

## Kitchen Design: meeting everyone's needs

Designing or modifying a kitchen that is accessible for a range of users can be challenging and requires some compromise. General principles can be applied to help achieve an accessible kitchen for most of the population. The three Australian Standards that can be useful for reference are *AS 1428.1*, *AS 1428.2* and *AS 4299*.

Important features of kitchen design include:

- Adequate space for moving around the kitchen.
- Work surfaces and adequate storage at suitable heights.
- Appropriate kitchen appliances, easy-to-use knobs, handles and controls.
- Easy access to kitchen waste disposal facilities.
- Planning for the future and considering the changing needs of users.

Becoming familiar with Australian Standards and current relevant legislation may help in the design process. Legislation and appliances change over time and as technology improves. It is advisable to contact appropriate organisations and health professionals to discuss current appliances and fixtures in relation to your needs.

### Kitchen layout

Good kitchen design begins with the main work areas—the cook top and oven, refrigerator and sink. Focus on fixtures designed with a range of users in mind and that are easily removed if extra manoeuvring space is needed. For people with a cognitive impairment, it may assist to use a simple, uncluttered design layout that may resemble something the person was familiar with in the past.

The distance between each main work area should allow sufficient room for easy day-to-day food preparation tasks. If it's too small, people may feel cramped. If too large, more energy is required for walking, lifting, carrying and cleaning.

For circulation space, an 'L' or 'U' shaped layout is preferable. If possible, make provision for dining space in the kitchen, using a table, counter or pull-out board.

For people who need support when walking or standing, a corridor-style kitchen design allows them to make use of the bench tops on either side for support. Additional handrails can be installed along the sides of benches for extra assistance. The maximum recommended space between the parallel bench tops is 1200 millimetres. Keep in mind that a corridor design does not provide wheelchair access should it be required later, nor does it meet the requirements of adaptable housing design.



The minimum comfortable manoeuvring space for a wheelchair user to make a 60 to 90 degree turn is 1500 millimetres wide and 1500 millimetres long in the direction of travel.

To make a 90 to 180 degree turn, the minimum space required is not less than 2070 millimetres in the direction of travel and not less than 1540 millimetres wide. Foot recesses of at least 290 millimetres high and 190 millimetres deep under cupboards are required to accommodate footplates. A compact kitchen design may work for a wheelchair user if the person does not need to turn around and is able to drive in and reverse out.

## Doors and windows

To maximise circulation space, doors to the kitchen should open out or slide. If the door must open into the kitchen, additional circulation space may be required inside the room. The minimum clear doorway width should be 850 millimetres. If designing for a wheelchair user, include extra width on the latch side of the door—this allows room for wheelchair footplates when the user reaches for the door handle. Additional width on the hinge side of the door is also recommended depending on the direction of approach to the doorway.

Windows can be located over the sink or the cook top and should be low enough for a wheelchair user to be able to see out. A remote control opening device may be necessary if the window is above bench height and out of reach.

## Choice of materials

Materials selected for kitchen use should be easy to clean, durable and stain-resistant. A section of heat-resistant material next to hotplates can be useful for sliding saucepans and pots directly off the cook top.

Colour contrast is important for those with vision impairment or for planning ahead when building for an ageing resident. Choose anti-glare surfaces and colours that provide a 30% luminance contrast with each other. Contrast bench tops to cupboards and power points to their background. Horizontal surfaces should be a lighter colour than vertical surfaces.

Opt for appliances where the control buttons and the backgrounds have strong contrasting colours. Words and pictures on controls should be large, simple and contrasting to the background.

## Worktops

Everything should be in easy reach of both standing adults and wheelchair users.

Standing adults generally prefer bench heights of 850 millimetres to 900 millimetres. Wheelchair users often prefer 700 millimetres to 850 millimetres. A compromise height of 850 millimetres may be used but if this is not ideal—consider who uses the bench tops the most.

Consider providing multiple work surfaces at different heights, pull-out worktops or height-adjustable worktops that can be operated electrically or manually and incorporate an emergency stop for safety.

A bench depth of 600 millimetres is generally recommended, however, wheelchair users and people with limited reach may find this width difficult when cleaning or reaching for objects at the back of the bench. As a minimum, provide an unbroken

bench sequence between the sink and cook top to assist with sliding items from one area to another. Bench edges and corners should be rounded for safety.

At least one work surface should provide a clear opening of 820 millimetres underneath to allow for the front approach of a wheelchair. Knee space under kitchen benches allows a person with limited standing tolerance to sit on a stool while preparing food.

## Sinks

Sinks should be placed centrally in the kitchen and ideally should be at the same level as the work surface and positioned towards the front of the work top. Sinks placed against an outside wall with a window above have access to convenient drainage and natural lighting. A sink unit or two single bowls located diagonally across a corner in the kitchen with knee space underneath gives easy access to the sink and to the counter on either side.

Standing adults and wheelchair users will prefer the sink at different heights. Options include a compromise fixed sink height, using a height-adjustable sink or two sinks at different heights (if space permits). For people with limited reach, a narrow sink may be suitable.

Food preparation can be concentrated in a small area by choosing a single or one-and-a-half bowl sink. For double bowls, consider a compact size without a drainer or a sink which features the option of fitting a chopping board and draining basket over one of the bowls.

A shallow sink provides greater knee space under the sink for wheelchair users, as does the selection of a P-trap with all waste pipes located against the back wall. The underside of the bowl and any exposed pipes should be insulated to protect users from burns. A slide-out towel rail can be fixed to the side wall of the knee recess.

Any rubbish disposals or dishwashers should be easy to reach from the sink position.

## Storage

Clutter can create confusion and make it harder to find things. Clean out drawers and cupboards regularly and discard the items that are no longer required.

Food, dishes and cooking utensils need to be within easy reach to minimise the time, work and effort expended in doing simple tasks. Frequently used items should be located on bench tops or stored between hip and shoulder height to minimise reaching and bending. Heavy pots and pans are best kept near the stove and sink.

High cupboards may be out of reach for wheelchair users or people with restricted shoulder movement. However, they should be included for other users. A shelf fitting that pulls down from the upper cupboard to the bench top may be useful in this instance. Island benches or mobile storage units provide more workspace and storage to house tableware and cutlery. Removable cupboard modules underneath bench tops allow easy access to their contents. Other ideas include:

- Pull out pantry, drawers and units provide easy access to items stored at the back of draws and shelves and reduce the amount of extended reach required. Examples include an under-sink pull-out unit for storing dishwashing equipment, cabinet interiors with pull-out baskets, or an ironing board hidden in a draw that pulls out and unfolds for use.

- Drawer inserts or dividers arrange the contents of drawers, and can include single or split-level, twin or diagonal cutlery dividers for storage of utensils.
- Mobile storage units can be moved to different task areas around the kitchen as required. These provide accessible storage and additional work surfaces.
- Revolving wire basket shelves rotate 360 degrees to allow easy access for cupboard corners. These should have a lip of no less than 50 millimetres.
- Clear plastic food storage containers allow their contents to be easily identified.
- A cookbook holder attached underneath an overhead cabinet keeps bench space free and allows more room for food preparation.
- A fold-down plate rack attached at a comfortable bench height stores plates within easy reach.
- Cupboard doors should be easy to open and close. Cupboard items will be most accessible if the doors have extended hinges that open up to 180 degrees. Door knobs can come in a variety of sizes and shapes to suit the user. Handles should be of a design that enables opening with one hand. Consider D-shaped or lever-style handles. Glow-in-the-dark or brightly coloured knobs may be useful for people with a visual impairment. Door handles should be fitted to the bottom of high cupboard doors, and at the top of low cupboard doors. Closing mechanisms should be soft roller catches, press release, magnetic catches or self-closing hinges.
- Label drawers and cupboards with their contents. Consider see-through cupboard doors or remove cupboard doors altogether.
- Consider installing a pantry. Pantry shelves should be U-shaped and shallow enough that stored items are within easy reach. For increased access, consider installing half doors with 180 degree hinges. Where space is restricted, a pre-made, pull-out pantry supported on heavy duty extension runners may be an option. This kind of fixture can be accessed from both sides.

## Taps

Rotating taps can be difficult for many people to operate. Alternative options include:

- Seal valve system: replaces existing washers and enables taps to be turned off with minimal effort.
- Extended lever taps: are available in various lengths and can be operated without requiring a strong grip. To enable reach for a wheelchair user, the lever handle must be a maximum of 300 millimetres from the front of the bench to the operable part of the tap (the centre line of the tap, or the end point of the level measure through its arc of movement).
- Ceramic disk quarter-turn taps: do not have washers and only require a quarter turn (that is, turning the tap from full OFF to full ON is a ninety-degree angle).
- Spring-loaded taps: turn off automatically after a specific time.
- Foot or knee-operated taps for those who cannot operate hand taps.
- Infra-red sensor taps: activated by movement and don't need turning on or off. Consideration needs to be taken of the location of the sensor when building for unknown or multiple users to ensure that the sensor is not installed beyond the recommended reach range of the user.

- Child-proof taps: the tap handle is pushed in and turned simultaneously.
- Single lever mixing taps are useful, but may be confusing for some older people or those with intellectual disability.

If permitted by local water authorities and if a back flow prevention device is fitted, taps with retractable hose fittings in the spout are useful for filling pans or jugs on the adjacent bench, or buckets on the floor. Swivel spouts with a high reach are also useful for filling tall jugs and pots. A bench-mounted instant boiling water tap is a convenient way to prepare hot drinks.

## Flooring

Choose a surface that is firm, durable, slip-resistant and easy to keep clean (for example, resistant to grease). Choose a colour that contrasts to adjacent surfaces and avoid complex patterns that may cause visual confusion. Clean floors regularly. Avoid polishing the flooring surfaces because this will increase the risk of someone slipping.

Ideally, the flooring should be extended to each wall so that if a cupboard is removed, increased circulation space with suitable flooring is already in place. Sheet flooring such as vinyl, PVC, or cork and rubber combinations are available in slip-resistant options. They are embedded with an abrasive material such as sand, aluminium oxide or fibreglass.

If tiles are preferred, select unglazed ceramic tiles. Smaller tiles provide extra slip resistance due to the increased area of grout. Tiles already treated with a slip-resistant formula are available. If replacing an existing tiled floor proves too difficult or expensive, a slip-resistant coating can be applied to an existing floor. These chemical applications etch the tile surface to improve traction. The appearance of the floor surface does not change.

Padded vinyl is available for those requiring cushioning in the floor, however, cushioned vinyl may not withstand wheelchair use.

## Switches

Large rocker-style switches for power and lights are generally the easiest to use and should have a minimum dimension of 30 millimetres by 30 millimetres. Light switches should be located between 900 millimetres and 1100 millimetres above floor level. Ensure there are sufficient outlets to avoid the inconvenience of unplugging and plugging in appliances.

Power outlets on rear walls should be avoided because they are difficult to access. If sufficient knee space is provided under bench tops, wheelchair users may be able to reach power outlets on rear walls. If not, place the outlets on the side of a cupboard or on the front fascia.

## Electrical appliances

Electrical appliances with fewer control options are usually easier to manage. Control knobs should be located at the centre, front or side of the unit. Controls should be large, have clear markings and a central cross bar to make them easier to operate.

Dials and knobs with simple choices will be easier to manage, for example ON/OFF and HIGH/LOW knobs. For users with a visual impairment, a switch with spring or automatic return to the OFF position may be useful. Look for appliances that have safety features. Appliances that beep or switch off if left on are helpful.



Power point timers may be useful because they automatically switch appliances off at a pre-set time. Consider installing a stove cut-off device for users who may forget to turn off the stove.

## **Dishwashers**

If incorporating a dishwasher, consider that while the ideal location is alongside the sink, it may not fit under a lowered bench top height and may need to be located at the end of the counter. Before buying a dishwasher, check the ease of opening, size and ease of controls and the accessibility of the detergent dispenser.

If the house is in an open-plan style, or someone in the household has hearing impairment or sensory issues, consider a dishwasher with noise-reduction features.

## **Ovens, cook tops and microwaves**

Under-counter ovens are generally not accessible or safe for people who have difficulty reaching or bending. Separate wall mounted ovens are more accessible because they can be installed at the right height so that the shelf that is used most is in line with the bench top.

Select ovens with hinged doors that open away from the adjoining work surface. An oven with a side-opening door through 180 degrees allows closer access for most users. The lower edge of the oven door should be approximately 760 millimetres from the floor to allow clearance for wheelchair access, and the opening of the oven should be placed at eye level so the person can see into the oven. When an oven with a side-opening door is used, it is useful to install a pull-out shelf beneath the oven, or a heat-resistant surface next to the oven. This will make it easy and safe for a person to remove hot items from the oven and for temporary placement of hot pots and pans.

Hotplates should be arranged in a staggered or half moon layout, flush with adjacent work surfaces to enable pots to be slid directly onto the bench space. If knee space is provided underneath the hotplate surface, consider the need for insulating material under the hotplate base to protect from radiating heat and accidental burns.

An electric cook top will reduce the risk of accidents from naked flames but may be a burn risk if the user cannot tell when the hotplate is warm. Gas provides instant, tangible heat and burners can be heard or gas odour detected if a hotplate is left on.

Sealed hotplates are easier to wipe clean than coil-style hotplates, but can create a hazard when sliding pots due to their raised profile.

Ventilator hoods should have separate buttons for an extractor fan and a light to improve visibility in the kitchen, especially over the stove.

Portable electric elements, electric fry pans, grills or woks can be used instead of a built-in cook top. Ceramic, convection and continuous trivet cook tops provide a flush work surface.

Microwave ovens should be located at bench height.

## **Refrigerators**

When selecting a refrigerator it is important to consider the ease of opening and accessibility of the shelving. For wheelchair users, the refrigerator should be positioned in a way that provides easy access to most of the shelves from a seated position. Consider a smaller side-by-side refrigerator and freezer or a combination

fridge/freezer with the freezer underneath. Freezers with pull-out storage drawers may be easier to access.

## Lighting

Kitchens should be well-lit with an adequate, uniform level of room lighting. Good lighting will help minimise accidents, eyestrain and fatigue.

A central ceiling fitting provides general room lighting, but additional task-specific lighting should be considered, particularly over the sink, cook tops and food preparation areas in positions that avoid shadowing.

Consider the type of light fitting used (for example track lighting, fluorescent strips) and how easy it will be to replace burnt out bulbs.

## Contacting the Independent Living Centre

For further information or to make an appointment to visit the display please contact the Independent Living Centre. The Independent Living Centre offers free advice on equipment and techniques to help you with everyday tasks.

Independent Living Centre  
11 Blacks Road  
Gilles Plains SA 5086

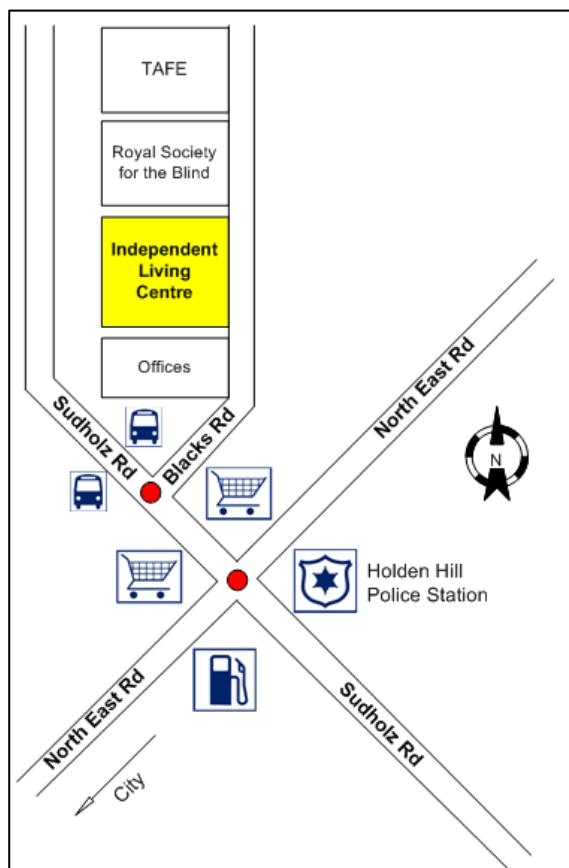
Phone: 1300 885 886 (SA & NT callers only) or 8266 5260

Email: [ilcsa@dcsi.sa.gov.au](mailto:ilcsa@dcsi.sa.gov.au)

Website: [www.sa.gov.au/disability/ilc](http://www.sa.gov.au/disability/ilc)

Accessible off street parking is available.

Bus services run nearby. Call 8210 1000 for timetable information.



## References

Information contained in this document has been sourced from the following publications:

- *Housing for Life*, 2001, Master Builders Association of the ACT
- *Welcome—design ideas for accessible homes*, 2002, Building Commission, Victoria
- *Guide to Planning Kitchens and Bathrooms*, 2006, Independent Living Centre, NSW

