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# Liveable Homes Designs that work for everyone.

## Technical Manual Contents

Resource	Description
<b>CD</b>	provides all resources electronically
<b>Brochure</b>	introduces potential home builders and renovators to the benefits of Liveable Homes
<b>Checklists</b>	
Essential Design Features Checklist	quickly identifies criteria recommended for inclusion in all homes
Desirable Design Features Checklist	quickly identifies enhanced criteria
<b>Fact Sheets and Diagrams</b>	
Fact Sheets with diagrams	provides detailed information on the Essential and Desirable Criteria with figures that illustrate the Essential and Desirable Criteria
<b>Other Resources</b>	
Western Australian profile	provides statistical data on the need for Liveable Homes
Information sheet	addresses the relationship between the national Livable Housing Design Guidelines and the Building Code of Australia (BCA)
<b>Wall Chart - Essential Criteria</b>	provides a quick view of the Essential Criteria

[liveablehomes.net.au](http://liveablehomes.net.au)

Provides:

- all the above resources
- diagrams in various electronic formats including Archicad, PDF, Jpeg, and
- a photo gallery of examples

### Your feedback is appreciated

We would appreciate your views on this manual, did it meet your needs? Is additional information required? Are there other resources that would assist you to include Liveable Homes criteria?

Please email your feedback to [liveablehomes@dsc.wa.gov.au](mailto:liveablehomes@dsc.wa.gov.au)



## What are Liveable Homes?

The Liveable Homes initiative was developed to increase the number of private and public homes that are built with universal access.

Liveable Homes are easy to move around in and easy to use. They are open-plan and designed to maximise space in key areas of the home.

Liveable Homes ensure people of all ages and abilities can live in or visit with comfort.

This resource was developed for people designing new homes or renovating existing homes. It is available online with other resources which are free to use.

Visit [liveablehomes.net.au](http://liveablehomes.net.au)

### Liveable Homes Working Group:

Housing Industry Association, Master Builders Association, Australian Institute of Architects, Building Designers Association, Housing and Urban Research Institute, WA Local Government Association, Department of Housing, Building Commission, and the Disability Services Commission.



## Essential design features checklist

Flat level walkway to entrance	1000mm minimum width path.	<input type="checkbox"/>
	1200mm x 1200mm land area to entrance door.	<input type="checkbox"/>
Wide entrance doorway	Flush entry.	<input type="checkbox"/>
	820mm door clear width.	<input type="checkbox"/>
Wide internal doorways and hallways	820mm door clear width.	<input type="checkbox"/>
	Hallways 1000mm minimum width.	<input type="checkbox"/>
Minimum of one accessible toilet on entry level	900mm x 1200mm (Clear of swinging door).	<input type="checkbox"/>
	If located in bathroom, toilet to be located in corner to enable installation of grab rails.	<input type="checkbox"/>
Minimum of one accessible shower on entry level	Hobless.	<input type="checkbox"/>
	Located in corner of room to enable installation of grab rails if required.	<input type="checkbox"/>
Reinforced walls in bathroom and toilet	Except for walls constructed of solid masonry or concrete, the walls around the shower, bath (if provided) and toilet should be reinforced to provide a fixing surface for the safe installation of grab rails.	<input type="checkbox"/>

For more detail see individual performance statements.

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



# Liveable Homes Designs that work for everyone.

## Desirable design features checklist

This checklist includes or extends to essential design features

Walkway to entrance	At least one 1100mm minimum width.	<input type="checkbox"/>
Entrance	Flush entry.	<input type="checkbox"/>
	850mm door clear width.	<input type="checkbox"/>
	Level landing 1350mm x 1350mm.	<input type="checkbox"/>
Internal doors & corridors	Doors 850mm minimum clear width.	<input type="checkbox"/>
	Hallways 1200mm minimum width.	<input type="checkbox"/>
	Door hardware installed at between 900mm – 1100mm above the finished floor.	<input type="checkbox"/>
Accessible toilet on entry level	1200mm x 1200mm minimum clear width between walls if located in a separate room.	<input type="checkbox"/>
Accessible shower on entry level	Hobless.	<input type="checkbox"/>
	Shower recess minimum dimensions of 900mm x 900mm.	<input type="checkbox"/>
	Provide a clear space of 1200mm x 1200mm forward of the shower recess entry.	<input type="checkbox"/>
Reinforced walls in bathroom and toilet	Except for walls constructed of solid masonry or concrete, the walls around the shower, bath (if provided) and toilet should be reinforced to provide a fixing surface for the safe installation of grab rails.	<input type="checkbox"/>

For more detail see individual performance statements.

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

**Desirable design features checklist - continued**

Car parking provision	Minimum dimensions of at least 3200mm (width) x 5400mm (length).	<input type="checkbox"/>
	Even, firm and slip resistant surface.	<input type="checkbox"/>
	Level surface (1:40 maximum gradient, 1:33 maximum gradient for bitumen).	<input type="checkbox"/>
	A vertical clearance over the parking space of 2500mm and protection from the weather.	<input type="checkbox"/>
Kitchen space	1200mm clearance in front of fixed benches and appliances.	<input type="checkbox"/>
	Slip resistant flooring.	<input type="checkbox"/>
	Ensure all flooring extends to under cabinetry so cupboards can be moved in future without affecting flooring.	<input type="checkbox"/>
Laundry space	1200mm clearance in front of fixed benches and appliances.	<input type="checkbox"/>
	Slip resistant flooring.	<input type="checkbox"/>
	Ensure all flooring extends to under cabinetry so cupboards can be moved in future without affecting flooring.	<input type="checkbox"/>
Bedroom space	Space or room of 10sq metres, one wall minimum length of 3 metres.	<input type="checkbox"/>
	1000mm clearance on at least one side of the bed.	<input type="checkbox"/>
Internal stairways	1000mm minimum clear width.	<input type="checkbox"/>
	Slip resistance finish on steps.	<input type="checkbox"/>
	Straight in design.	<input type="checkbox"/>
	Positioned adjoining a load bearing wall.	<input type="checkbox"/>
	Continuous handrail on at least one side.	<input type="checkbox"/>

For more detail see individual performance statements.

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Desirable design features checklist - continued**

Switches and power points	Light switches to be located 900mm – 1100mm above the finished floor.	<input type="checkbox"/>
	Power points installed not lower than 300mm above the finished floor.	<input type="checkbox"/>
Door hardware	Installed between 900mm – 1100mm above finished floor.	<input type="checkbox"/>
Family/Living room	Provide clear circulation space of 2250mm in diameter.	<input type="checkbox"/>
Window sills	1000mm height above the finished floor.	<input type="checkbox"/>
Flooring	Level transition and slip resistant.	<input type="checkbox"/>

For more detail see individual performance statements.

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

## Dwelling access

Performance Statement:	There is a safe and continuous pathway from the street entrance and/or parking area to a dwelling entrance that is level.
<b>Essential</b>	<p>a. A safe and continuous pathway from:</p> <ul style="list-style-type: none"> <li>i. the front boundary of the allotment; or</li> <li>ii. a car parking space, where provided, which may include the driveway on the allotment,</li> </ul> <p>to a entrance that is level as specified in Dwelling entrance. This provision does not apply where the average slope of the ground where the path would feature is steeper than 1:14.</p> <p>b. The path of travel as referred to in (a) should have a minimum clear width of 1000mm. See figures 1 and 1a. And –</p> <ul style="list-style-type: none"> <li>i. an even, firm, slip resistant surface;</li> <li>ii. a crossfall of not more than 1:40;</li> <li>iii. a maximum pathway slope of 1:14. (Landings are to be provided at intervals as detailed in AS1428.1 (2009) for gradients between 1:20 – 1:14);</li> <li>iv. a step ramp compliant with AS1428.1 (2009) may be incorporated, with a landing at its head, and foot where there is a change in height of 190mm or less. The landings must have a length of at least 1200mm exclusive of the swing of door or gate that opens onto them. See figure 3.</li> </ul>
<b>Desirable</b>	As for Essential except replace (b) with a minimum clear pathway width of 1100mm. See figure 2.

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



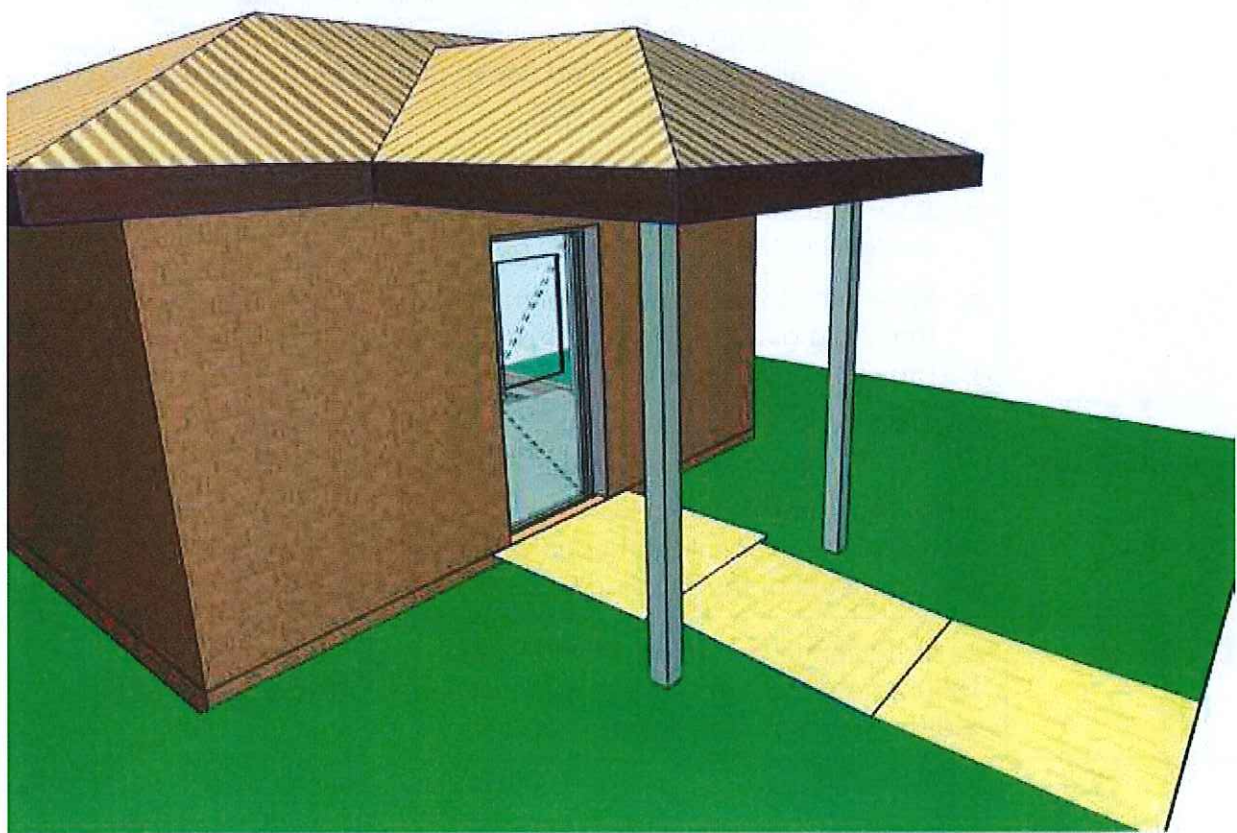
# Liveable Homes Designs that work for everyone.

## Dwelling entrance

Performance Statement:	There is at least one level entrance into the dwelling to enable home occupants to easily enter and exit the dwelling.
<b>Essential</b>	<p>a. The dwelling should provide an entrance door with -</p> <ul style="list-style-type: none"> <li>i. a minimum clear opening width of 820mm. See figure 1a;</li> <li>ii. a level transition and threshold (maximum vertical tolerance of 5mm between abutting surfaces is allowable provided the lip is rounded or bevelled). See figures 6 and 7; and</li> <li>iii. reasonable shelter from the weather. See figures 1a and 4.</li> </ul> <p>b. A level landing area of 1200mm x 1200mm should be provided at the level entrance door. See figure 1a.</p> <p>c. Where the threshold at the entrance exceeds 5mm a ramped threshold of up to 56mm compliant with AS1428.1 (2001) may be provided. See figure 5.</p> <p>d. The level entrance should be connected to the safe and continuous pathway as specified in Dwelling access.</p> <p>Note: The entrance must incorporate waterproofing drainage and termite risk management that complies with the Performance Requirements of the Building Code of Australia (BCA).</p>
<b>Desirable</b>	As for Essential except replace (b) with a level landing area of 1350mm x 1350mm and (a) (i) with minimum clear door opening width of 850mm. See figures 2 and 4a.

Where there is direct access to the house from the garage a flat level entry should be considered.

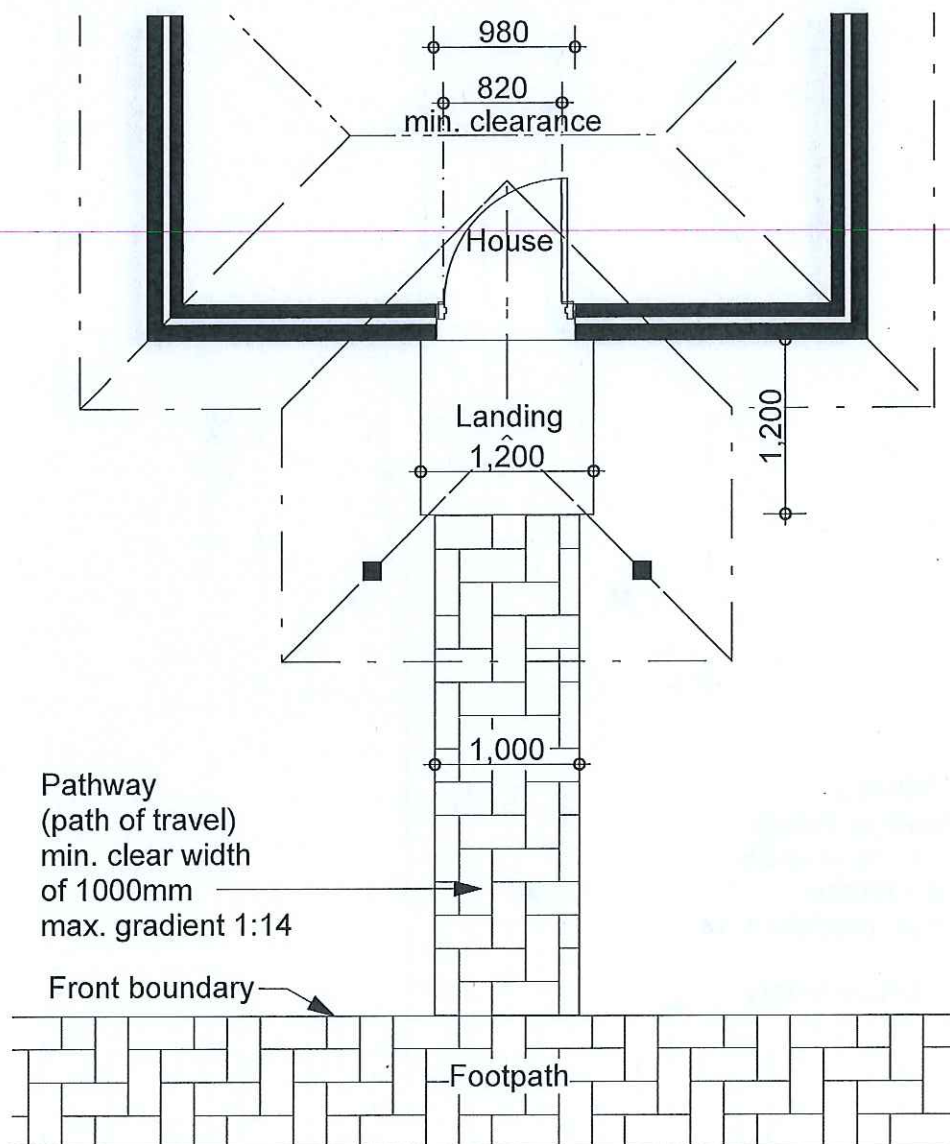
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Figure 1. Dwelling access perspective**

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

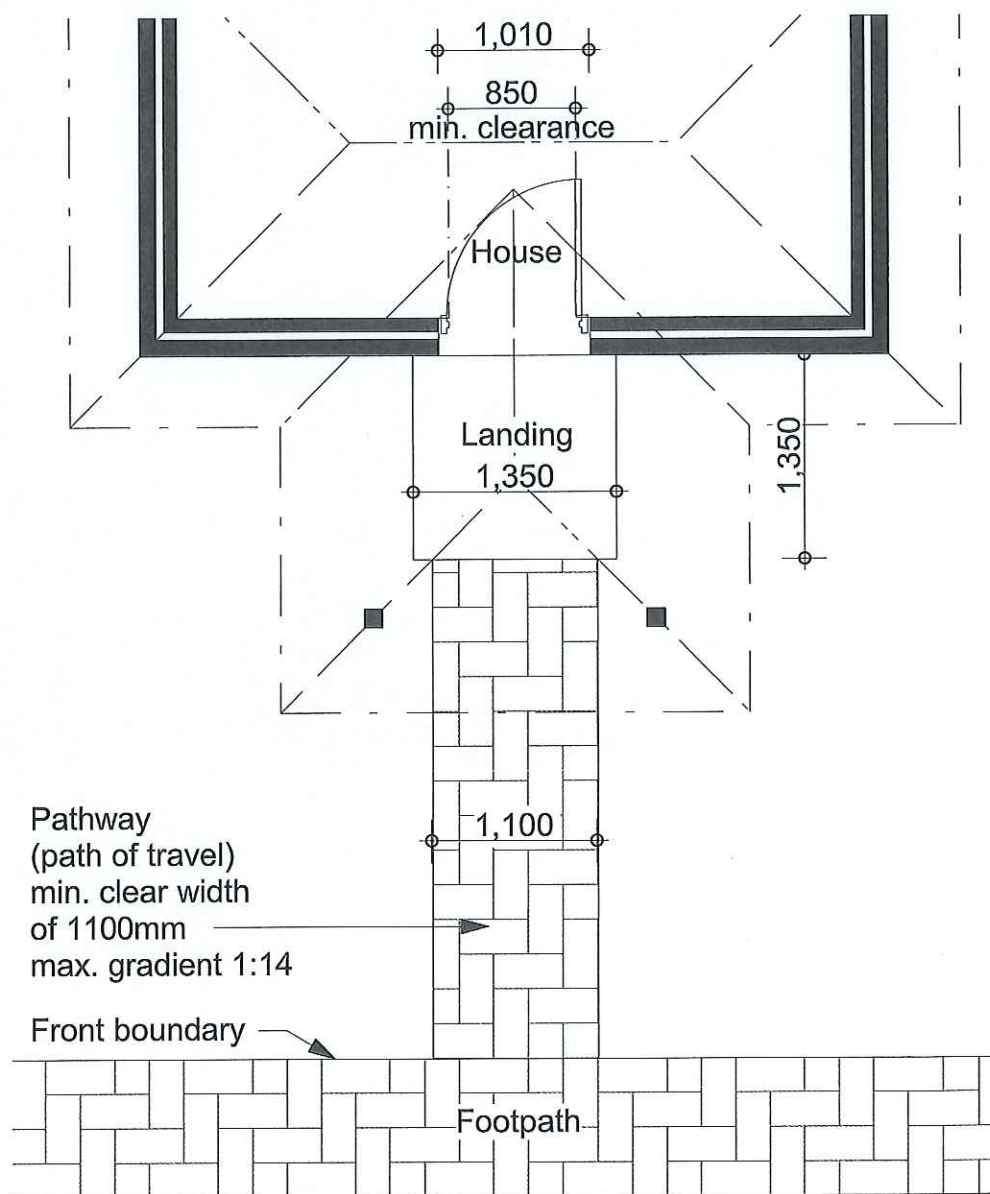




**Figure 1a. Dwelling access - Essential**

Note: In Western Australia  
Use standard internal door sizes  
of 870 & 920 to achieve a min.  
clear opening of 820 & 870  
respectively.

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

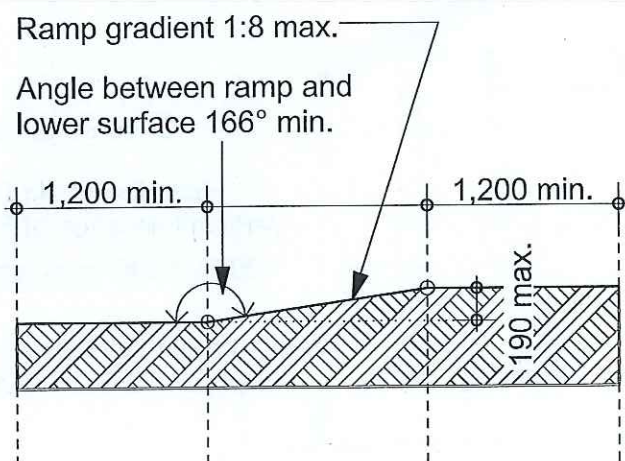


**Figure 2. Dwelling access - Desirable**

Note: In Western Australia  
Use standard internal door sizes  
of 870 & 920 to achieve a min.  
clear opening of 820 & 870  
respectively.

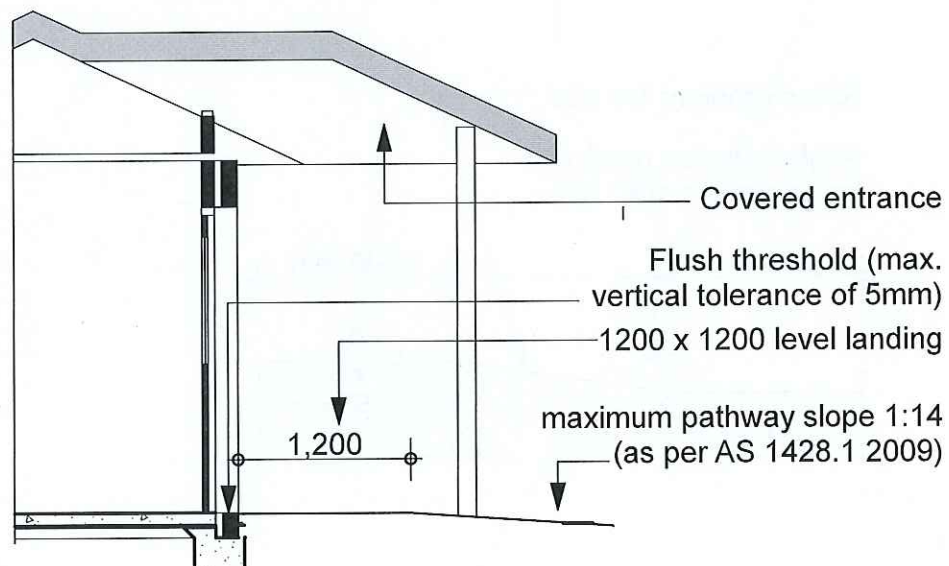
This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 3. Step ramp**

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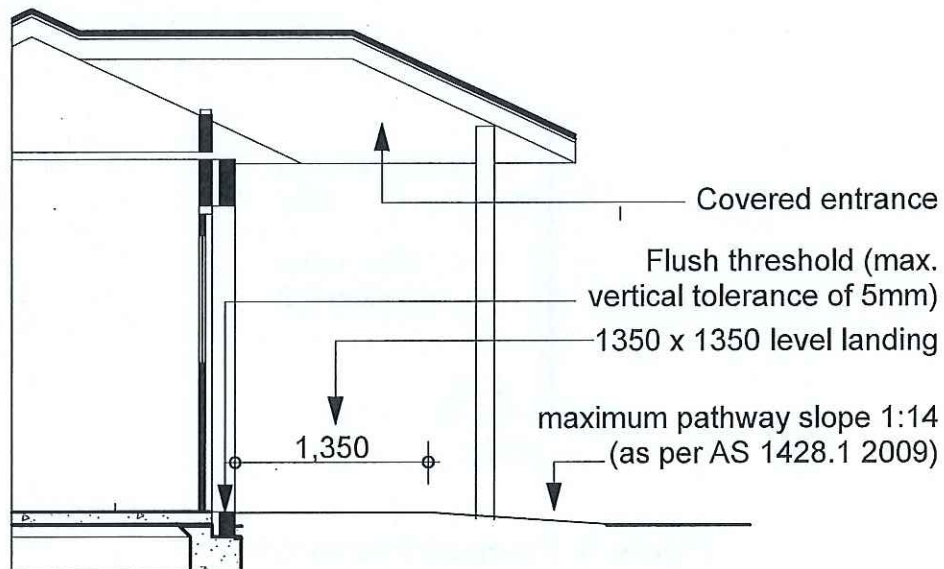


**Figure 4. Dwelling access - Essential**

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**Figure 4a. Dwelling access - Desirable**

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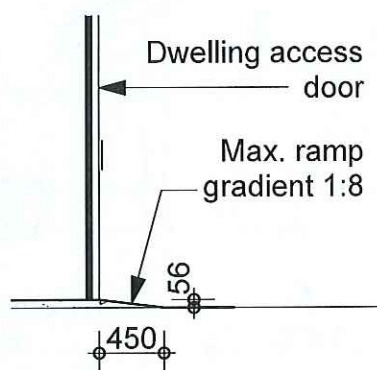
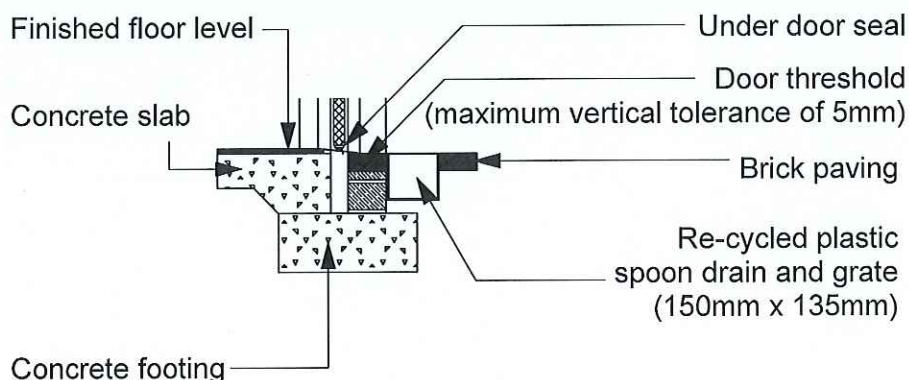


Figure 5. Ramped threshold

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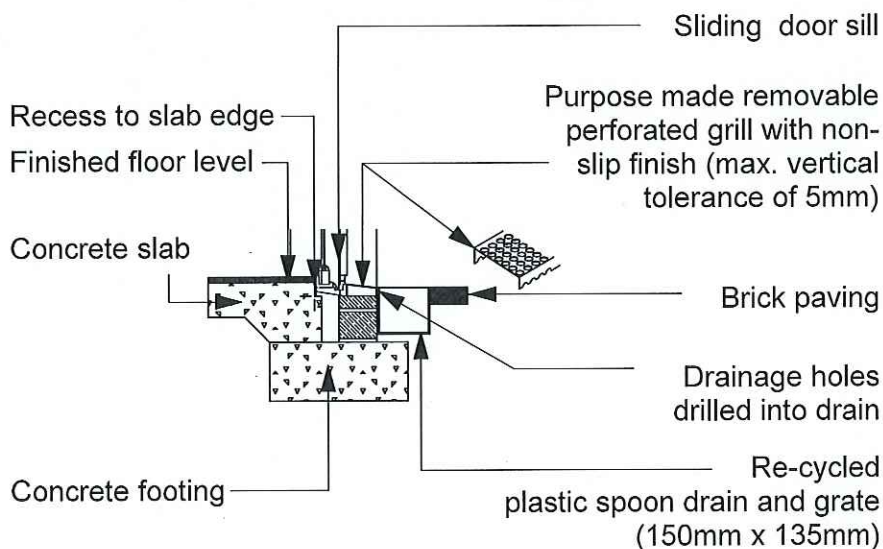


# Liveable Homes Designs that work for everyone.



NOTE: The entrance must incorporate waterproofing, drainage and risk management that complies with the Performance Requirements of the Building Code of Australia (BCA)

**Figure 6. Flush threshold at front door**



NOTE: The entrance must incorporate waterproofing, drainage and risk management that complies with the Performance Requirements of the Building Code of Australia (BCA)

**Figure 7. Flush threshold at sliding door**

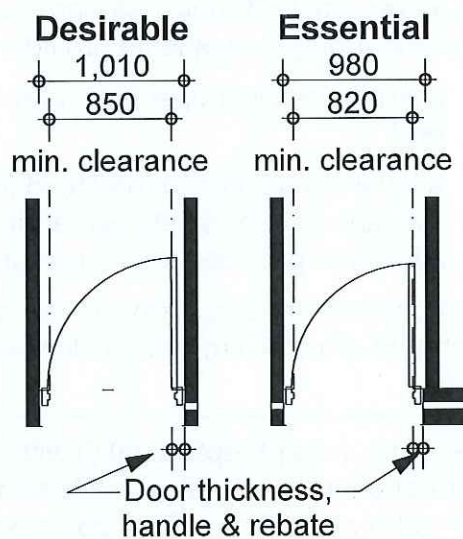
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

## Internal doors and corridors

Performance Statement:	Internal doors and corridors facilitate comfortable and unimpeded movement between spaces.
<b>Essential</b>	<p>a. Doorways to rooms on the entry level used for living, dining, bedroom, bathroom, kitchen, laundry and sanitary compartment purposes should provide:</p> <ol style="list-style-type: none"><li>a minimum clear opening width of 820mm. See figure 8; and</li><li>a level transition and threshold (maximum vertical tolerance of 5mm between abutting surfaces is allowable provided the lip is rounded or beveled).</li></ol> <p>b. Internal corridors/passageways to the doorways referred to in (a) should provide a minimum clear width of 1000mm. See figure 8a.</p>
<b>Desirable</b>	<p>As for the Essential except replace (a) (i) with a minimum clear opening width of 850mm and (b) with a minimum corridor/passageway width of 1200mm. See figures 8 and 8a.</p>

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 8. Ground (or entry) level door requirements**

Note: In Western Australia  
Use standard internal door sizes  
of 870 & 920 to achieve a min.  
clear opening of 820 & 870  
respectively.

If using double doors it is  
recommended that the essential  
criteria be followed and at least  
one door provides 820mm clear.

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Desirable**



**Essential**

**Figure 8a. Internal corridors**

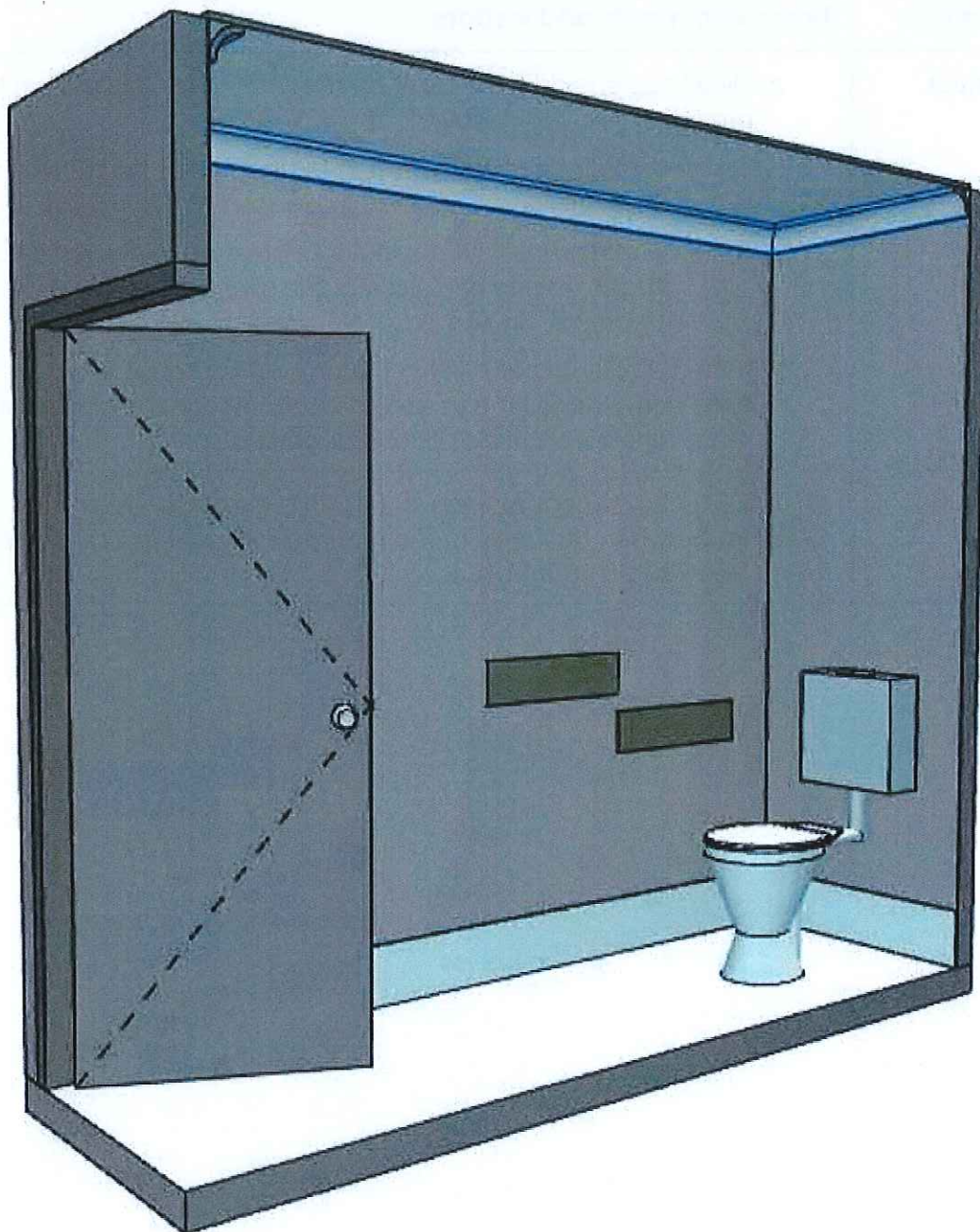
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



## Toilet

Performance Statement:	The ground (or entry) level has a toilet to support easy access for home occupants and visitors.
<b>Essential</b>	<p>a. Dwellings should have toilet on the ground (or entry) level that provides:</p> <ul style="list-style-type: none"><li>i. a minimum clear width of 900mm between the walls of the bathroom if located in a separate room; and</li><li>ii. a minimum 1200mm clear circulation space forward of the toilet pan exclusive of the swing of the door. See figures 9, 9a and 9b.</li></ul> <p>b. If the toilet is located within the ground (or entry) level bathroom, the toilet pan should be located in the corner of the room to enable the installation of grabrails.</p>
<b>Desirable</b>	As for Essential except replace (a) (i) with a minimum clear width of 1200mm between the walls of the bathroom if located in a separate room. See figures 10 and 10a.

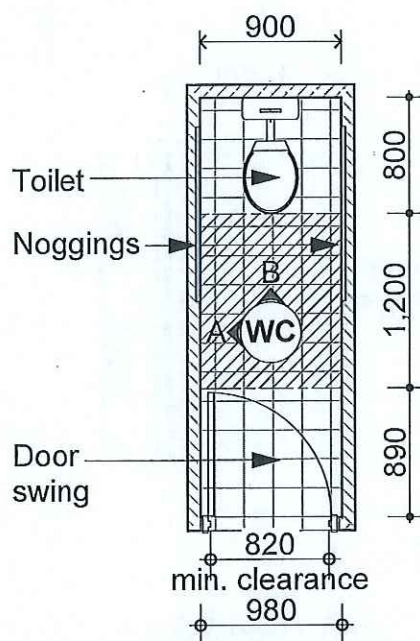
This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



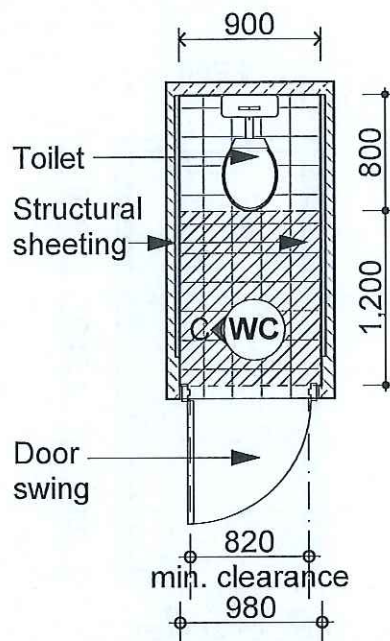
**Figure 9. Toilet perspective**

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 9a. Toilet - Essential**  
Layout and circulation space  
Location of noggings



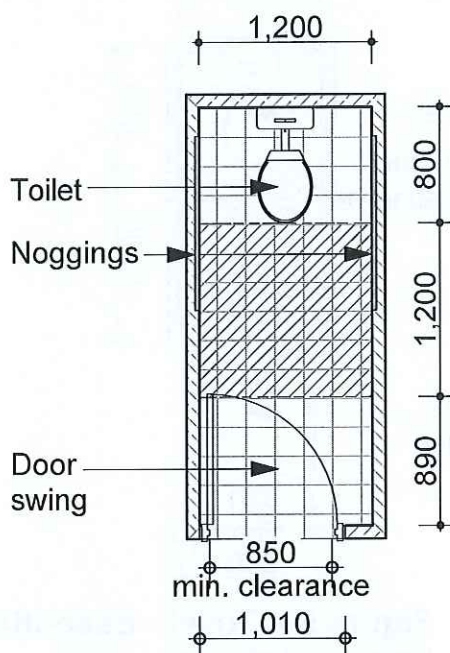
**Figure 9b. Toilet - Essential**  
Layout and circulation space  
Location of structural sheeting

Note: In Western Australia

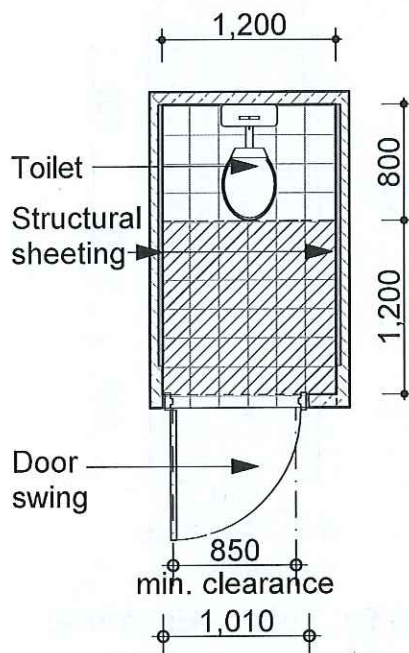
Use standard internal door sizes of 870 & 920  
to achieve a min. clear opening of 820 & 870  
respectively.

Internal brickwork (solid) can be substituted for  
the framed walls and will omit the need for  
noggings/sheeting.

This information was sourced from the national Liveable Housing Design Guidelines  
produced by the National Dialogue on Universal Housing Design.



**Figure 10. Toilet - Desirable**  
Layout and circulation space  
Location of noggings



**Figure 10a. Toilet - Desirable**  
Layout and circulation space  
Location of structural sheeting

Note: In Western Australia  
Use standard internal door sizes of 870 & 920  
to achieve a min. clear opening of 820 & 870  
respectively.  
Internal brickwork (solid) can be substituted for  
the framed walls and will omit the need for  
noggings/sheeting.

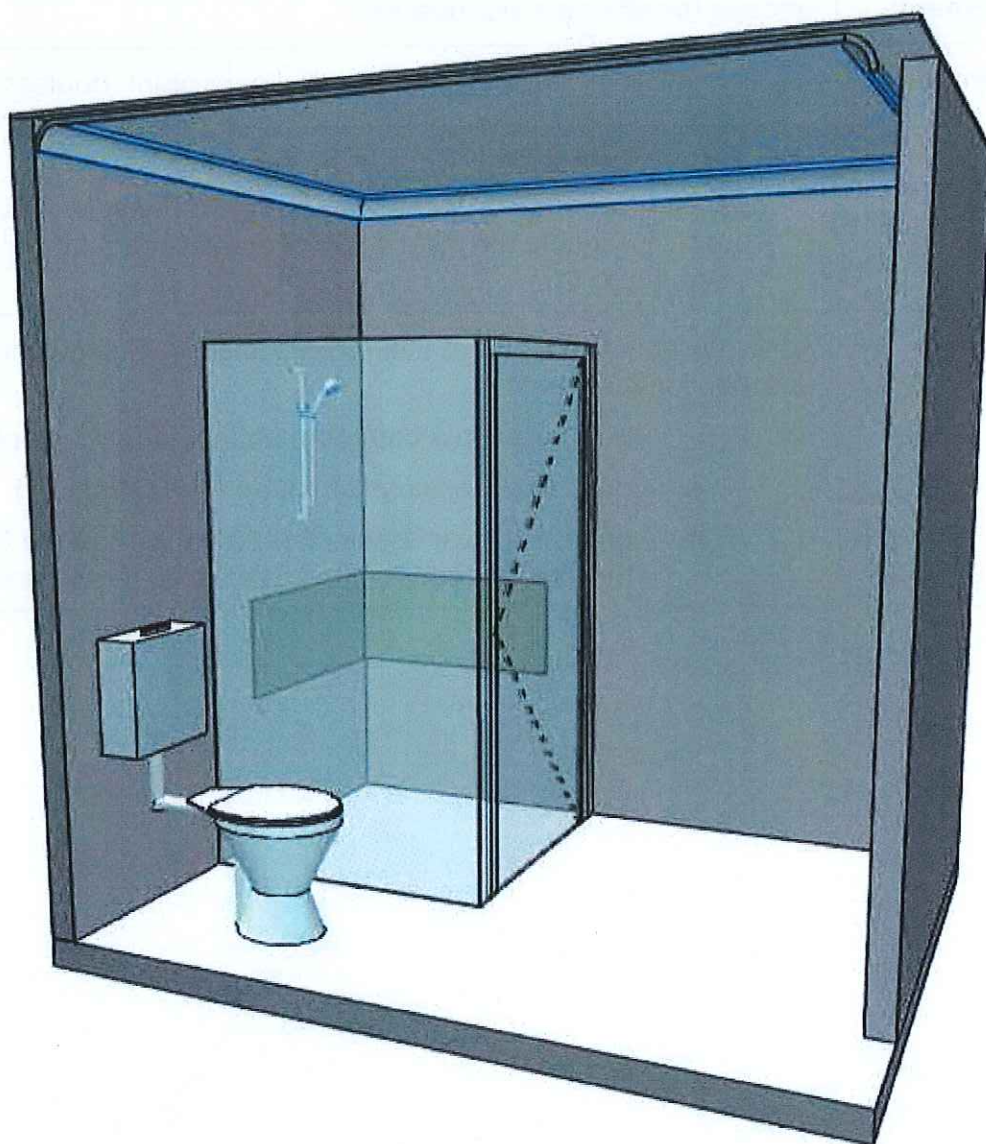
This information was sourced from the national Liveable Housing Design Guidelines  
produced by the National Dialogue on Universal Housing Design.



## Shower

Performance Statement:	The bathroom and shower is designed for easy and independent access for all home occupants.
Essential	<ul style="list-style-type: none"><li>a. One bathroom should feature a slip resistant, hobless (step-free) shower recess. Shower screens are permitted provided they can be removed at a later date.</li><li>b. The shower recess should be located in the corner of the room to enable the installation of grabrails at a future date. See figure 11.</li></ul>
Desirable	<p>As for Essential except that the hobless (step-free) shower recess described in (a) should -</p> <ul style="list-style-type: none"><li>i. be located in a bathroom on the ground (or entry) level;</li><li>ii. provide dimensions of 900mm x 900mm; and</li><li>iii. provide a clear space of 1200mm x 1200mm forward of the shower recess entry. See figure 12 and figure 12a.</li></ul>

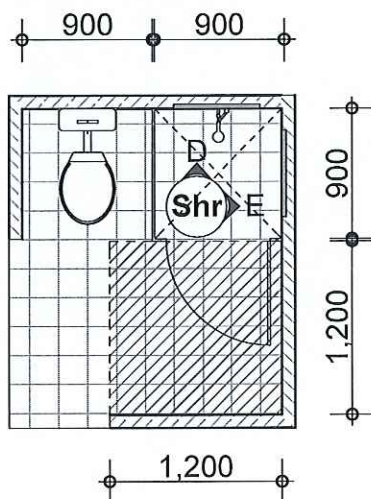
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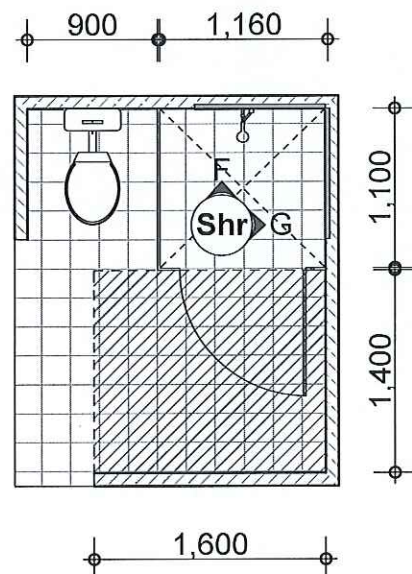
**Figure 11. Shower perspective**

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 12 Option 1.**  
**Shower Recess - Desirable**  
Circulation space requirements  
Nogging requirements



**Figure 12a Option 2.**  
**Shower Recess - Desirable**  
Circulation space requirements  
Structural sheeting requirements

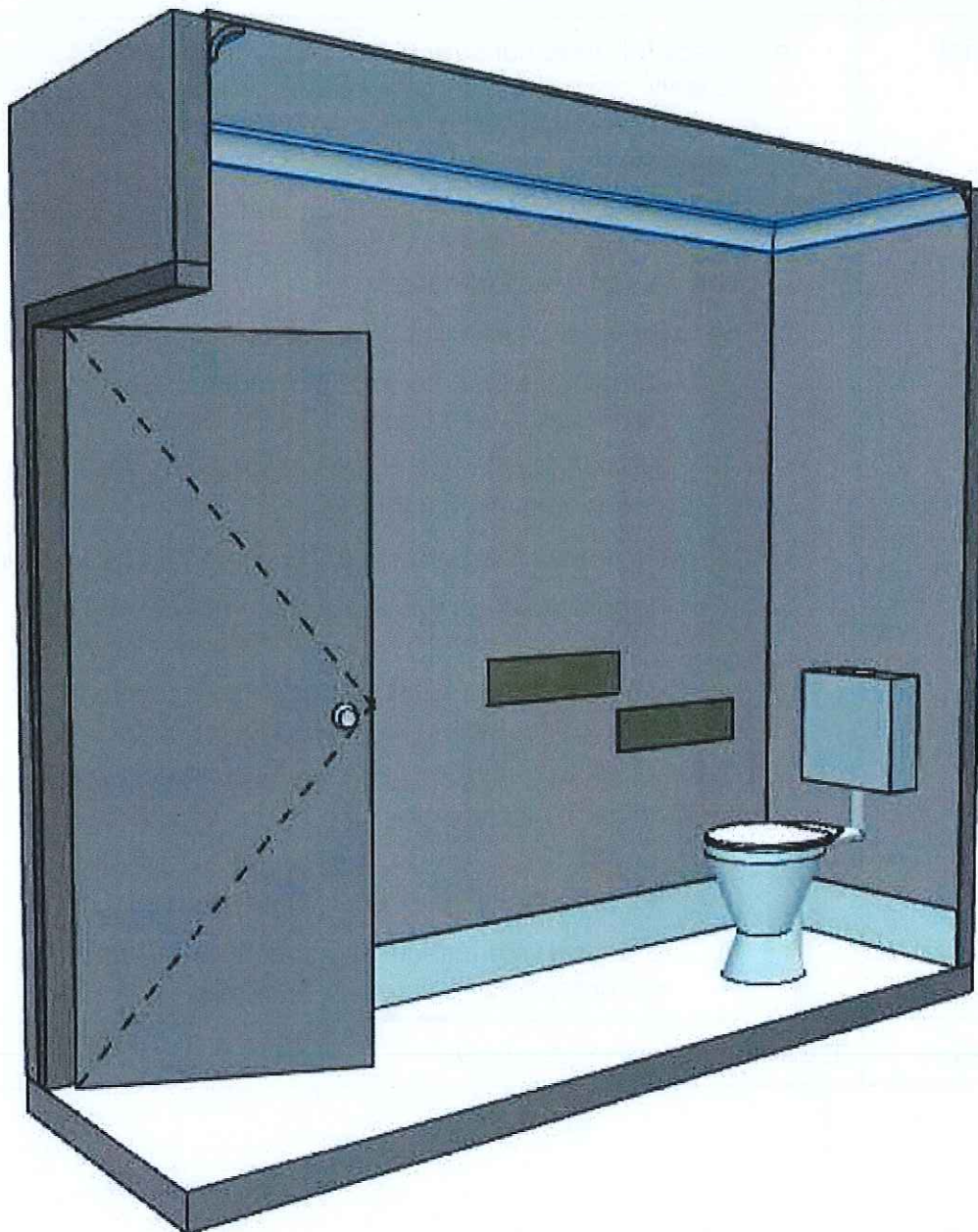
This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

## Reinforcement of bathroom and toilet walls

Performance Statement:	The bathroom and toilet walls are built to enable grabrails to be safely and economically installed.
<b>Essential</b>	<ul style="list-style-type: none"> <li>a. Except for walls constructed of solid masonry or concrete, the walls around the shower, bath (if provided) and toilet should be reinforced to provide a fixing surface for the safe installation of grabrails.</li> <li>b. The fastenings, wall reinforcement and grabrails combined must be able to withstand 1100N of force applied in any position and in any direction.</li> <li>c. The walls around the toilet are to be reinforced by installing –               <ul style="list-style-type: none"> <li>i. noggings with a thickness of at least 25mm in accordance with figures 13 and 13a; or</li> <li>ii. sheeting with a thickness of at least 12mm in accordance with figure 14.</li> </ul> </li> <li>d. The walls around the bath are to be reinforced by installing –               <ul style="list-style-type: none"> <li>i. noggings with a thickness of at least 25mm in accordance with figures 15, 15a and 15b; or</li> <li>ii. sheeting with a thickness of at least 12mm in accordance with figures 16, 16a and 16b.</li> </ul> </li> <li>e. The walls around the hobless (step-free) shower recess are to be reinforced by installing –               <ul style="list-style-type: none"> <li>i. noggings with a thickness of at least 25mm in accordance with figures 17 and 17a; or</li> <li>ii. sheeting with a thickness of at least 12mm in accordance with figure 18 and 18a.</li> </ul> </li> </ul>
<b>Desirable</b>	Essential requirements apply.

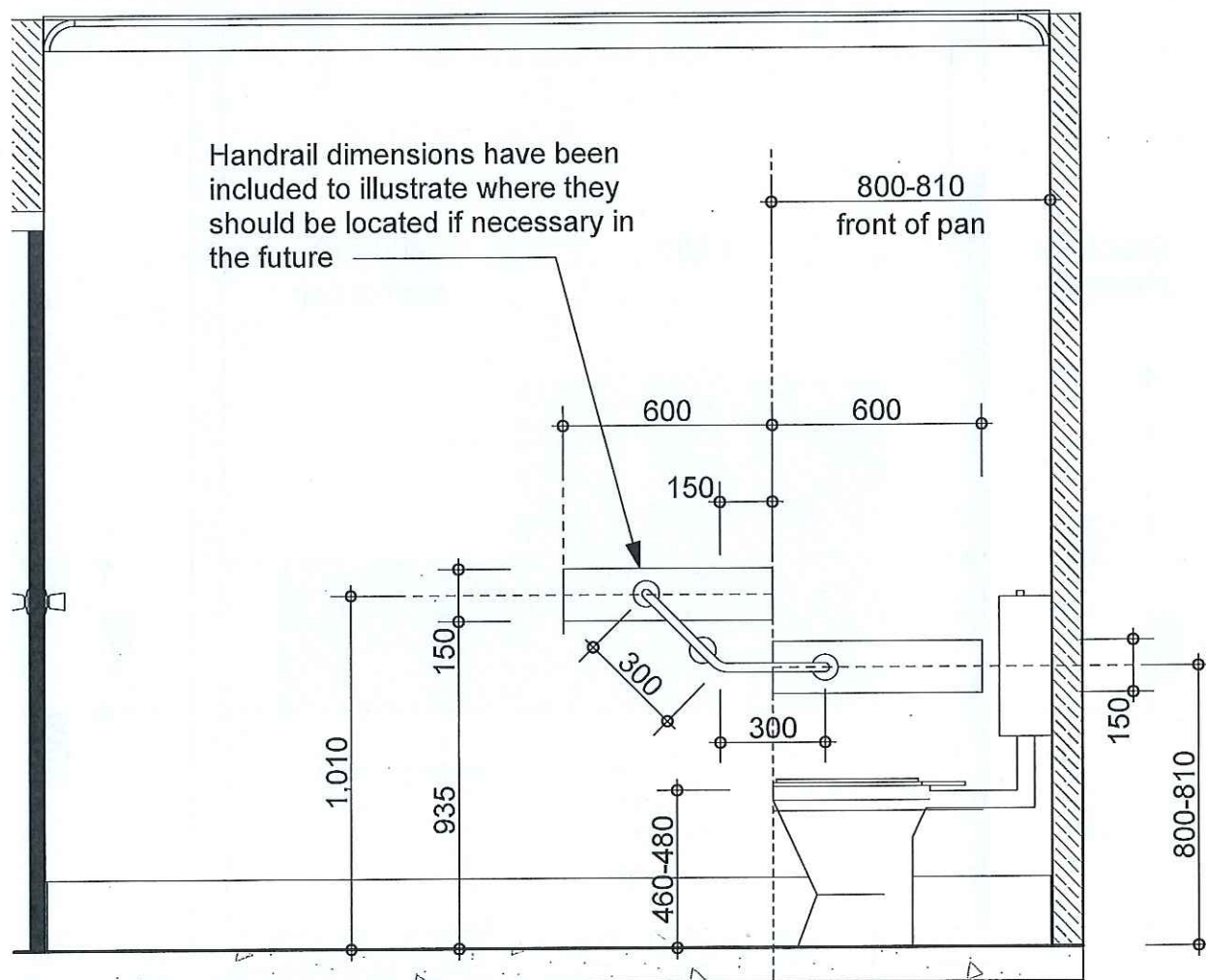
This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 13. Toilet and nogging location perspective**

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

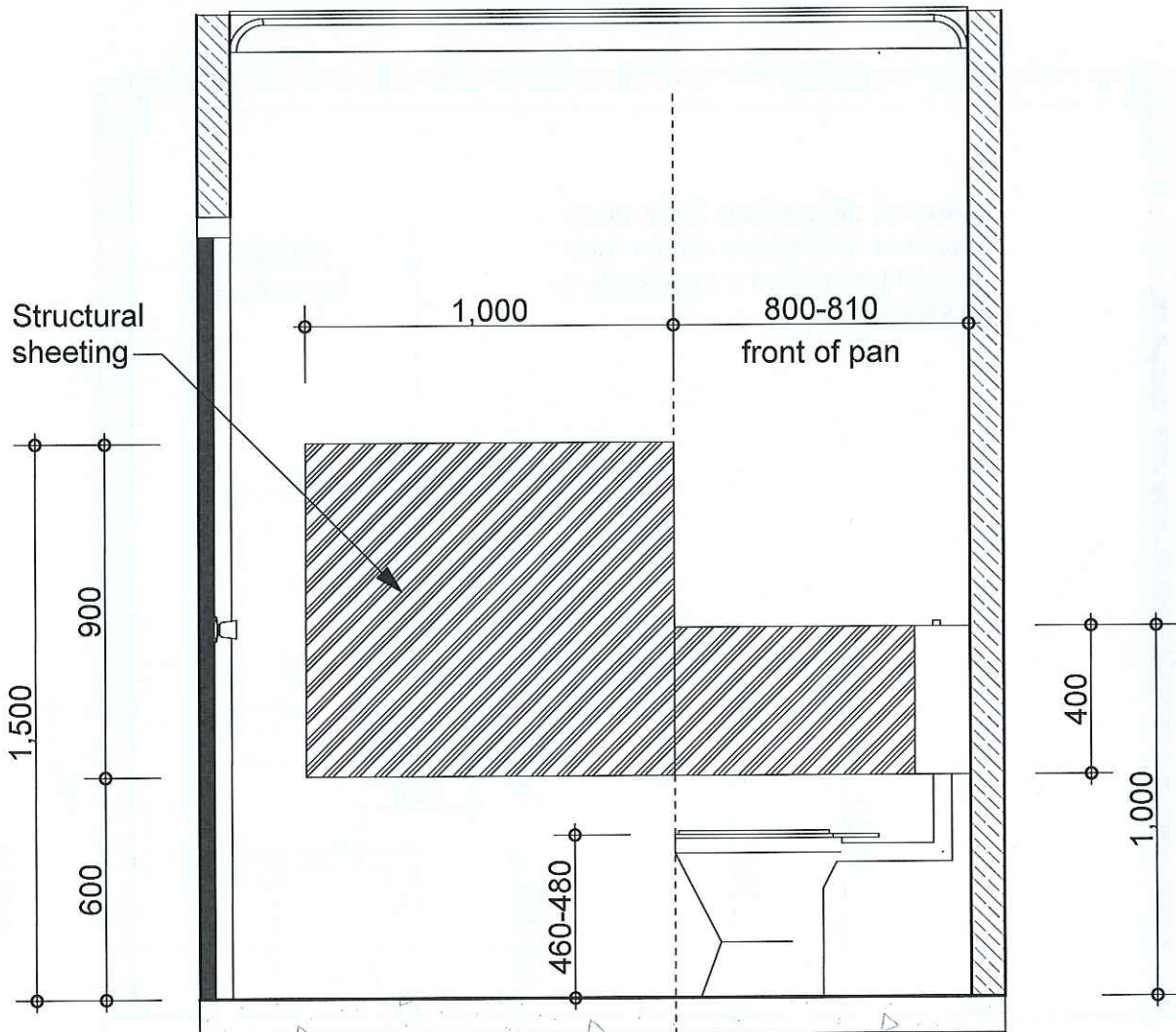


**Figure 13a. Sideview (location of noggings)**

Note: For the purposes of dimensioning, the front of the toilet pan has been used as the datum plane.

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 14. Sideview (location of structural sheeting)**

Note: For the purposes of dimensioning, the front of the toilet pan has been used as the datum plane.

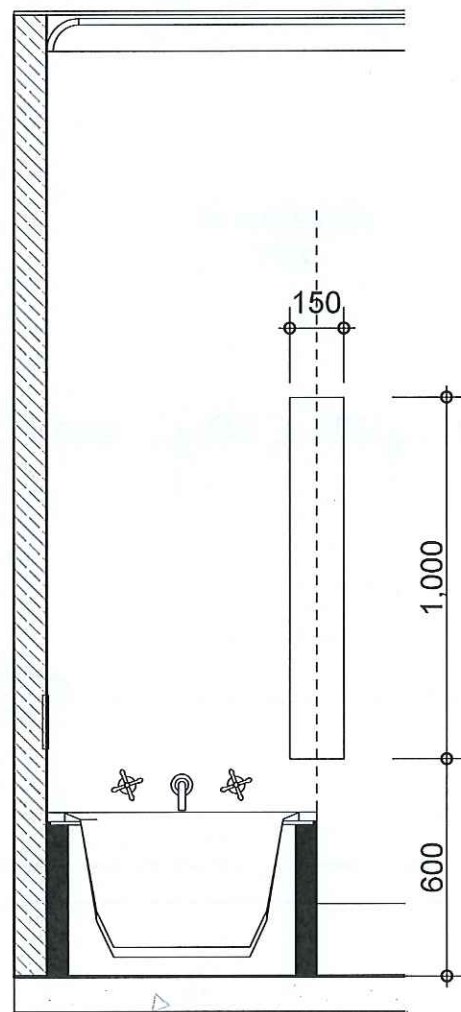
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



Figure 1. Schematic diagram of the experimental setup.

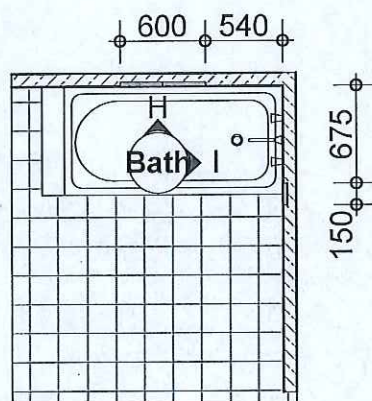
The experimental setup is shown in Figure 1. The setup consists of a computer system (PC) connected to a data acquisition system (DAQ) and a motor system (MS). The DAQ system is connected to the MS and the PC. The MS is connected to the DAQ system and the PC. The PC is connected to the DAQ system and the MS.





**Figure 15a. Bath nogging requirements**

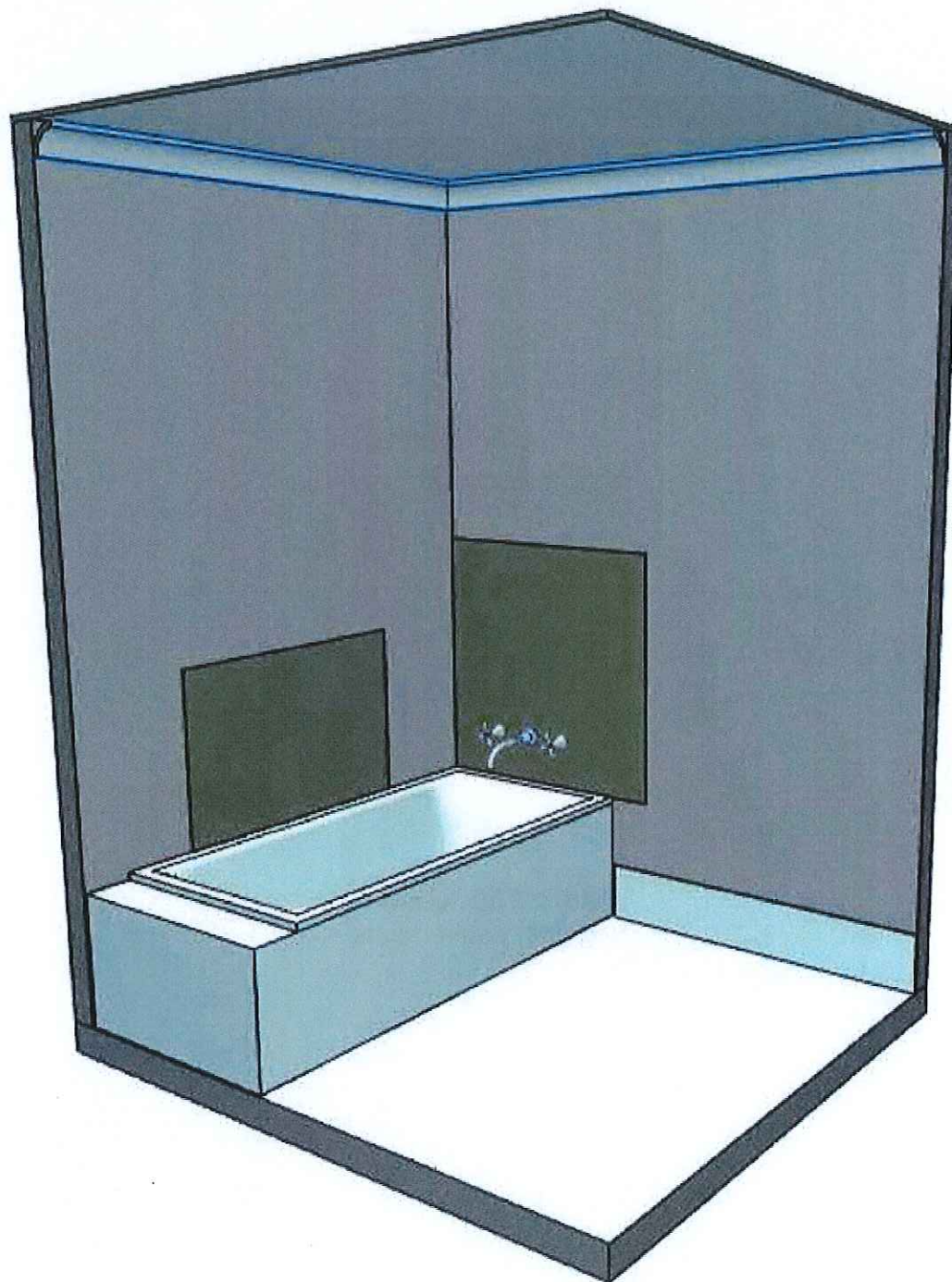
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Figure 15b. Bath**  
Nogging requirements

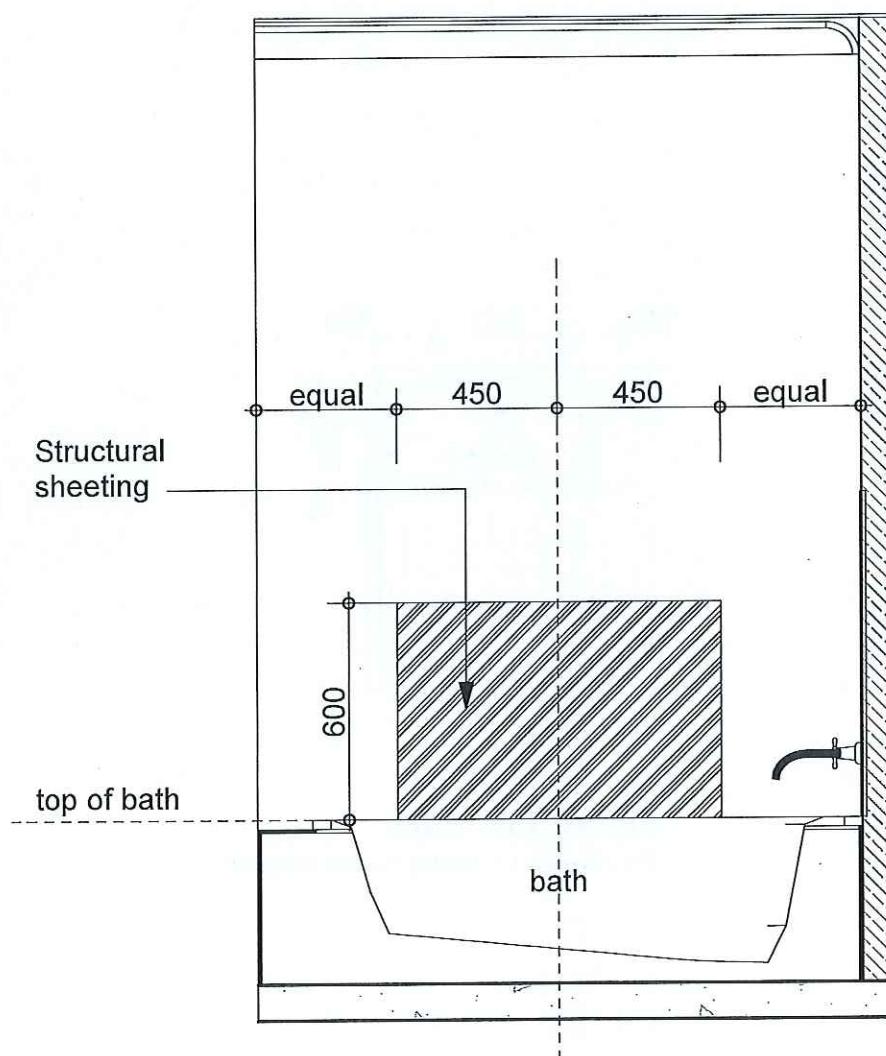
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 16. Bath structural sheeting perspective**

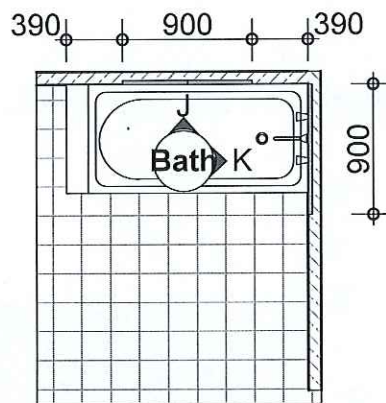
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Figure 16a. Bath structural sheeting requirements**

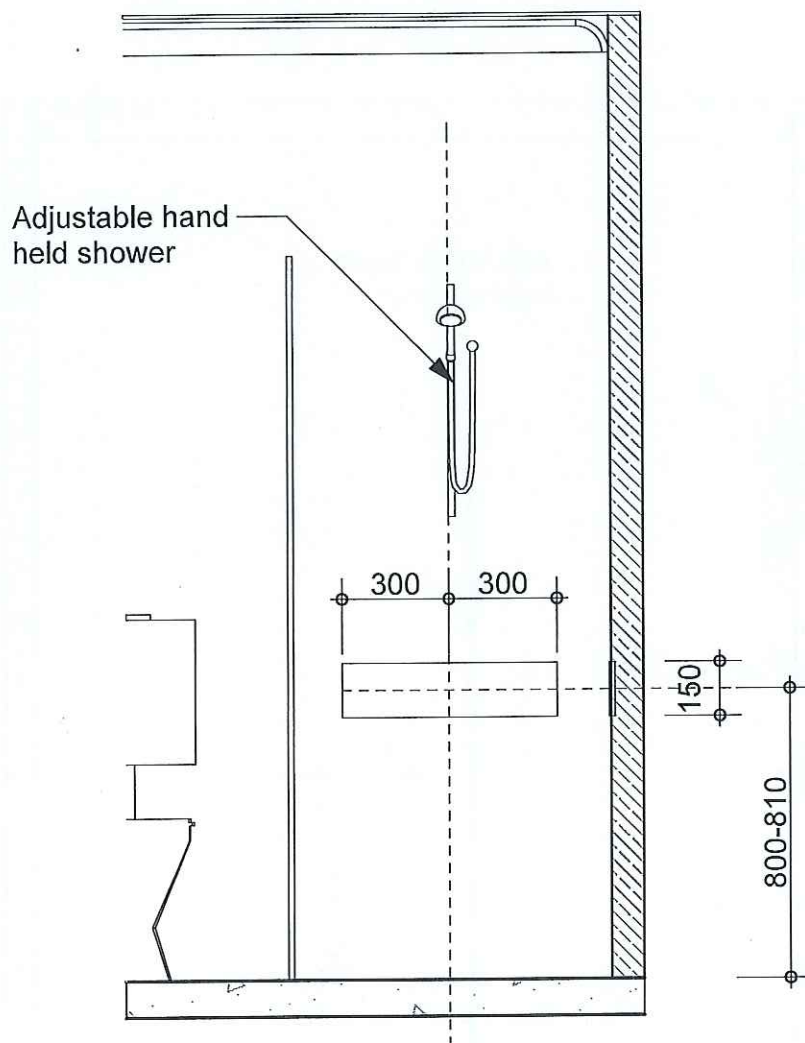
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 16b. Bath**  
Structural sheeting requirements

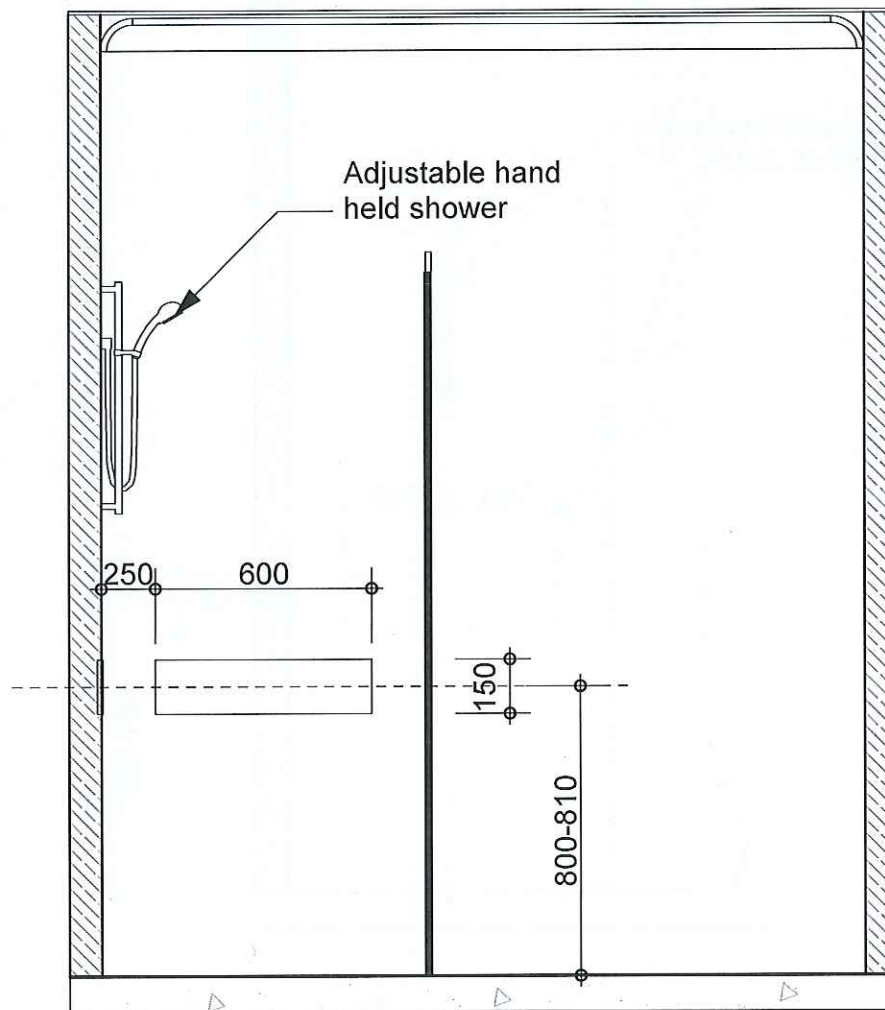
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Figure 17. Shower recess and location of noggings**

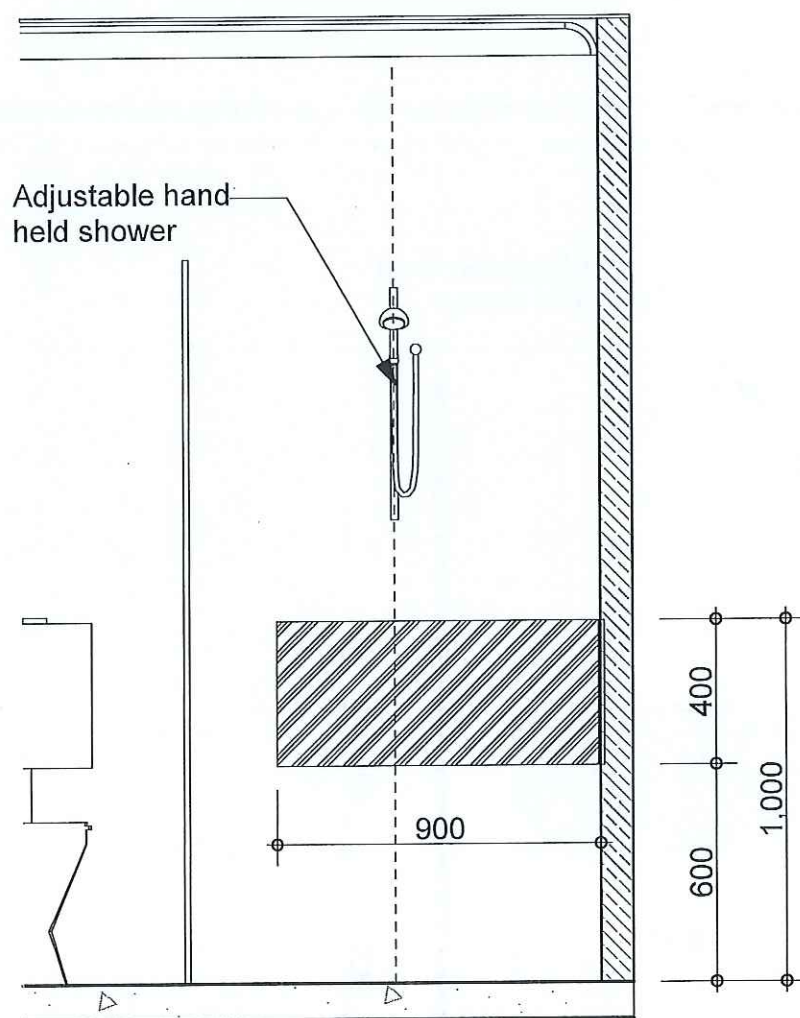
This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 17a. Shower recess and location of noggings**

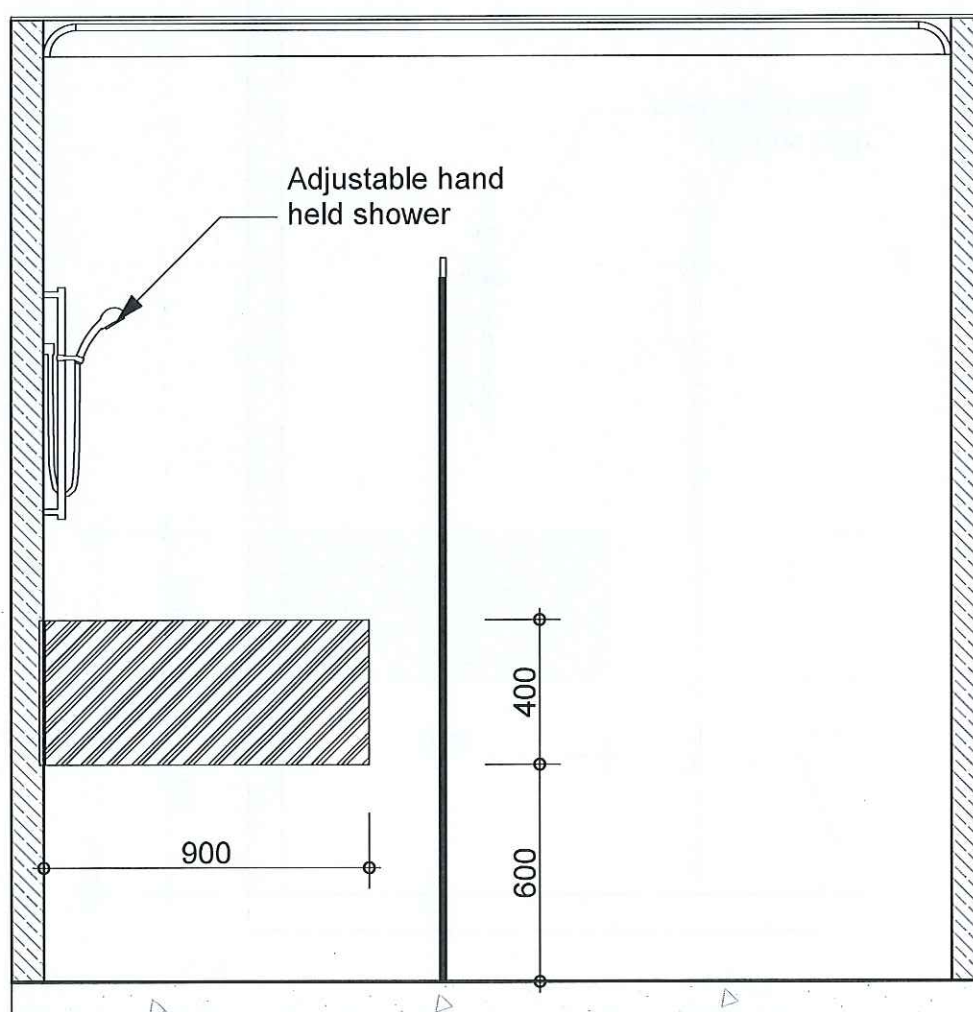
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Figure 18. Shower recess and location of structural sheeting**

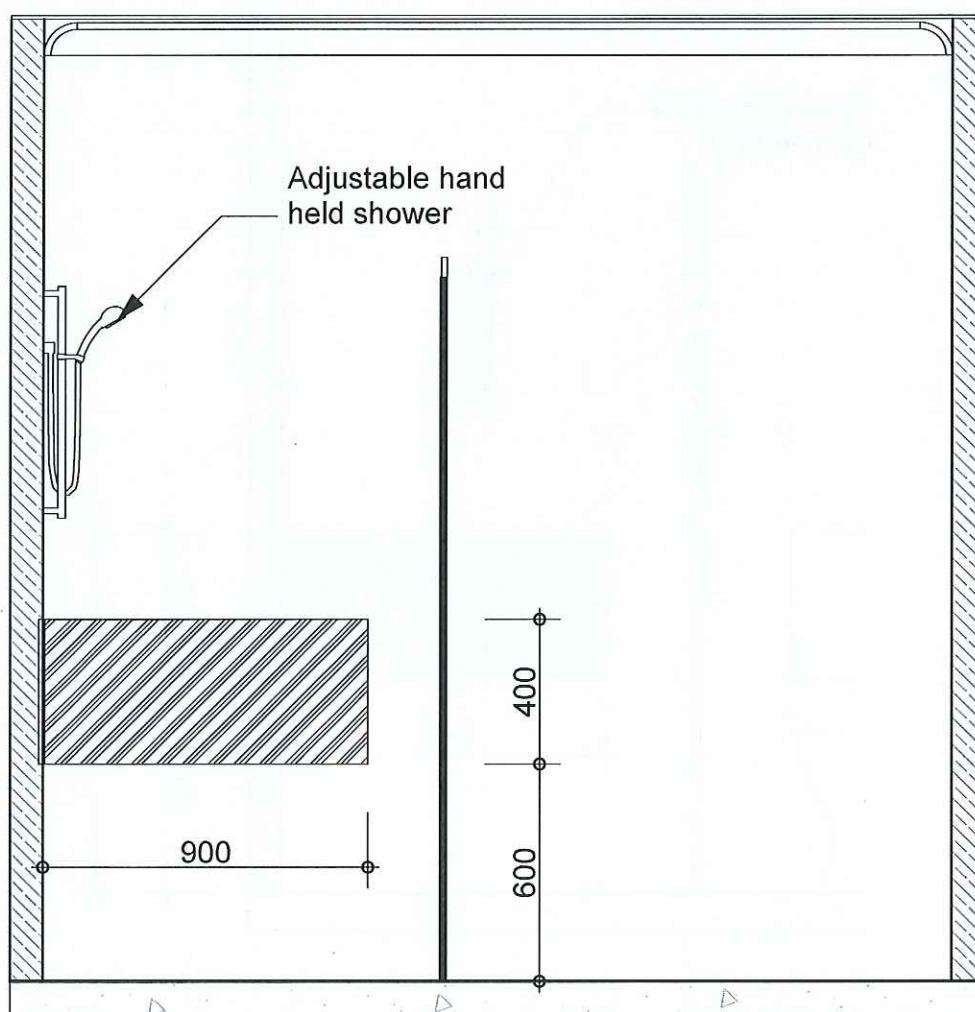
This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 18a. Shower recess and location of structural sheeting**

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**Figure 18a. Shower recess and location of structural sheeting**

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## Kitchen

<b>Performance Statement:</b>	<b>The kitchen space is designed to support ease of movement between fixed benches and to support easy adaptation.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	<ul style="list-style-type: none"><li>a. The kitchen space should be designed to support ease of movement and adaptation with –<ul style="list-style-type: none"><li>i. at least 1200mm clearance provided in front of fixed benches and appliances. See figures 19 and 19a; and</li><li>ii. slip resistant flooring.</li></ul></li><li>b. Where practicable, floor finishes should extend under kitchen cabinetry to enable cupboards to be moved without affecting the flooring.</li></ul>

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**Figure 19. Kitchen perspective**

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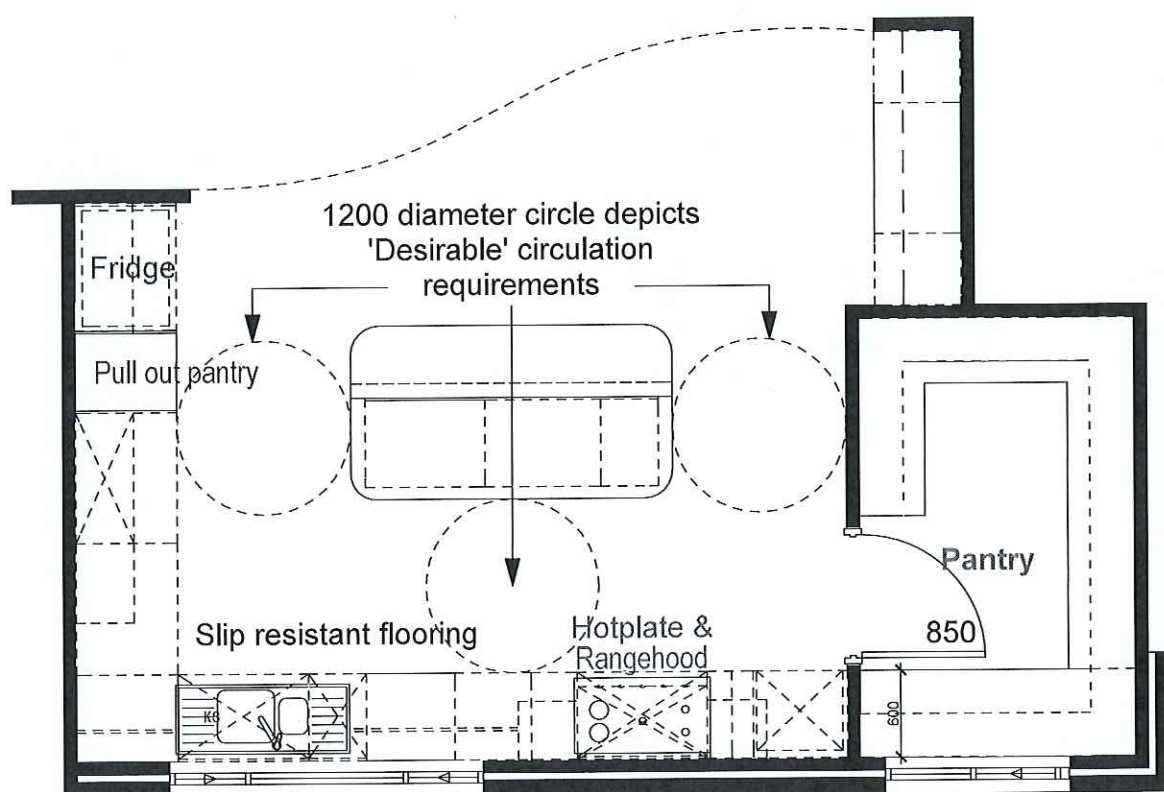


Figure 19a. Kitchen - Desirable

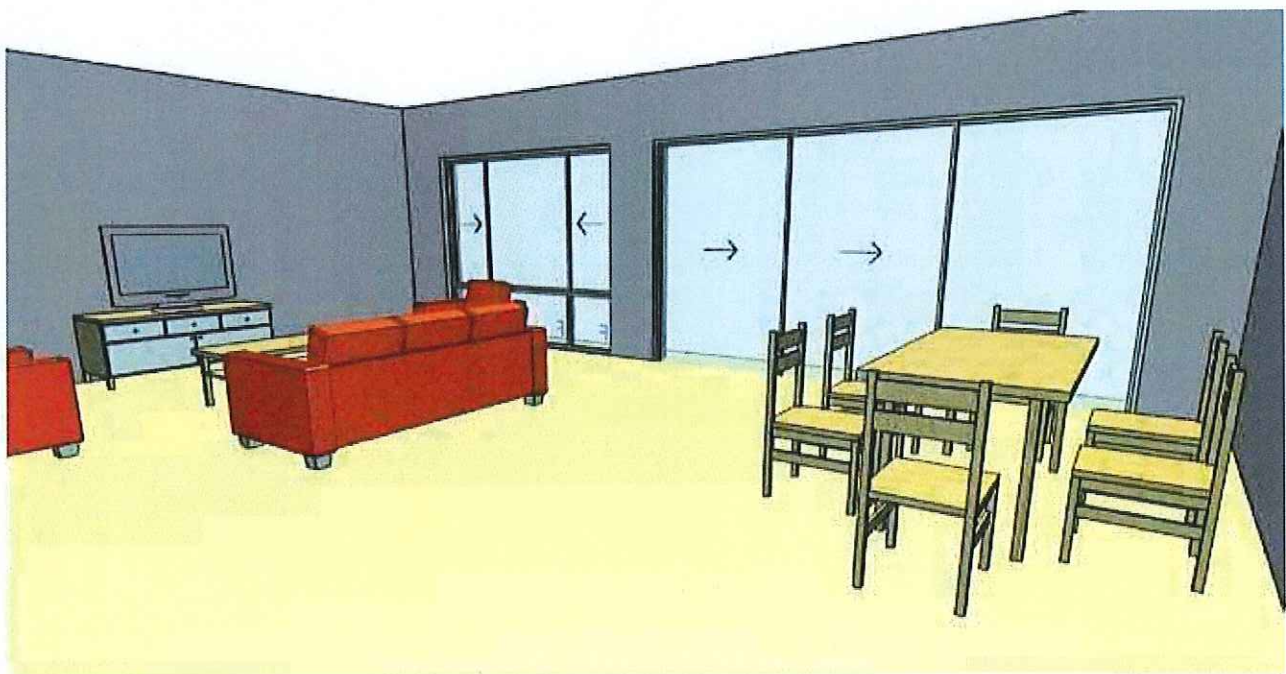
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## Family/Living room

<b>Performance Statement:</b>	<b>The family/living room features clear space to enable the home occupant to move in and around the room with ease.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	The family/living room accommodates a free space, 2250mm in diameter, to enable ease of movement clear of furniture. See figures 20 and 20a.

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**Figure 20. Living room perspective**

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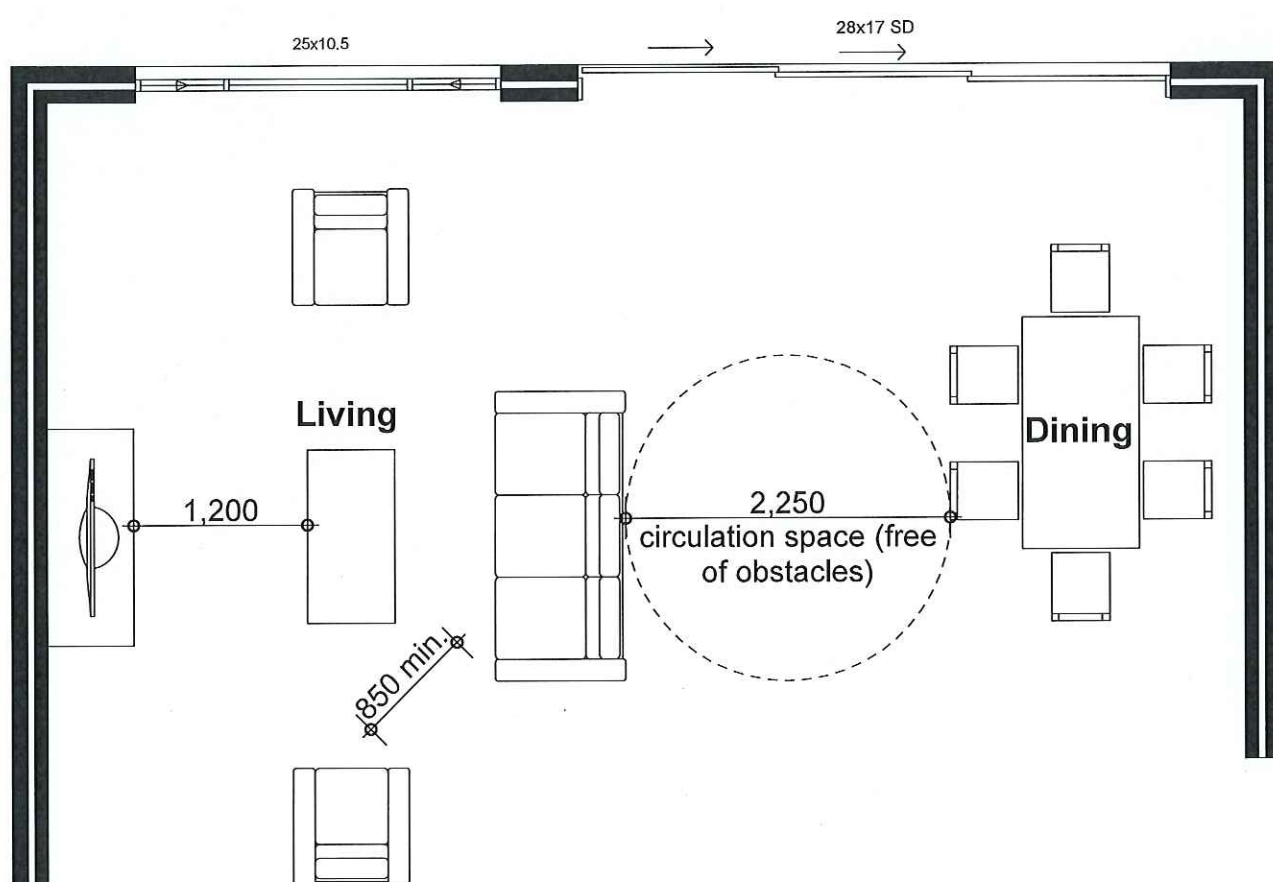


Figure 20a. Living room plan- Desirable

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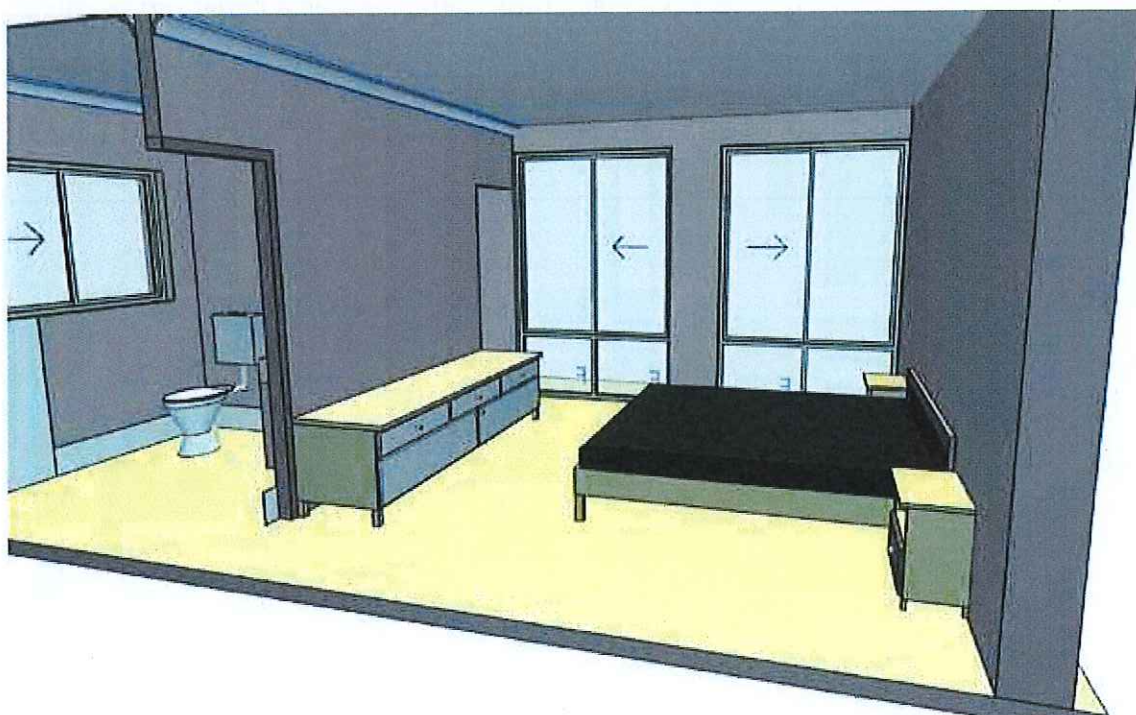
## Ground (or entry level) Bedroom

Performance Statement:	There is a space on the ground (or entry) level that can be used as a bedroom.
Essential	No requirements.
Desirable	<p>The dwelling features a space (or room) on the ground (or entry) level that:</p> <ul style="list-style-type: none"><li>i. is of at least 10m<sup>2</sup> with one wall a minimum length of 3m;</li><li>ii. provides for a minimum path of travel of at least 1000mm on at least one side of the bed. See figures 21 and 21a.</li></ul>

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Designs that work for everyone.



**Figure 21. Bedroom perspective**

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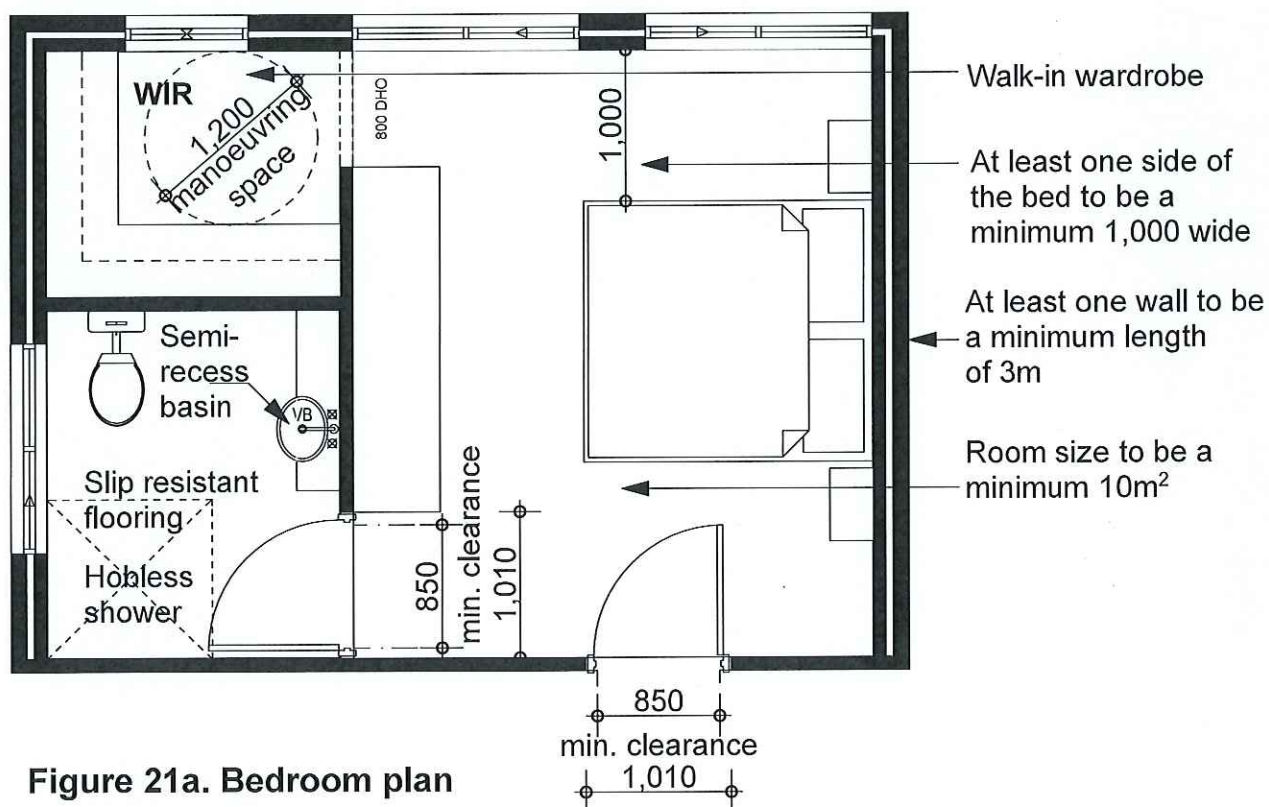


Figure 21a. Bedroom plan

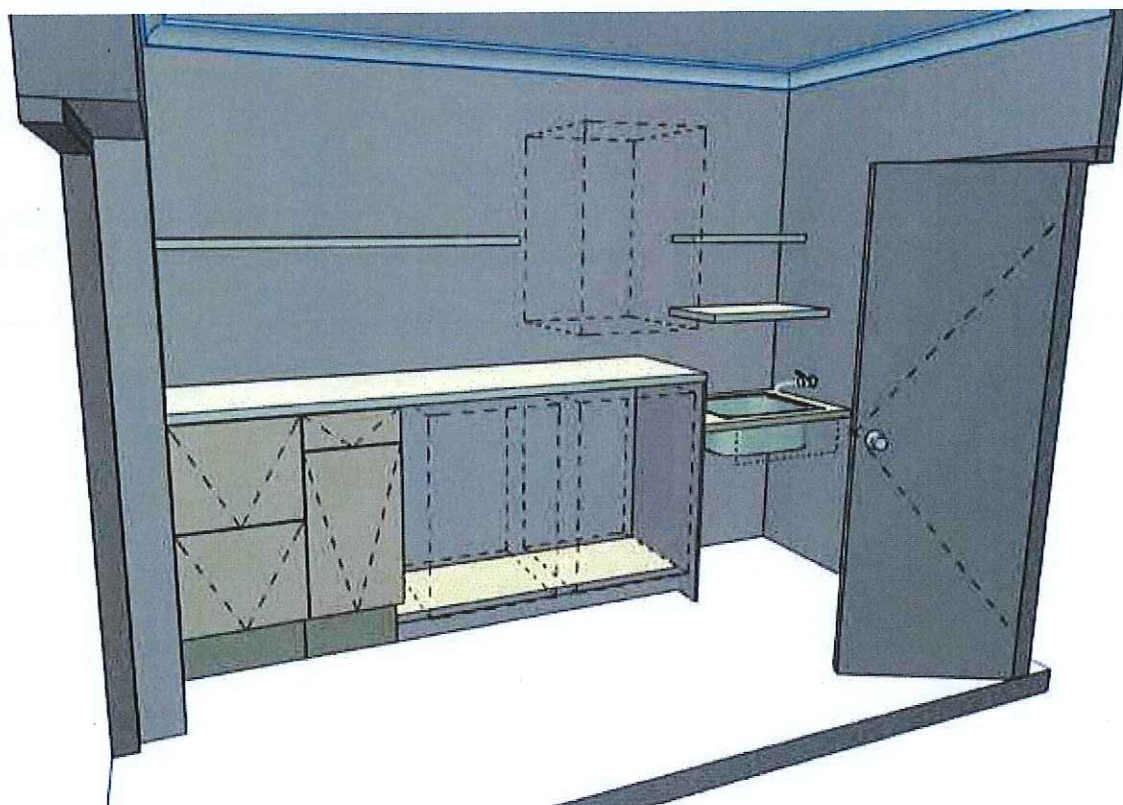
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

## Laundry

<b>Performance Statement:</b>	<b>The laundry space is designed to support ease of movement between fixed benches and to support easy adaptation.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	<ul style="list-style-type: none"><li>a. The laundry space should be designed to support ease of movement and adaptation with -<ul style="list-style-type: none"><li>i. at least 1200mm clearance provided in front of fixed benches and appliances. See figures 22 and 22a; and</li><li>ii. slip resistant flooring.</li></ul></li><li>b. Where practicable, floor finishes should extend under laundry cabinetry to enable cupboards to be moved without affecting the flooring.</li></ul>

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.





**Figure 22. Laundry perspective**

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

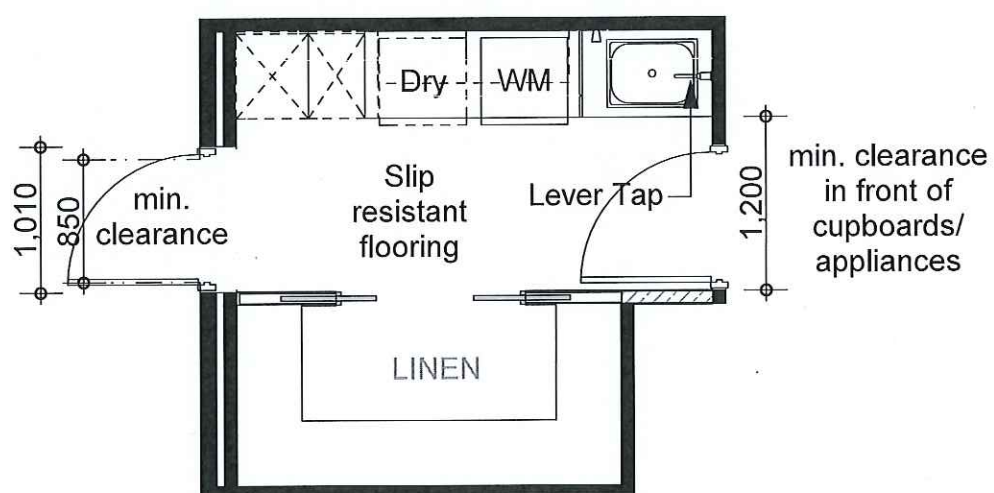


Figure 22a. Laundry floor plan

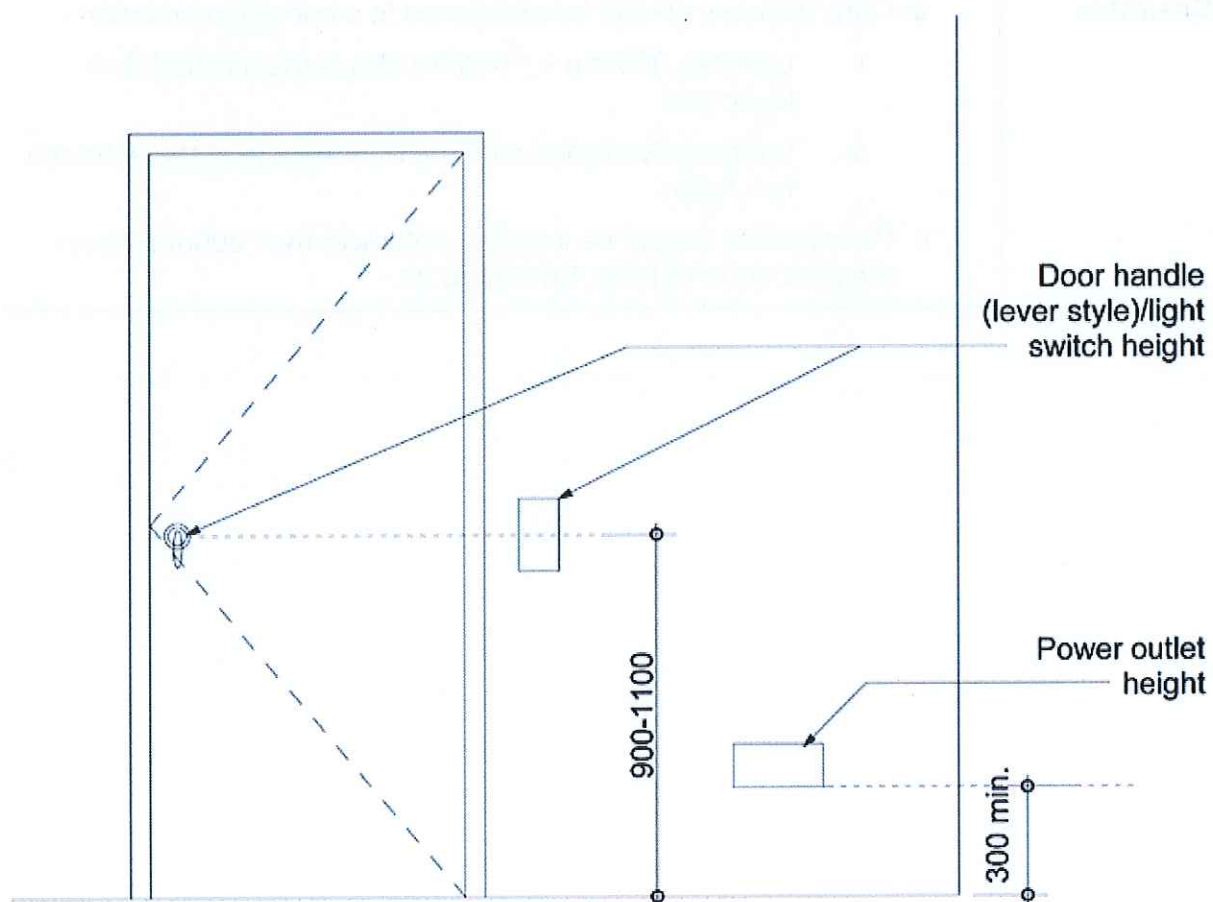
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



## Switches and powerpoints

<b>Performance Statement:</b>	<b>Light switches and powerpoints are located at heights that are easy to reach for all home occupants.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	<ul style="list-style-type: none"><li>a. Light switches should be positioned in a consistent location -<ul style="list-style-type: none"><li>i. between 900mm – 1100mm above the finished floor level; and</li><li>ii. horizontally aligned with the door handle at the entrance to a room.</li></ul></li><li>b. Powerpoints should be installed not lower than 300mm above the finished floor level. See figure 23.</li></ul>

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**Figure 23. Switches, powerpoints and door handles - Desirable**

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## Door and tap hardware

<b>Performance Statement:</b>	<b>Home occupants are able to easily and independently open and close doors and safely use tap hardware.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	<ul style="list-style-type: none"><li>a. Doorways to feature door hardware installed at between 900mm -1100mm above the finished floor. See figure 23.</li><li>b. Basins, sinks and tubs to feature lever or capstan style tap hardware with a central spout.</li></ul>

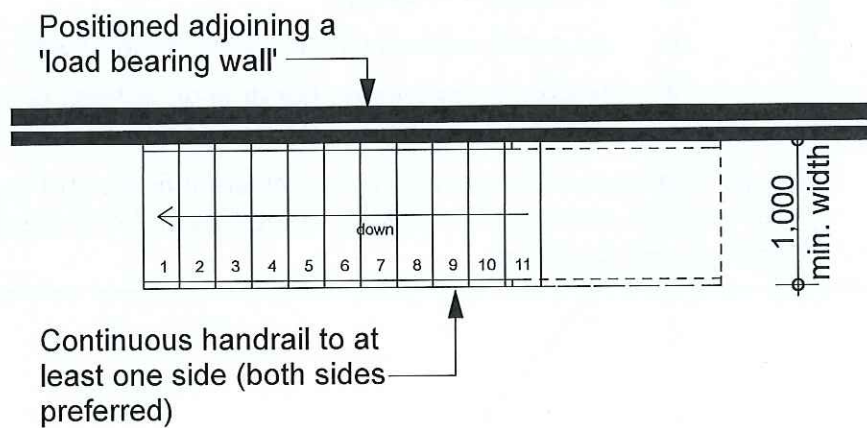
This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

## Internal stairways

Performance Statement:	Where installed, stairways are designed to reduce the likelihood of injury and also enable future adaptation.
Essential	No requirements.
Desirable	<p>a. Where practicable, stairways in dwellings should provide a minimum clear width of 1000mm and –</p> <ul style="list-style-type: none"><li>i. be straight in design;</li><li>ii. be positioned adjoining a load-bearing wall; and</li><li>iii. feature a continuous handrail on at least one side of the stairway. See figures 24 and 24a.</li></ul> <p>Note: The steps must provide a slip resistant finish and suitable non-slip tread as specified in the BCA. Handrails on both sides of the stairway are preferred.</p>

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



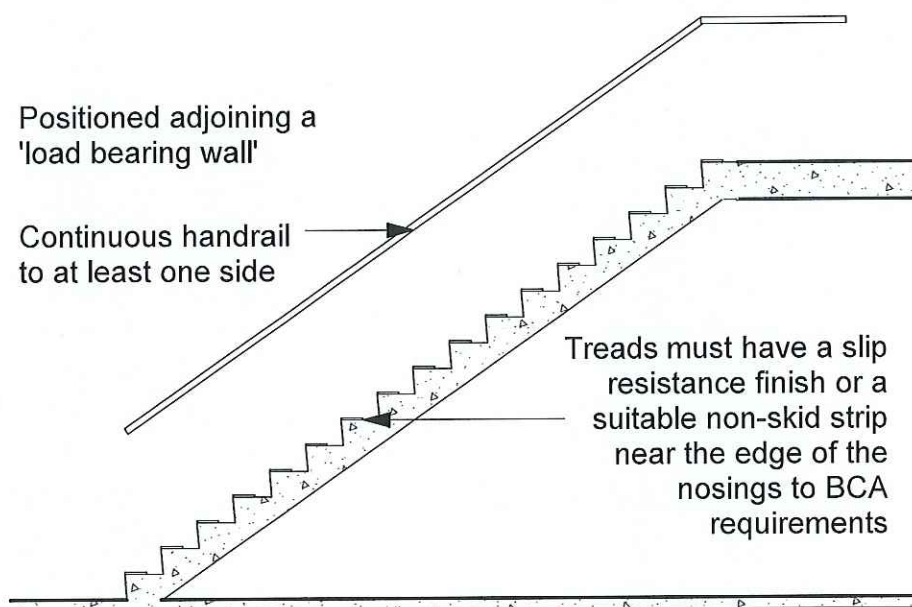


**Figure 24. Internal stairways - Desirable**

Note: Stair, handrail and balustrade construction to comply with the performance requirements of the Building Code of Australia (BCA).

Note: Continuous handrail to at least one side of the stairway and fixed at a height not less than 865mm above the nosings of the stair treads. Balustrades incorporating handrails must comply with BCA requirements.

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



**Figure 24a. Internal stairways- cross section**

Note: Stair, handrail and balustrade construction to comply with the performance requirements of the Building Code of Australia (BCA).

Note: Continuous handrail to at least one side of the stairway and fixed at a height not less than 865mm above the nosings of the stair treads. Balustrades incorporating handrails must comply with BCA requirements.

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.



## Window sills

<b>Performance Statement:</b>	<b>Windows sills are installed at a height that enables home occupants to view the outdoor space from either a seated or standing position.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	Window controls should be easy to operate with one hand and located within easy reach from either a seated or standing position.  Window sills on the ground (or entry) level in living areas and bedroom spaces should be positioned no higher than 1000mm above the finished floor to facilitate natural surveillance.

This information was sourced from the national Livable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

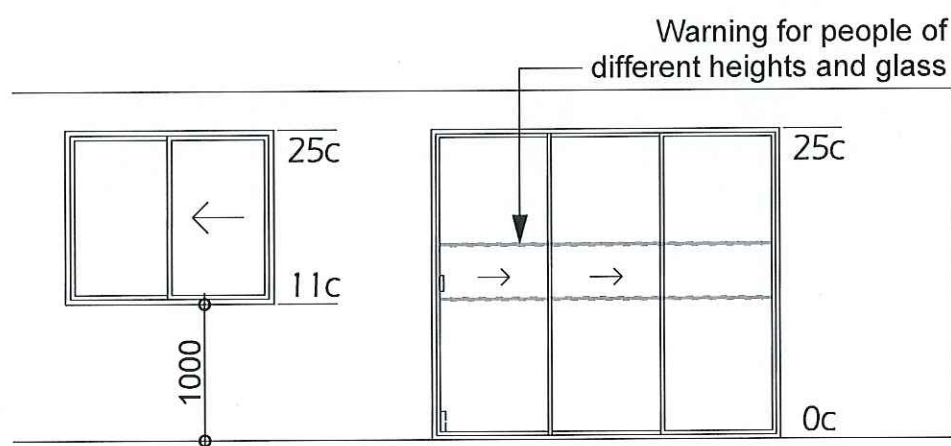


Figure 25. Windows

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## Flooring

<b>Performance Statement:</b>	<b>Floor coverings are slip resistant to reduce the likelihood of slips, trips and falls in the home.</b>
<b>Essential</b>	No requirements.
<b>Desirable</b>	Floor coverings should be slip resistant and feature level transition between abutting surfaces (a maximum vertical tolerance of 5mm between abutting surfaces is allowable provided the lip is rounded or bevelled).

This information was sourced from the national Liveable Housing Design Guidelines produced by the National Dialogue on Universal Housing Design.

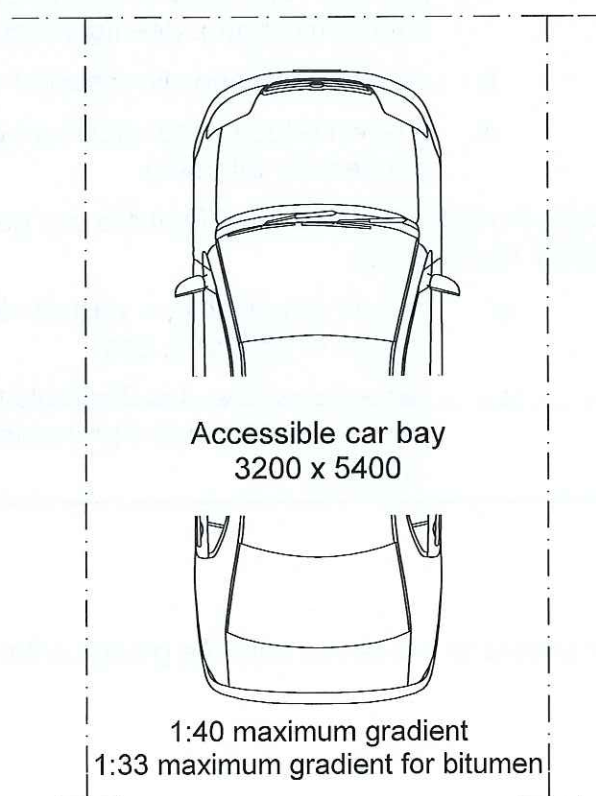
## Car parking (where part of the dwelling access)

Performance Statement:	Where the parking space is part of the dwelling access it should allow a person to open their car doors fully and easily move around the vehicle.
<b>Desirable</b>	<p>a. Where the parking area forms part of the access pathway into the dwelling the space should incorporate -</p> <ul style="list-style-type: none"> <li>i. minimum dimensions of at least 3200mm (width) x 5400mm (length). See figure 26;</li> <li>ii. an even, firm and slip resistant surface; and</li> <li>iii. a level surface (1:40 maximum gradient, 1:33 maximum gradient for bitumen).</li> </ul> <p>Also, the following additional features can be incorporated for Class 1a dwellings:</p> <ul style="list-style-type: none"> <li>iv. where practicable, a vertical clearance over the parking space of 2500mm; and</li> <li>v. where possible, it is desirable that the parking space be covered to ensure protection from the weather. See figure 26a</li> </ul>

Where there is direct access to the house from the garage a flat level entry should be considered.

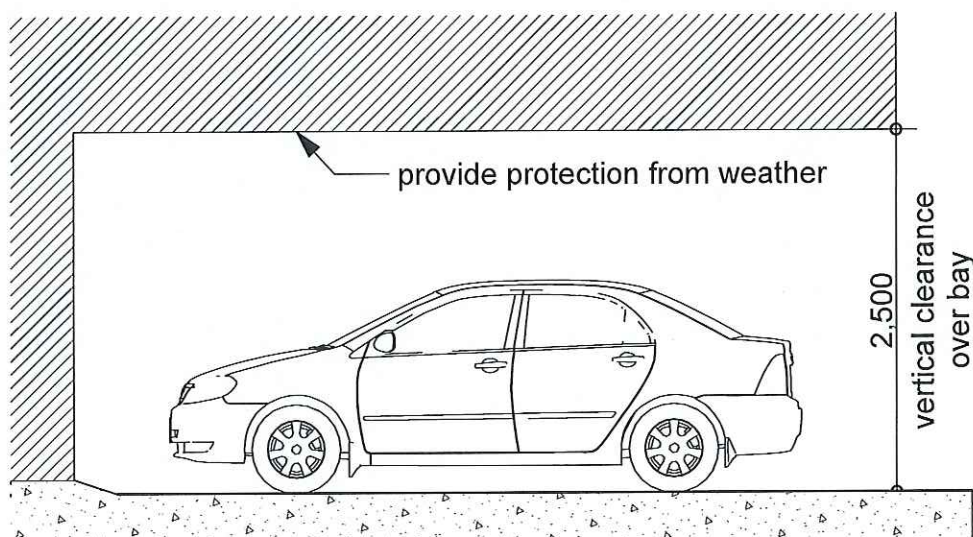
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**Figure 26. Car parking**

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**Figure 26a. Car parking vertical clearance**

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### We're getting older...

Over the past two decades, the number of elderly people increased by 167.8 per cent and one in four Australians are aged 55 years or older.<sup>1</sup>

Almost a quarter of Western Australians will be aged 60 years and over by the year 2021, compared with 15% in 2001.<sup>2</sup>

WA's baby boomers start to reach the traditional retirement age of 65 in 2011, at which point baby boomers will represent approximately one-quarter of the WA population.<sup>3</sup>

### We're living longer

- The number of elderly people increased over the past two decades by 168%, compared to total population growth of 30%. Increased life expectancy for both males and females has contributed to this rise.<sup>4</sup>

With advances in medicine and public health interventions, mortality rates due to disease continues to decline; however disability rates are not declining at the same pace.<sup>5</sup>

This means that with longer lives, years lived with disability is also longer. At present, women are expected to live 20.7 years with a disability and Men are expected to live for 18.6 years with a disability.<sup>6</sup> If the trend of increasing lifespan continues, years lived with disability will continue to increase.

### We are working (and earning) longer

- In 2010, 71% of Australians aged 55-59 years were working. Half (51%) of 60-64 year olds and one quarter (24%) of 65-69 year olds also participated in the labour force.<sup>7</sup>

### Our health and wellbeing impacts on how we live

In Australia 68 per cent of men and 55 per cent of women are overweight or obese (based on actual measurements).<sup>8</sup>

One in five West Australians has a disability (20 percent or 405 000 people).<sup>9</sup>

In 2007, one in ten people aged 55 years (490 000 people) and over was a carer of people this age. One of the key factors in future trends will be people's plans as they get older, including when and how they intend to retire and what factors will influence their decisions.<sup>10</sup>



## Our expectations about where and how we will live are changing

Most older people live independent active lives and are involved in a wide range of social, leisure and community activities', as do people with disability. Most older people continue to live in private households, with around two thirds in family households, usually with their partner.

Only three per cent of people aged 65 and older live in retirement villages and mostly because their homes were not designed for them to 'age in place'. The vast majority of them would have preferred to stay in their previous homes.<sup>11</sup>

A survey on dwelling, land and neighbourhood use by older home owners suggests a market demand for more accessible dwelling designs, to provide those homes that 'better suit needs', preferably in the general housing market rather than age-segregated housing developments.<sup>12</sup>

To achieve our dream of ageing in place we need homes designed to be economical, environmentally friendly and socially sustainable.

Smart universal design can meet these needs at little or no additional cost.

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