixing the finished wall sheets. This is to allow for the fixing of future grab-rails and other fittings in any location. Record this information on the plans for the future purchaser.

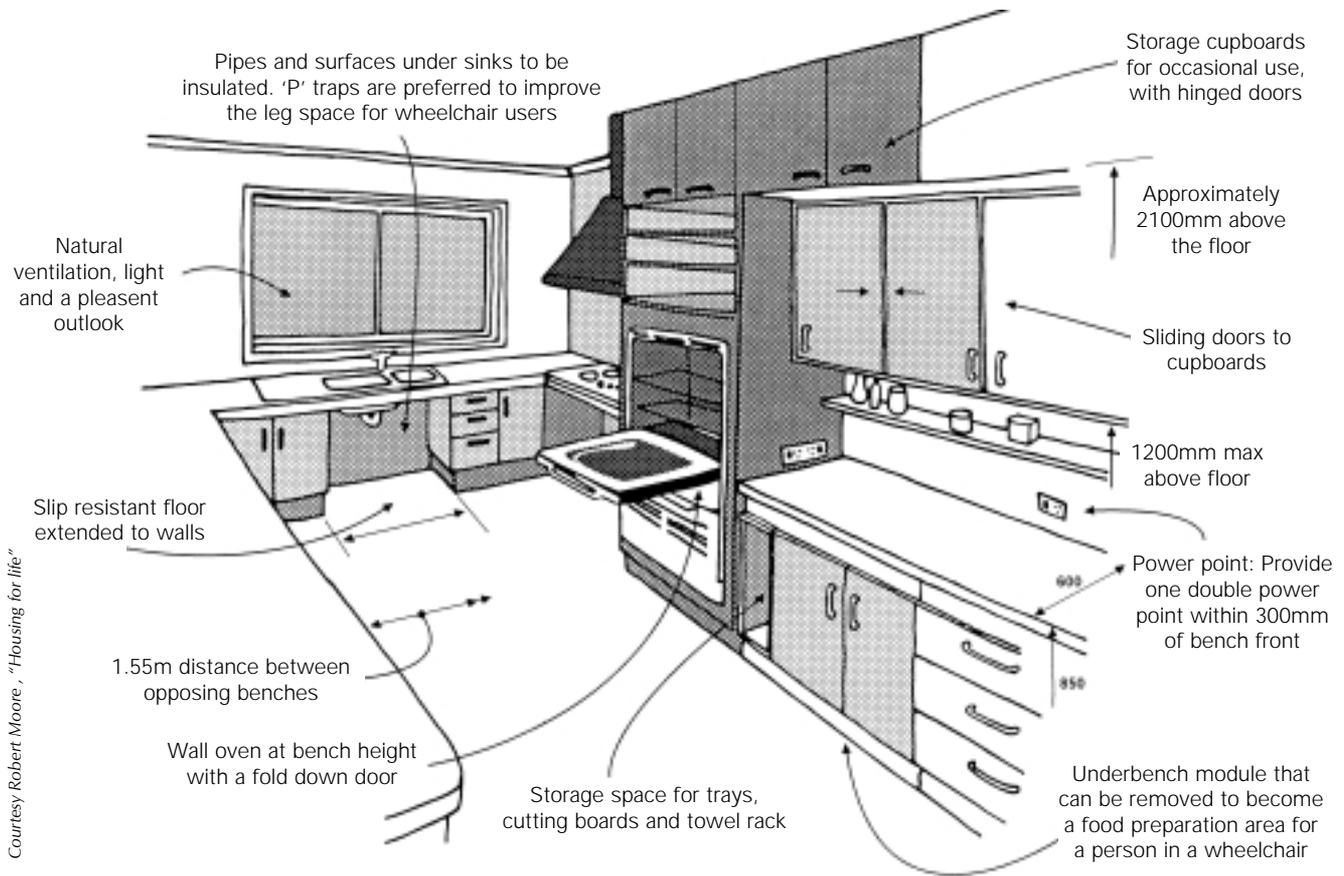
All such fixtures must be securely fixed to the plywood with suitable screws or purpose-made anchors. Do not position a cavity sliding door beside a toilet pan because it will be difficult to fix future grab-rails onto that wall.

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

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 cut away tiles. This preferred method enables the easy relocation of the pan without the need to retile a section of the floor to match.

Install a mirror in the bathroom 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.





Courtesy Robert Moore, "Housing for life"

Fit semi-recessed wall hung basins to bench tops with removable vanity units underneath. Use 'P' trap water seals to basins. These provide greater leg room for wheelchair users than 'S' traps.

### KITCHEN

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.

If an adjustable bench top is not practical, incorporate a pull-out bench top into a cupboard at the required height.

Avoid using pull-out tops in areas that also serve as walkways.

### OTHER

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. Ensure that you keep accurate records of the location of these conduits for future reference.

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

Wherever possible, install adjustable shelving and pull-out baskets that can be accessed from a seated position. This form of storage should be used throughout the house.

#### ADDITIONAL KEY REFERENCES

Master Builders Association of the ACT. 2001 'Housing for Life' – Designed for Everybody.

Australian Standard 4299 – 1995 'Adaptable Housing'. Some dimensions referred to in this older standard may be revised.

Australian Standard 1428.1 – 1998 'Design for Access and Mobility'. \* A revision of this standard will be released soon.