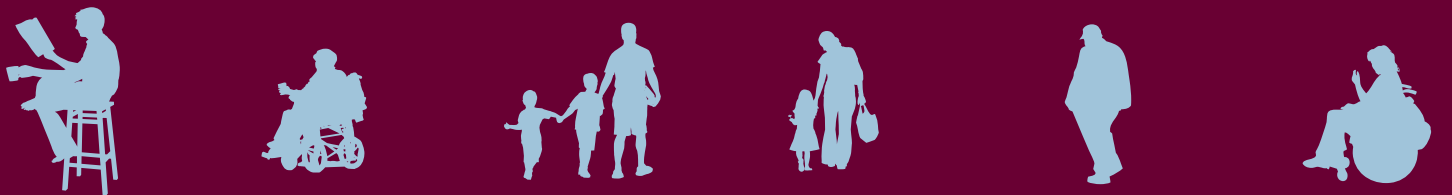


# Lifemark Design Standards Handbook



# Lifemark

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# Foreword

## Why Lifemark™ Housing?

As people get older they want to stay in their own homes and be part of the community they know, for as long as possible. To do this they need: independence and security; easy access around their home and a house designed to minimise the risk of slips, trips and falls.

Homes that are awarded the Lifemark are homes that include practical and common sense design features that meet the needs of people of different ages and abilities over time. They are homes designed to be useable by most people over their lifetime without the need for major adaptation in the future. Lifemark standard housing is for everyone.

Moving house, or altering the home, can be an expensive, disruptive and stressful experience. Sometimes a 'forced move' can be prevented if a home has a degree of flexibility designed-in that enables simple adjustments and adaptations to be made to cater for a change in the household's needs. As occupants age, these needs may often relate to reduced mobility or agility. Planning for this in the original design, while initially seeming irrelevant, may prove a huge bonus to the occupants later on. And for younger people who don't intend to live in their home for the long-term, a Lifemark home still provides benefits now whatever stage in life they are at. For example, a level and wide entrance to the home (essential for those needing to use mobility aids) is also helpful to parents with push chairs or for moving furniture or bringing shopping in from the car.

As well as the obvious benefits to the occupants of a home and their visitors, increasing the New Zealand housing stock of Lifemark homes can save New Zealanders as a whole millions of dollars a year. Significant public money will be saved through reduced hospital bills from slips, trips and falls, fewer taxpayer funded retro-fittings and by having people 'age in place' for longer - delaying their move to taxpayer funded rest homes.

One eighth of New Zealanders are over 65 and that figure is projected to increase to one quarter by 2051. Of the projected 1.5 million over 65's in 2051, the over 85's are growing proportionately faster than any other group and will make up 7% of New Zealanders by 2051. Catering to the housing needs of the aging New Zealand population should be a major concern as there are simply not enough Lifemark homes in New Zealand now and there will be even fewer in proportion to the aging population in 40 years time if current building trends continue. It therefore makes sense for the design of all new housing to consider the diverse needs of the widest range of people who may take up residence – either initially or during the life of the home.

We have prepared this handbook to encourage the design of homes that create and maintain strong and socially sustainable communities as the profile of our population changes over time.

Chris Preston



Chairman, Lifetime Design Limited

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# Introduction

## 1.1. Purpose of this Handbook

Lifetime Design Ltd has prepared this handbook to facilitate the development of housing that meets the current and future needs of an aging population while also providing benefits to occupants and visitors of every age and ability.

## 1.2. What is the Lifemark?

All over the world people are changing the way they are designing their homes so that they will work for everyone. There is a global movement focused on developing house design features for today's changing population.

In New Zealand this Universal Design movement is represented by the Lifemark™, a seal of approval which is endorsed by Lifetime Design Limited. Lifetime Design Limited is a registered charity established by CCS Disability Action with assistance from the Ministry of Social Development and the Ministry of Health. Its goal is to foster and promote design standards that work for people right across life's ages and abilities - from young families to older and disabled people.

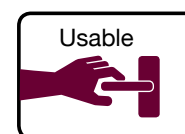
A Lifemark home is a home that includes practical and common sense design features that meet the needs of people of different ages and abilities and that avoid barriers that may discriminate against people living in or visiting the home. Lifemark homes are designed to be usable by most people over their lifetime without the need for major adaptation in the future.

The Lifemark has been driven by a need to provide appropriate housing for older people. But the five Lifetime Design Principles of usability, adaptability, accessibility, safety and lifetime value benefit others as well. For example, in a Lifemark home it is easier to manoeuvre prams, easier to carry shopping bags and easier for people with a physical disability or temporary injury to get around independently.

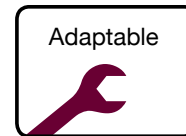
So if you are a family with infants, toddlers or young children, or you have sustained an injury that impacts your mobility like a broken leg or back injury, or you are enjoying your later years in life but your mobility is deserting you, then a house designed with Lifetime Design Principles will serve your needs.

## 1.3. The Lifetime Design Principles

A usable home is a dwelling that has common sense design features that meet the needs of people of different ages and abilities over time. A Lifemark home has features that make home life easier including reachable power points and easy to use taps, window latches and light switches. It has level entry doorways, wide corridors and bathrooms, a kitchen and laundry facilities that are designed to be easy to use.



An adaptable home is a dwelling with design features that can be easily adapted to the changing needs of the occupants as they progress through life. An adaptable home is one in which a change in a persons circumstances does not require an expensive retrofit in order for them to continue to live easily, safely and independently in the home. In a Lifemark home, integral design and specification features, which may not be noticeable, will facilitate adaptations at a later stage for a household that has a family member with a temporary or permanent disability, or a progressive condition.



An accessible home is one that enables an occupant or visitors to the home to be able to access it easily, safely and independently. Nobody is excluded from participating in home life because they are aging or have a disability.



A safe house is one which uses common sense design features that are proven to prevent injuries in the home, especially from slips, trips and falls. Improved lighting, non-slip surfaces in wet areas, better designed stairs, appropriate alarm systems and window latches are some of the features that prevent injuries yet can be designed tastefully and not look institutional. A Lifemark home is a safe home.



A Lifemark home is not intended to be complicated or expensive for designers to design, builders to build or most importantly for people to live in. The Lifetime Design Principles have been carefully considered so that they can be easily incorporated into a dwelling's design and construction early on with only a marginal, if any, cost effect.



Once occupied, a Lifemark home will save the household money when needs change since the home is able to be quickly and easily adapted to suit the new set of circumstances. Without the Lifemark features, the household may be faced with expensive, complicated and disruptive major adaptation works or possibly a forced move to a more suitable home. In other words, a Lifemark home has the potential for considerable cost savings in the future.

#### 1.4. Who the Lifemark Handbook is for

This Lifemark Handbook has been written for architects, architectural designers, builders, developers, real estate agents, retirement and rest home operators, social housing providers, city council and government policy makers, home buyers, home builders, occupational therapists, other industry stakeholders and anyone with an interest in the Lifetime Design Principles. At the end of this handbook you will also find a Lifemark Design Standards Assessment Form that will help you calculate your Lifemark Rating.

## 1.5. Relationship to New Zealand Standard NZS 4121:2001 – Design for access and mobility: Buildings and associated facilities.

The Building Act 2004 and the Building Code require all buildings to which the public are admitted (whether for free or by charge) to have reasonable and adequate facilities for disabled people to visit, work, and carry out normal activities. However, the Building Act and Building Code do not require access or facilities for disabled people in residential housing.

The Building Act also references the New Zealand Standard NZS 4121 (the code of practice for design for access and use of buildings by persons with disabilities) as a compliance document for the requirements of disabled people's access.

The Lifemark Design Standards are not a part of the Building Act, nor are they a part of NZS 4121. They are a set of voluntary residential housing standards based on similar underlying design principles to those reflected in NZS 4121 but with principles of safety and adaptability along with a healthy dose of common sense added to the mix. The Lifemark Design Standards identify minimum requirements (particularly for dimensions) which comply with the minimum performance requirements of the NZBC. However, this Lifemark Design Standards Handbook may also recommend more useful or best practice criteria, which may be in excess of the minimum requirements of the NZBC. For example while the building code requires doors to have a minimum 760mm clear opening, the Lifemark Design Standards require a minimum 810mm clear opening.

The Lifemark applies to typical New Zealand homes including apartments. While the space constraints of a typical apartment make it difficult to achieve the Lifemark, we know it is possible because in 2010 Summerset became the first retirement village operator to have its new apartments achieve the Lifemark.

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*The NZS 4121 is a public building standard. Lifemark is a standard for NZ homes.*

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We recognise that there is much debate among stakeholders about what minimum spatial requirements are appropriate with respect to how they affect older people and people with disabilities. Lifetime Design has therefore opted for a non-prescriptive approach that it aims to have adopted by the industry. We have used, for the most part, the spatial minimums in NZS 4121 with some common sense variations for the residential housing environment.

The minimum circulation and approach spaces required within a Lifemark home, whilst considering basic circulation space for a wheelchair user, do not always match the equivalent space requirements for wheelchair users as specified in NZS 4121. A wheelchair user living in a 3-Star or 4-Star Lifemark Home may need to compromise in respect of available manoeuvring and circulation space in some instances. We therefore recommend a wheelchair user should aim to achieve the 5-Star Lifemark rating to ensure the full spatial requirements as specified in NZS 4121 and their needs are met.

Consideration of the basic circulation space for wheelchair use does create circulation and approach spaces that will assist a wide range of occupants and visitors including families with young children or people using walking sticks or frames and some wheelchair users.

### 1.6. Background to the Lifemark™ Standards

Lifetime Design Limited's aim is to see a large scale shift in new housing design so that an increasing proportion of the New Zealand housing stock will be suitable for a growing proportion of older people. We believe the best way to achieve this is by focusing on the design features that cannot be changed later without major expense. We have taken NZS 4121 as a starting point, identified the key structural and spatial elements we believe are critical to put in place up front, during the house design stage, to ensure the future flexibility and adaptability of the home and then added some home safety standards that will prevent injuries as well as usability standards that will just make life easier.

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*Our aim is to increase the NZ housing stock of homes built for a lifetime.*

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The Lifemark Design Standards and the content of this handbook are the culmination of many years of New Zealand and international research and are based on an international movement toward Universal Design Principles. What is absolutely clear in New Zealand and internationally is that the size of the demographic shift over the next 20 years demands a large scale response now. Because the vast majority of people want to stay living in the home and the neighbourhood they know, rather than moving to an age-restricted development of some sort, it makes sense to ensure that mainstream housing meets the majority of their needs.

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*The Lifemark Design Standards are based on an international movement toward Universal Design Principles.*

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There is no evidence that the NZS 4121 has led to new accessible homes being built. However, the Lifemark Standards have already led to a documented increase in the number of new accessible homes being built. Furthermore, these new homes also meet the additional Lifetime Design Principles of adaptability, usability, safety and lifetime value.

**PLEASE NOTE:**

This is a living document that will be updated and amended regularly. Check the version number on the front and back cover to see if you have the latest version available. We welcome feedback from all stakeholders to help us to refine the Lifemark Design Standards Handbook over time.

*the*  
**Lifemark**  
*design standards*

CERT TM



## Lifemark Standards Overview

Lifetime Design Ltd's aim is to influence the design of mainstream housing so that a greater proportion of new homes built will be suitable for older people and people with disabilities to live in for a longer period of time.

The following Handbook explains the 7 areas that are so important to get right at the design stage of a new home. They include the minimum structural and spatial requirements that cannot be changed later without major expense. We have also included the most important home injury prevention standards because of the value of reducing the significant costs and social burden associated with home injuries. But most importantly we have included a healthy dose of common sense.

For each of the 7 areas, namely Accessing the Dwelling, Getting Around, Fittings and Fixtures, Bedrooms, Dwelling Facilities, Bathrooms and Multi-Storey Access, we:

- list the relevant individual standards, indicating with an asterisk and a darker shading those standards that are required to achieve a 3-Star Lifemark rating
- note how many points can be accrued for each standard and the minimum points required to achieve a 4-Star or 5-Star Lifemark rating
- explain in simple terms why the standard is important
- explain exceptions to the standards and suggest other design considerations

## The Lifemark 5-Star Rating System

The Lifemark 5-Star rating system provides consumers with information on how usable, adaptable, accessible and safe a home is. The entry-level 3-Star Lifemark rating is achieved by meeting certain minimum required standards that earn points toward a Lifemark Score. 135 points are required for a 3-Star Lifemark which means a home is fully adaptable **in the future** at minimal cost. 180 points are needed for a 4-Star Lifemark and 240 points are needed for a 5-Star Lifemark which means a home is fully accessible now.

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*The more stars, the more accessible, safe and usable.*

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The Lifemark Seal of Approval helps the home builder or home buyer choose between homes based on how appropriate they are for their current and future needs.



## 1

# Car Parking

Where the parking space forms part of the dwelling access it shall allow a person to open their car doors fully and easily move around the vehicle

		POINTS
1.1a	At least one car parking space is able to be adapted to a minimum width of 3500mm.*	4
1.1b	At least one car parking space actually has a minimum width of 3500mm.	7
1.1c	At least one car parking space actually has a minimum width of 3500mm and length of 5000mm.	10
1.2a	At least one car parking space is able to be adapted to have a level, firm, slip resistant flat surface with a slope not exceeding 1:50.	3
1.2b	At least one car parking space actually has a level, firm, slip resistant flat surface with a slope not exceeding 1:50.	5

\*required standard for a 3-Star Lifemark

## Why car parking is important

Vehicle access is very important to the mobility of older people as well as temporarily and permanently disabled people to enable them to be actively involved in the community. So easy access to and from the car is critical to a Lifemark home. A flat car park with sufficient

clearances allows people to transfer to/from wheelchairs or walking frames and to move comfortably around the vehicle and open doors fully. It also allows young children to be easily secured in car seats or transferred to pushchairs without the pushchair rolling away.



*A tight steeply sloping parking space makes getting in and out of a vehicle difficult for everyone. Parking spaces should allow for doors to be opened fully.*



*In this example, there is no available flat surface next to the vehicle making transferring to and from a walking frame or wheelchair very difficult. Even getting out of a vehicle with crutches is difficult on a sloping surface.*



*A wide, flat surface with no slope makes getting in and out of a vehicle easy for everyone.*



*A wide, flat surface with no slope also makes transferring to walking aids or a wheelchair much easier.*

### Design Considerations

Parking that meets the key dimensional requirements may be easier to provide than garage parking and this is perfectly satisfactory provided the occupants can easily access the entrance to the house (Section 3, The Entrance).

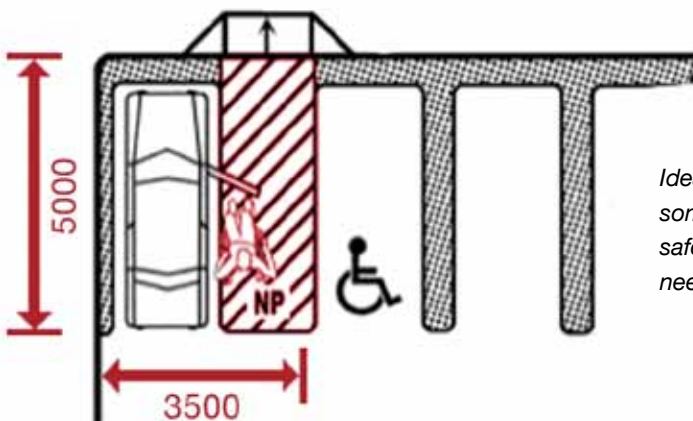
When designing carports, consider the placement of support posts to ensure car doors can be fully opened.

Where the parking space is external, the space requirements may be met with landscape strips that could be 'sacrificed' for paving in the future if required. Where this approach is taken, care

should be used in calculating the future total paved/impermeable surfaces, with regard to stormwater run-off.

A double garage would normally provide sufficient space to meet this requirement. Where double garages are provided, single wide-opening doors should be used in preference to paired doors – to allow a vehicle to be parked towards the centre of the space if required.

The slope of a parking space is a determinant of how slippery it might be. See the explanation of slip resistant surfaces in Section 2, Pathways.



*Ideal parking space dimensions enable someone to get into and out of a vehicle safely and easily and onto a pathway without needing to go over a step.*

## 2

## Pathways

Occupants can easily and safely access the dwelling entrance

		POINTS
2.1a	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is able to be installed with a minimum clear width of 1200mm.*	3
2.1b	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is installed with a minimum clear width of 1200mm.	6
2.2a	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is able to be installed with a level, firm, slip resistant surface with a maximum slope of 1:20 and a crossfall of not more than 1:50.*	5
2.2b	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is installed with a level, firm, slip resistant surface with a maximum slope of 1:20 and a crossfall of not more than 1:50.	10
2.3	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is installed with a light switch at the dwelling entrance for pathway lighting.*	1
2.4	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is installed with sensor lighting for the pathway.	3

\*required standard for a 3-Star Lifemark

## Why an easy to use pathway is important

Direct and level access is the starting point for barrier-free design. A fall is often the first disabling event in a cascade toward immobility and a restricted lifestyle. Prevention of slips, trips and falls is the critical first step in preventative health care for the aging.

Easy and safe access to the home is required not only by older people and those in wheelchairs, it will also help users of walking frames, parents with strollers, a parent balancing a child on one hip with bags of groceries in the other hand and toddlers taking their first steps.



*An uneven, mossy and narrow pathway makes independent access difficult and unsafe whether using a walking frame, wheelchair or even if not using any walking aid at all.*



*Narrow uneven pathways are also inconvenient and unpleasant to use with prams or push chairs and young children are more likely to trip.*



*A wide pathway surface provides plenty of room for an older or disabled person to be assisted by a person walking next to them.*



*A flat, slip resistant and non-sloping pathway is much safer and more convenient for everyone.*

### Design Considerations

Barrier-free design begins outside the home. Lifemark approved homes enable easy and comfortable access, whether from the garage, carport or the front gate. Generally, access from the car parking space to the house is the most critical to get right in the initial design of a house.

Barrier-free access does not necessarily mean a collection of institutional-type ramps, rails and platforms. It is about providing sufficient clearance and manoeuvring space, level thresholds and slip resistant paths. It is about easy progress from outside to inside, from the car or street to the house.

### Slip Resistant or Non-slip Surfaces

Building Code Clause D1 Access Routes requires that access routes 'have adequate slip resistant walking surfaces under all conditions of normal use.' Acceptable Solution D1/AS1 requires a friction coefficient of 0.4 for level access routes used by the public. For houses, this includes only the route to the main entrance. Table 2 of the D2 Compliance Document lists the materials that are acceptable where a slip resistance of 0.4 is required.

Compliance with the slip-resistant performance of NZBC D1.3.3 (d) may be verified by confirming that the walking surface under the expected conditions of use has a coefficient of friction (i) of no less than:

$$i = 0.4 + 0.0125 S$$

where S is the slope of the walking surface expressed as a percentage.

The Lifemark Design Standards require non-slip surfaces in areas other than access routes such as kitchens, bathrooms and other wet areas.

## 3

## The Entrance

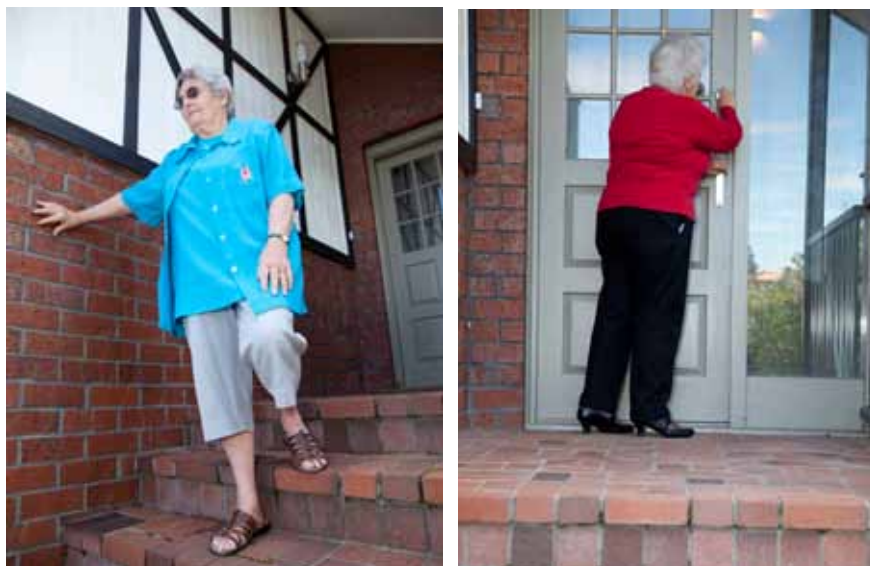
Occupants can easily and safely enter and exit the dwelling

		POINTS
3.1	The dwelling entrance shall provide an entrance door with a minimum clear opening width of 810mm. (860mm door leaf)*	10
3.2a	The dwelling entrance shall provide an entrance door with a maximum threshold of 20mm.*	5
3.2b	The dwelling entrance shall provide an entrance door with a level transition.	15
3.3	The dwelling entrance shall include an external landing area measuring 1200mm x 1200mm.	2
3.4	The dwelling entrance shall include an external landing area that is level with a 1:50 fall or shallower.	2
3.5	The dwelling entrance shall include an external landing area that provides shelter from the weather.	2
3.6	The dwelling entrance shall include an external landing area that is slip resistant.*	3
3.7a	The dwelling entrance shall include an external landing area with switch operated lighting at the dwelling entrance.*	1
3.7b	The dwelling entrance shall include an external landing area with sensor lighting.	3

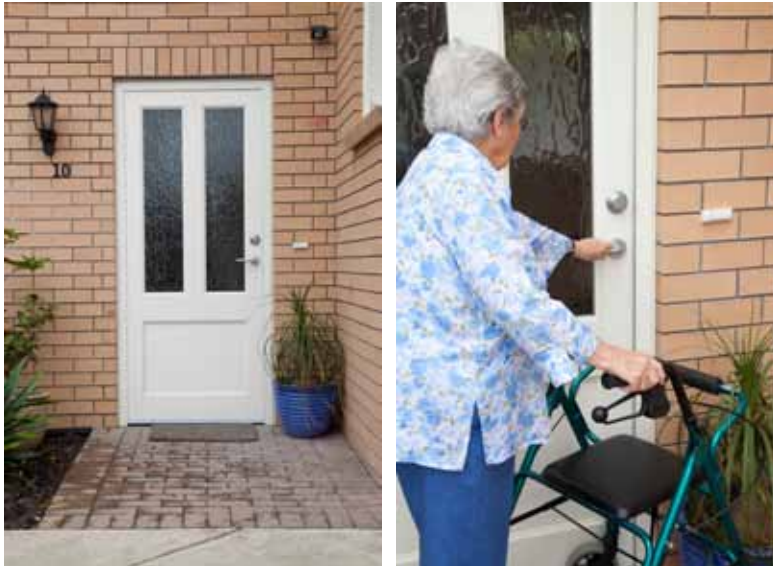
\*required standard for a 3-Star Lifemark

**Why an accessible dwelling entrance is important**

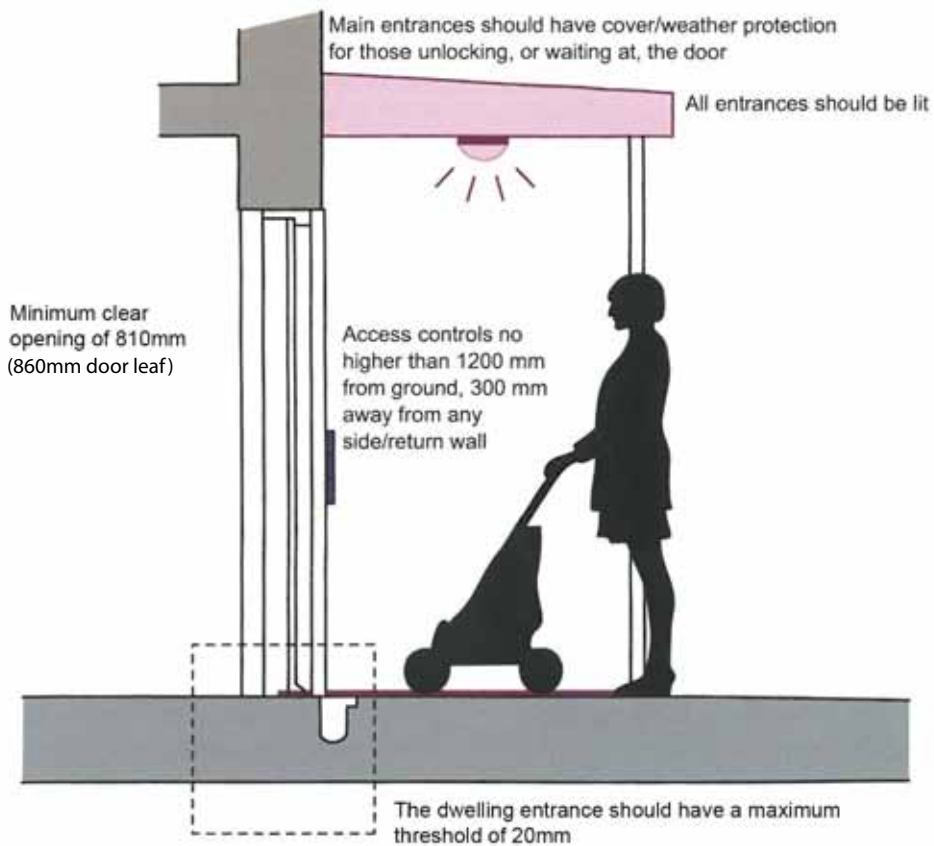
Ease of movement at, and through entrance doorways is important to make this as convenient as possible for the widest range of people including those with push chairs, those less agile and those using walking sticks or other mobility aids. A well lit and dry entrance is important for safety and convenience. Providing some degree of good lighting and shelter from the weather to people unlocking or waiting at the door will reduce injuries. The best way to prevent slips, trips and falls at the entrance is to provide a level threshold. The following section will illustrate various options to achieve a maximum threshold of 20mm.



*The entrance has a threshold less than 20mm, a landing area greater than 1200mm x 1200mm; it is covered and has sensor lighting, but all of that is meaningless since the steps to the front door make this entrance inaccessible to many.*



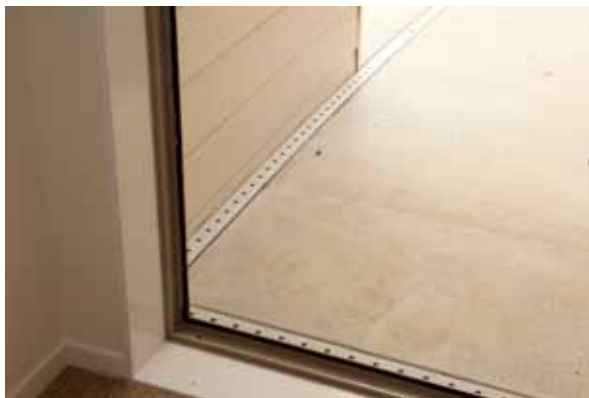
*This entrance meets or exceeds the required Lifemark Design Standards which means it is easy to use by everyone. However the door mat represents a tripping hazard.*



*Entrance design considerations.*

**Design Considerations**

Level entry doorways can be achieved in many different ways of which some are shown below.



*Examples of level threshold entrance doors.*



# Internal Doors

Internal doors facilitate comfortable and unimpeded movement between spaces

4.1	ALL doorways to ALL rooms on the primary living level shall provide a minimum clear opening width of 810mm (860mm door leaf).*	15
4.2	ALL doorways to ALL rooms on the primary living level shall provide a level transition and threshold. This accepts difference in floor materials either side of the doorway.*	8
4.3	ALL doorways to ALL rooms on the primary living level shall provide a 300mm return wall on the door handle edge of the door facing the side the door swings towards.	5

\*required standard for a 3-Star Lifemark

## Why user-friendly doors are important

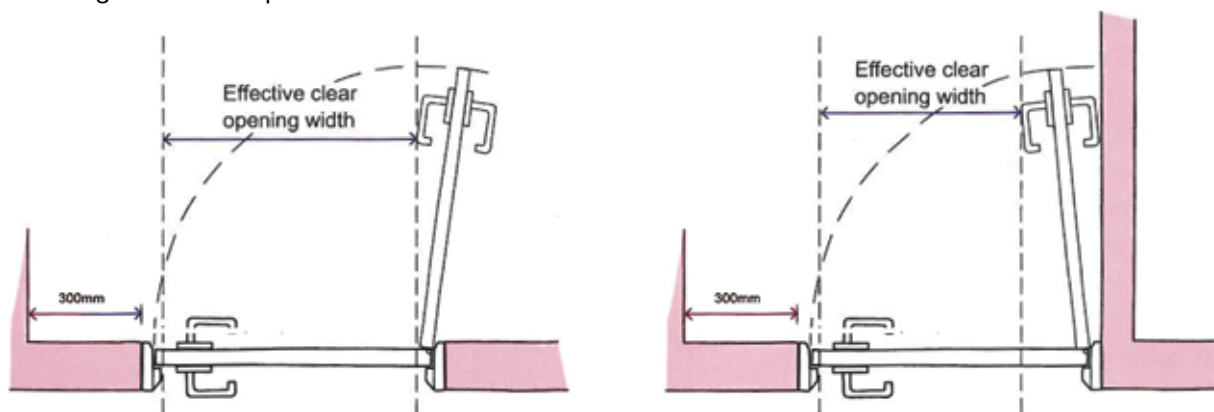
Wider doors inside the house provide extra space for manoeuvring, which becomes more important as people get older and families grow.



A 300mm return wall as shown in the diagrams below make reaching a door handle possible for a wheelchair user. The photo shows how difficult it is to open a door from a wheelchair when there is no 300mm return wall. Note how the footplate is touching the wall.

## Design Considerations

Whether a door is a side hung standard door, a cavity slider, bifold door or a ranch slider, an 810mm clear opening should be clear of all protrusions including the door handle and the thickness of the door in the open position. This will require an 860mm door leaf, able to be opened to at least 90 degrees. It is important to plan the protrusion of the door into rooms and circulation space in the design of the home, to ensure there is sufficient space to accommodate the door swing while still allowing movement space within the room.



The Lifemark Handbook presumes that primary living spaces such as a living/family room, a space or room capable of being used as a bedroom, a bathroom, and the kitchen and laundry are all on the primary living level. However, in some homes such as a two storey townhouse, the bedroom and bathroom may be upstairs. When these homes are designed as Lifemark homes they will require provision for a future stair or platform lift so they can be accessed. While we do not require non-primary living level doorways to have clearances of 810mm, we strongly encourage such a clearance whenever possible.

## 5

# Wide Corridors

Corridors facilitate comfortable and unimpeded movement between spaces

		POINTS
5.1	ALL internal corridors or passageways shall provide a minimum clear width of 1050mm.*	15
5.2a	ALL internal corridors or passageways shall provide light switches at both ends of any corridors.	3
5.2b	ALL internal corridors or passageways shall provide sensors to automatically turn lights on at night.	5

*\*required standard for a 3-Star Lifemark*

## Why wide corridors are important

Movement through a Lifemark home should be as convenient as possible to the widest range of people including those using walking frames, wheelchairs or other mobility aids and those moving furniture or other large objects. Corridors need to provide free movement between all the critical facilities for the widest range of potential occupants. Lighting in corridors is also important to reduce the number of incidences of people tripping over objects left in the corridor at night time.



*A clearly sub-standard corridor with restricted accessibility.*



# 6

## Light Switches

Light switches and other service controls are located at heights that are easy to reach for all occupants

		POINTS
6.1	Light switches and other service controls (eg. security systems, intercommunication systems, air-conditioning controls) shall be horizontally aligned with door handles at 900-1200mm above finished floor level.*	10
6.2	Light switches and other switches (eg. security systems, intercommunication systems, air-conditioning controls) shall be toggle, rocker, push pad, or push button in design.	2

*\*required standard for a 3-Star Lifemark*

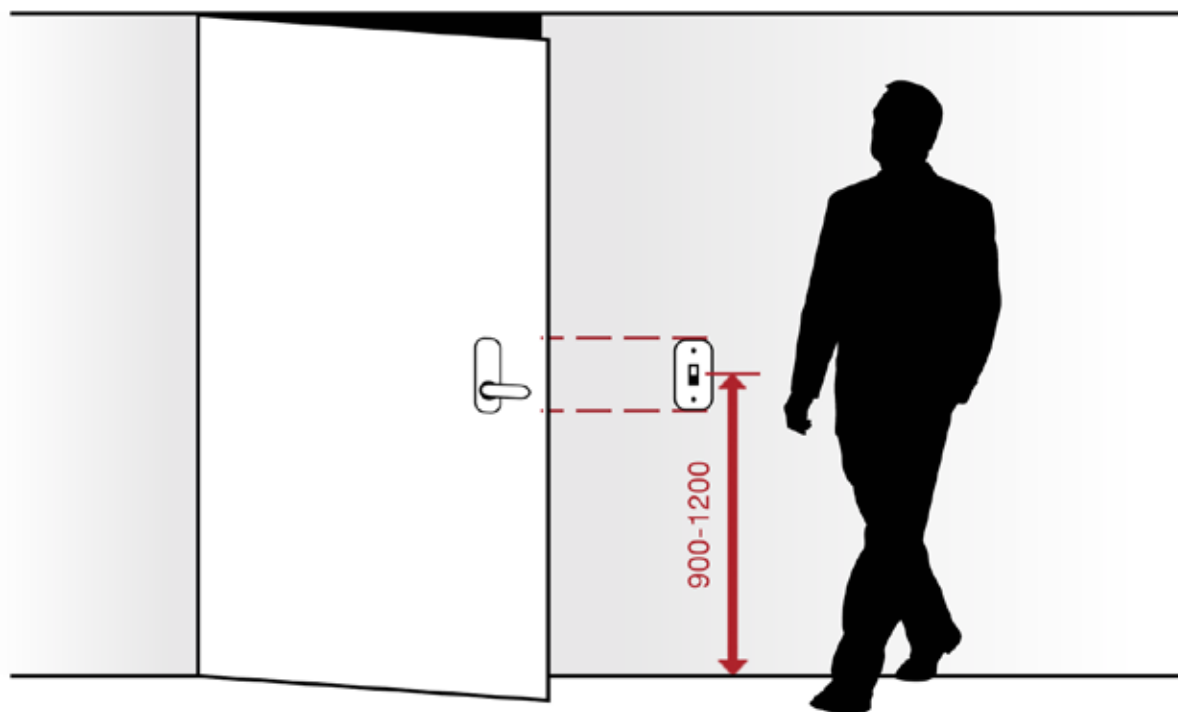
### Why easy to find and use light switches are important

When light switches are horizontally aligned with door handles the occupant is more easily able to locate a door handle in the dark. Similarly a visually impaired occupant will find light switches

more easily if they are located at a consistent height throughout the house.



*This light switch is not horizontally aligned with the door handle and results in the person feeling around to try to find it in the dark.*



*Light switches positioned between 900mm-1200mm above the finished floor level are at the most convenient height. The important factor is that they are horizontally aligned to the door handle. Light switch heights, like powerpoints, are measured to the middle of the light switch.*

### Design Considerations

There are some excellent light switches available today that are particularly suited to older people or people with dexterity issues. Large rocker style light switches are very easy to use and are worth considering.

Light switches and other service controls that give tonal contrast against their surroundings are also easier to find in a darkened room. There are also light switches that glow to assist with finding them in the dark.

Where there are multiple entry points to a room or hallway space a light switch should be provided at each entry point. Similarly, light switches should be provided at the top and bottom of stairs. Sensor lighting is also very practical for stairways and certain task lighting situations.

# 7

## Easy to Reach Powerpoints

Powerpoints are located at heights that are easy to reach for all occupants

		POINTS
7.1a	Powerpoints, TV, phone and computer outlets are installed at a consistent height not lower than 300mm above the finished floor level.*	2
7.1b	Powerpoints, TV, phone and computer outlets are installed at a consistent height between 500-1200mm above the finished floor level.	8
7.2	Powerpoints, TV, phone and computer outlets are installed at least 500mm from an internal corner.	2

\*required standard for a 3-Star Lifemark

### Why easy to reach powerpoints are important

The main driver for this particular standard is about ease of use. As we get older and lose our agility, it is far easier to use a powerpoint or other outlet that is not too low to the ground. In fact higher powerpoints and other outlets are easier to use whatever your age, particularly if you are tall.

The height parameters for Standard 7.2 relating to the 500mm distance from an internal corner is to ensure that wheelchair or walking frame users can actually reach the powerpoint or other outlet from the wheelchair or with their walking frame in front of them.



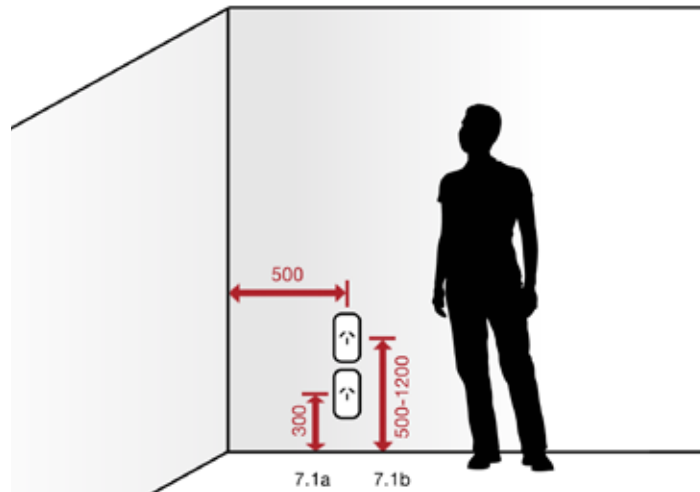
*When powerpoints are this low they are difficult to reach and may lead to a back injury for less mobile or tall occupants. This powerpoint at 200mm from the floor to the centre of the powerpoint is below the required Lifemark Design Standard of 300mm and significantly lower than the preferred Lifemark Design Standard of 500 – 1200mm.*



*When powerpoints are this close to an internal corner they are difficult and inconvenient to reach for all occupants but especially for wheelchair users who can't reach them without considerable difficulty, if at all.*



*This photograph shows just how easy and convenient powerpoints can be if installed above 500mm from the finished floor level.*



*Powerpoint heights are measured from the finished floor level to the centre of the powerpoint. Similarly the distance from an internal corner is also measured to the centre of the powerpoint. Powerpoints can be provided above 1200mm when provided for special purposes such as for a wall mounted television, heatpump or other appliance. Such a powerpoint should be additional to others in the room.*

### Design Considerations

While the required standard is for powerpoints and other outlets to be installed at a height not lower than 300mm above the finished floor level, we strongly encourage designers to consider 7.1b rather than 7.1a as their default standard. A minority of designers have said higher powerpoints and other outlets can be visually obtrusive and so prefer the 300mm minimum however in practice we note that most powerpoints end up hidden behind furniture items and are therefore not seen anyway. As a population we are getting taller with each generation. We believe the benefits of having easier to use powerpoints and other outlets far outweigh the view of a few that they are not aesthetically pleasing.

Another advantage of having powerpoints that are a minimum 500mm above the finished floor

level is that the powerpoints are more likely to be useable if a bed is placed in front of it. It is particularly important to consider the placement and height of powerpoints in bedrooms.

There are a number of common sense exceptions to the height parameters in 7.1a and 7.1b. These include powerpoints and other outlets that are installed for specific purposes or built in appliances. For example, a wall-mounted television should be able to have outlets that sit behind the television. However, where a powerpoint is installed at a higher or lower height than the parameters in 7.1a and 7.1b then at least one alternative powerpoint should be installed within the Lifemark parameters in the same room.

# 8

## Windows

Window controls and sills are installed at a height that enables home occupants, including those with restricted movement and limited reach, to operate the window and view the outdoor space from either a seated or standing position

		POINTS
8.1	Window controls shall be lever handles and be able to be operated with one hand.*	5
8.2a	Window controls and sills in the primary living areas shall be no higher than 1200mm above the floor.	5
8.2b	ALL window controls ON ALL LEVELS shall be no higher than 1200mm above the floor.	7
8.3	Fit security stays on windows to prevent them from obstructing paths or walkways outside.	2
8.4	Fit security stays on windows that are lower than 900mm where it is possible to fall one metre or more.	2

\*required standard for a 3-Star Lifemark

### Why window standards are important

Lever handle window controls are also easier to use by people with limited hand dexterity.

Older people tend to be seated more than younger people, and some may be constrained to a wheelchair. Lower window sills enable people to see outside more easily from a seated position, and so feel connected to what is going on outside. This is important not only for their own health but it also improves neighbourhood safety by enabling passive surveillance – older people are often around to watch when others are not.

Being ‘shut in and left alone’ is one of the great fears about aging and it is also the antithesis of sustainable community making. Housing design ought to encourage and allow controlled interaction between public and private zones. Windows are the primary interface in this.

Open windows that protrude out onto external pathways or onto balconies can result in serious injuries especially to children running around corners who don’t see them. Attaching security stays that prevent the windows opening too far serve a safety purpose in addition to the security purpose for which they were designed. Likewise, security stays can prevent severe injuries from children falling out of windows where the fall is greater than 1000mm.



A lever handle window is easy to operate with one hand which is useful if you have your hands full



These windows are too high and the woman needs to stretch awkwardly to keep an eye on her grandchildren playing in the background.

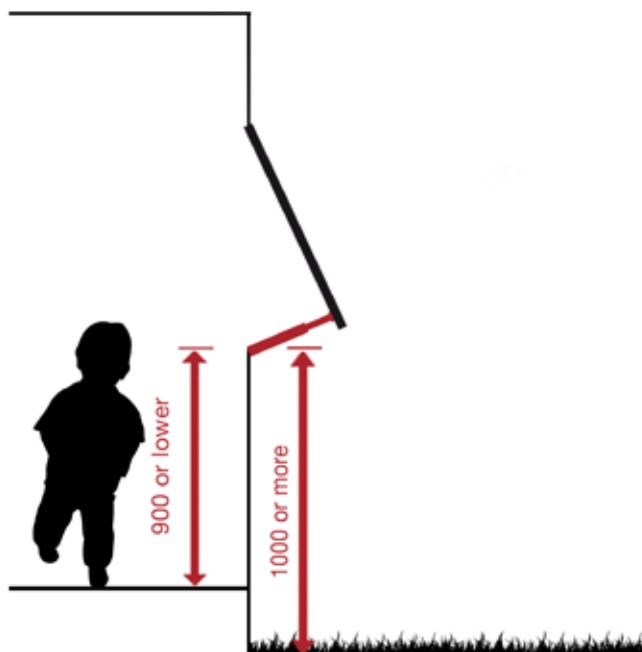


These windows meet the Lifemark Design Standard by being lower than 1200mm above the floor. The woman is able to sit up in bed reading while at the same time she can see out of the window.





*There is a very clear danger here when windows do not have security stays. This girl risks running around the corner to protruding windows at head height. This could be avoided with the installation of security stays.*



*A security stay will prevent this window opening and a child falling more than 1 metre.*

### Design Considerations

While not a Lifemark Design Standard we encourage designers to consider window access. There should be potential for a clear approach route that enables a wheelchair or walking frame user to approach a window in each room.

Exceptions to 8.2a and 8.2b can be made for windows in bathrooms, laundry rooms and kitchens. In these rooms where privacy is required or where appliances, bench tops and

other fittings make it impractical to have window sills lower than 1200mm or where it is beneficial for good airflow and ventilation to have windows nearer to the ceiling, an exception to the window sill height parameters is allowed. However, the window controls requirement remains applicable so that all occupants can operate the windows.

Top hung windows are preferred to side hung windows since window controls will be more easily positioned at the standard height.

# 9

## Door Fittings

Occupants are able to easily and independently open and close doors

		POINTS
9.1	All door handles shall have a lever action.*	5
9.2	All door handles shall be horizontally aligned with light switches at between 900-1200mm above the finished floor level.*	5

\*required standard for a 3-Star Lifemark

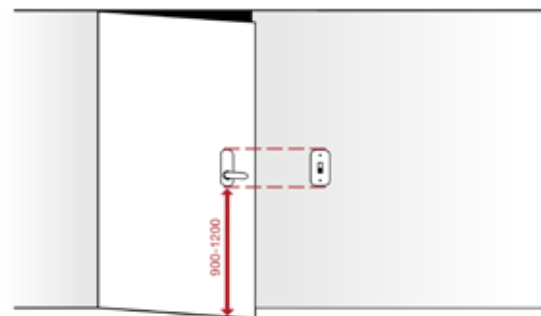
### Why easy to use door handles are important

Lever action door handles are far easier to use than traditional round knob door handles which require a gripping and twisting action to open the door. A lever action door handle can be operated simply by exerting a downward force on the lever which is particularly important for anyone with arthritic hands who may have difficulty gripping a knob door handle. An occupant with a broken arm or sprained wrist or even someone carrying something will also be able to open a door with a lever action handle where they would struggle to do so with a knob door handle.

When door handles are horizontally aligned with light switches the occupant is more easily able to locate a door handle in the dark. Similarly a visually impaired occupant will locate a door handle more easily if they are located throughout the house at a consistent height.



A lever handle is much easier to use than old fashioned knob handles.



Door handles that are aligned with light switches at a consistent height between 900mm – 1200mm above the finished floor level are easier to find in the dark.



You can open a lever handle when carrying things as this girl shows by opening a door with a drink in her hands.

### Design Considerations

Not all lever action door handles are alike. They come in lots of shapes and sizes. When selecting your lever action door handle aim to have a lever handle where the end of the handle returns back toward the door. These handles are safer as they are less likely to ‘catch’ on clothing when passing by a partially opened door.

# 10

## Tap Fixtures

Occupants are able to easily and independently use plumbing controls

		POINTS
10.1	All plumbing controls shall be lever, push button or electronic.*	5
10.2	All plumbing controls shall have a single spout.	2

*\*required standard for a 3-Star Lifemark*

### Why user friendly tap fixtures are important

As with lever action door handles and lever window controls, lever tap fixtures are far easier to use than traditional round knob taps which require a gripping and twisting action to turn. Lever taps are particularly user-friendly for people with arthritic hands or for anyone who may have a hand or arm injury that is restricting their dexterity.

Lever taps are more hygienic than traditional taps since they can be operated with minimal hand contact including the back of the hand which is often cleaner than the palm and fingers. There is a reason doctors use lever taps. Single spout plumbing controls are significantly safer to use than dual hot and cold spouts and reduce the incidence of scalding, particularly in older people whose skin is more susceptible to burns.



*Single spout, lever taps are easy to use especially by people with arthritic hands.*

### Design Considerations

Push button or electronic sensor tap fixtures are even easier to use than lever tap fixtures.

## Smoke Alarms

A smoke alarm system provides the early warning that is necessary in an emergency

		POINTS
11.1a	A smoke alarm system is installed that enables future adaptation to both audible and visual warnings.	2
11.1b	A smoke alarm system is installed that is hard wired to provide both audible and visual warnings.	5

*\*required standard for a 3-Star Lifemark*

# 11

### Why an audible and visual smoke alarm is important

A wired smoke alarm with audible and visual warnings is important for hearing impaired occupants. Basic battery operated smoke alarms will work for most occupants but an alarm with visual warnings will help provide hearing impaired occupants with an earlier warning of a fire than an audible only alarm. Those extra seconds could be the difference between life and death. The alerting device shall comply with the requirement of NZS4512.



*Alarms should have visual warnings for deaf occupants.*

## 12

# Bed Space and Bedrooms

Bed space and bedrooms support ease of movement around the bed by occupants

		POINTS
12.1a	There is space on the primary living level where a standard single bed (measuring 900mm x 1900mm) can fit with a minimum 800mm clear space available around one side and the foot of the bed. A clear minimum 800mm wide path is also required from the door to the side of the bed.*	5
12.1b	There is space on the primary living level where a standard double bed (1350mm x 1900mm) can fit with a minimum 800mm clear space available around both sides and the foot of the bed. A clear minimum 800mm wide path from the door to the side of the bed.	10
12.1c	There is at least one bedroom on the primary living level where a standard double bed (1350mm x 1900mm) can fit with a minimum 900mm clear space available around both sides and the foot of the bed and a clear minimum 900mm wide path from the door to the two sides which includes a 1500mm turning circle.	15
12.2	Light switches are provided at the entry door and on both sides of the bed in the case of the master bedroom.	5

\*required standard for a 3-Star Lifemark

## Why a bed space on the primary living level is important

There are many circumstances when having a sleeping space on the primary living level may be required. This standard is not just about meeting the needs of people with a permanent disability but also enabling independence for people who have a temporary injury that impacts their mobility. Occupants with a back or other mobility impairing injury may prefer to sleep on the primary living level for the term of their injury rather than have to make their way to other levels of the house.

Lifemark homes do not necessarily have to be single storey, but key rooms and facilities that are essential for day-to-day living should be located on one easily accessible level. These spaces include a living or family room and a space that can be used for sleeping. The sleeping area does not necessarily have to be a dedicated bedroom but Lifemark homes are about flexibility and adaptability so it is important that a separate dining room or study nook can be used as a bedroom in the future if required so that the occupant can maintain independence when remaining in their home.



*This bedroom provides plenty of space to access both sides of the bed easily, including with a walking frame or wheelchair.*

The light switch standards in the bedroom are related to safety considerations. A large number of trip injuries occur in the bedroom when people get up in the night to go to the bathroom so having accessible light switches will prevent trip injuries.

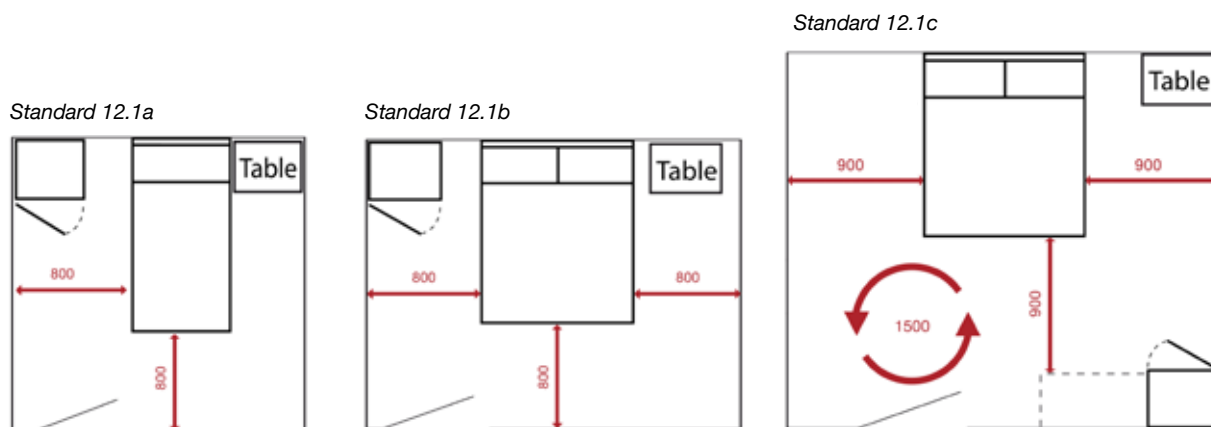
### Design Considerations

Lifemark homes should be planned so that when entry level sleeping spaces (that were not originally designed as bedrooms) need to be used, they do not appear to be compromised spaces. The bedroom space on the primary living level needs to enable easy movement in and out of the room and around normal bedroom furnishings.

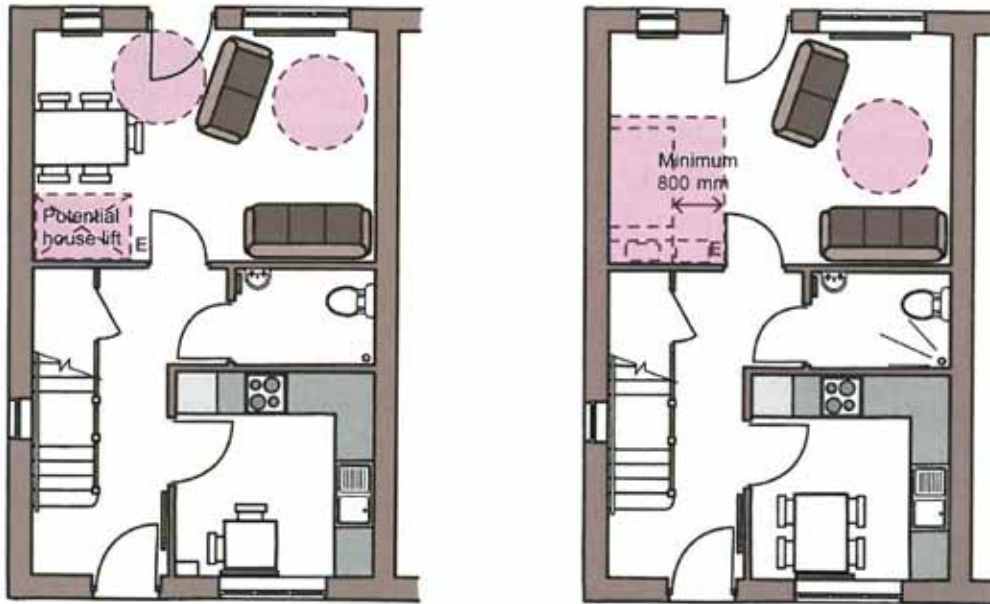
Direct and simple movement paths between the bedroom or bedroom space and other primary living level facilities improves accessibility and increases independence. The bedroom space or bedroom should therefore allow for easy manoeuvring and easy access to a wardrobe and to a bathroom. Direct access from the bedroom space or bedroom to a bathroom is good practice when designing for people with limited mobility. The route between this bedroom and bathroom should not pass through any living/habitable room or area.

If the design of the house does not enable a space that can be used for sleeping on the primary living level, then access to the other levels may be considered by making provision for a future use of a stair lift or platform lift.

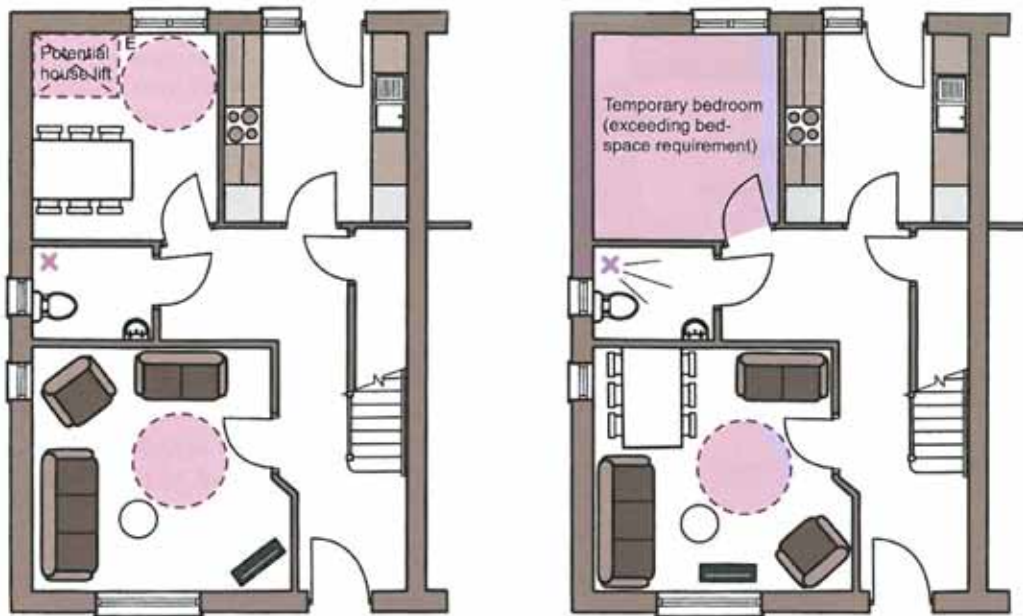
Designers and builders may also wish to build in the potential for the future fitting of hoists. For almost no additional cost, a main bedroom and bathroom ceilings should be made capable of supporting single point ceiling hoists above the bed, bath/shower and toilet.



These sample bedroom layouts show the minimum dimensions required to earn 5, 10 or 15 points toward your Lifemark Star Rating.



Ground-floor plan without (Left) and with (Right) temporary bed-space



Ground-floor plan without (Left) and with (Right) temporary bedroom

# Laundry Space

The laundry space is designed to support ease of movement and ease of use of laundry appliances and storage space

13.1a	The laundry space or room shall be large enough to provide at least 1050mm clearance in front of fixed benches and appliances.*	2
13.1b	The laundry space or room shall be large enough to provide at least 1200mm clearance in front of fixed benches and appliances.	4
13.2	The laundry space or room shall be large enough to accommodate appliances at ground level.	2
13.3	The laundry shall include slip resistant flooring.	5

\*required standard for a 3-Star Lifemark

## Why an easy to use laundry space is important

The Lifemark laundry standards are mostly about independence with an additional standard relating to safety. Independent living requires access to all facilities in the home including the laundry. An occupant is not living independently if they require someone else to do the laundry so it is important that the laundry space is designed in a way that makes doing the laundry easy. The laundry is also a wet area and therefore should have slip resistant flooring for increased safety.



This dryer is too high and makes loading and unloading awkward. Reaching items at the back of the dryer may require a stool which has safety implications. Ideally, dryer and washer units should be at ground level and frontloading.

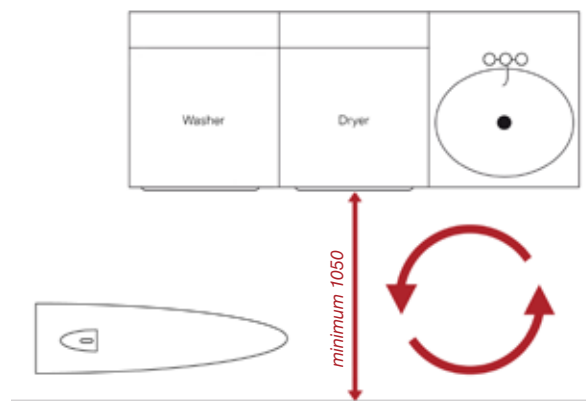
## Design Considerations

Provision of a laundry as an independent utility room can demand a disproportionate amount of space in a modern home when considering the sophistication of modern appliances. It may be warranted to consider combining the laundry with other wet areas such as bathrooms to enable sharing of circulation space and reduced travel distances (e.g. between undressing and placing clothes in a washing basket or machine).

Alternatively, it may be worth expanding the laundry into a larger more broadly useful utility room or easily accessible attached garage. This may be used for storage, recycling, wheelchair parking for overnight charging etc.

Laundry facilities in cupboards off a passageway or other room may borrow circulation space from the adjoining area. When designing cupboard laundries it is worth considering the floor surface of the adjoining area to avoid damage from splashes or flooding accidents.

As for other wet areas, it is appropriate to ensure a level threshold at doorways, the impact of floor slopes to the waste, and slip resistance of tiles. See Section 2, Pathways for an explanation of slip resistance.



A minimum 1050mm clearance in front of appliances is the required standard but 1500mm is the preferred minimum clearance.

# 14

## Kitchen

The kitchen is designed to support ease of movement between fixed benches and ease of use of appliances and storage space

		POINTS
14.1	The kitchen space is not a main thoroughfare in the home.*	3
14.2	The kitchen space is located next to the dining area.	3
14.3a	The kitchen space includes at least a 1200mm clearance provided in front of fixed benches, major appliances and fittings.	5
14.3b	The kitchen space includes at least a 1200mm clearance provided in front of fixed benches, major appliances and fittings. This clearance extends to a 1500mm turning circle measured up to at least 250mm above the floor.	10
14.4	The kitchen space shall have slip resistant flooring.	5
14.5	The kitchen space shall have task lighting above workspaces.	2
14.6	The kitchen space shall have easy to use handles on doors and drawers.	2
14.7	The kitchen space shall have at least half of the storage space below the bench tops consisting of drawers and not cupboards. Bottom drawers shall be a minimum of 250mm from the floor.	2
14.8	The kitchen space shall be designed with appliances located at least 300mm from the internal corners of bench units.	2

*\*required standard for a 3-Star Lifemark*

### Why an easy to use kitchen is important

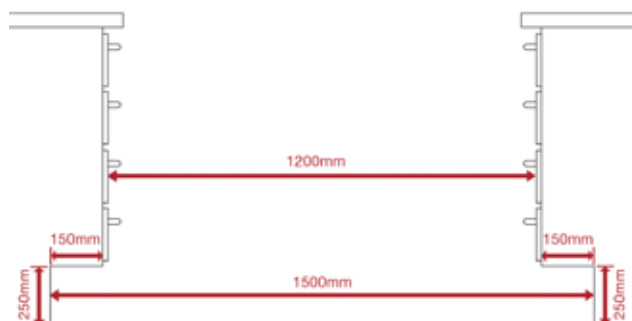
Independent living requires access to all utilities of the home. The kitchen is often a central focus of the home, where a great deal of recreation and social interaction occurs. Natural and easy access to participate in these activities is fundamental to leading a normal life.



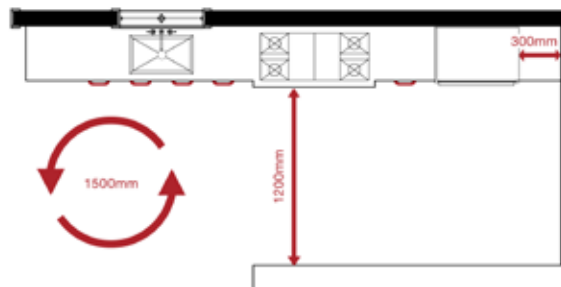
*Drawers make reaching items at the back a lot easier even if you are not a wheelchair user.*

*Note the excellent task lighting and that there are no appliances near the internal bench corners.*





The left hand diagram illustrates standard 14.3b. The minimum 1200mm clearance in front of fixed benches extends to a 1500mm turning circle at ground level when kickboards are 150mm deep. Of course the preference is to have greater than 1200mm clearance so a 1500mm turning circle is more easily achieved.



The right hand diagram shows an alternative approach to providing a turning circle in a kitchen.

### Design Considerations

The key requirement for a Lifemark home is to ensure the space is there to provide flexibility for a range of future needs. 2.7m between any facing walls generally allows sufficient space for wheelchair manoeuvring between bench tops (i.e. 2 x 600mm deep bench tops and 1500mm between them).

Most modern kitchen designs are open plan so they already meet the special requirements of a Lifemark home.

Arrangement of kitchen fittings (especially the location of the sink) can have some bearing on the cost of adaptation. Where a bench is capable of relocation, it is preferable that it does not contain the sink.

Selection of appropriate appliances in the original kitchen can significantly improve its safety for older people. For example, older people are generally more susceptible to burns due to deteriorating skin sensitivity and their burns often

take longer to heal. Burns are common when they are required to reach across boiling pots to adjust hotplate and oven controls. Selection of a cook top with hotplate controls along the side (or front) can lessen this risk. (Side controls are preferable as controls along the front are too easily reached by young children).

Cost efficiencies are improved by avoiding benches that require ‘site measurement’. This is achieved where the benches are not constrained between walls (i.e. an open plan kitchen). This is in fact the most common arrangement of modern homes, where the kitchen and family rooms are combined. Open planning also allows the space between benches to be increased in the future if required, by relocating the return bench. Often it will be possible to ensure that no plumbing or electrical fittings connect to this bench, or if they do, that they do not constrain future relocation of it.

## 15

## Toilet

The primary living level has a toilet to support easy and independent use for occupants and visitors

		POINTS
15.1a	Dwellings shall have the plumbing and drainage space for the future installation of a toilet on the primary living level that includes a minimum 800mm clear space beside the toilet and a centre line of the toilet pan that is 450mm from the wall.*	5
15.1b	Dwellings shall have a toilet on the primary living level that includes a minimum 800mm clear space beside the toilet and a centre line of the toilet pan that is 450mm from the wall.	10
15.1c	Dwellings shall have at least one toilet on the primary living level that is compliant with accessible toilet dimensions.	20
15.2	Toilet walls are reinforced to provide a fixing surface for grab rails to be safely and economically installed in the future.*	5

\*required standard for a 3-Star Lifemark

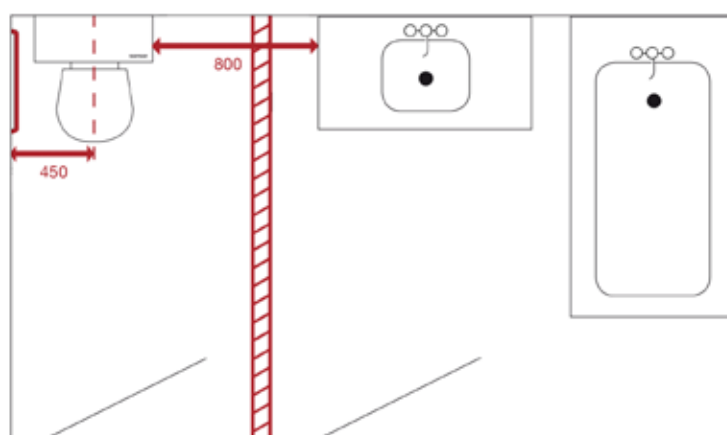
### Why an accessible toilet is important

Wet areas are among the most expensive parts of a house to construct and to refit. They are also the places where the requirement to accommodate different levels of mobility become most apparent in order for people to retain their independence. It is therefore critical that wet areas are designed with flexibility to meet different needs over time.

Typically, modern houses are designed with toilets that are separate from bathrooms.

The adaptation of these designs, combining the two into one room, may provide the circulation space required for people who are less mobile.

While Lifemark Design Standard 15.1b will provide for most wheelchair users, Lifemark Standard 15.1c provides specifically for the needs of wheelchair users. NZS4121.2001 10.5.1 – 10.5.6 sets out the definition of an accessible toilet.



This sample bathroom layout shows a bathroom that meets standard 15.1a. As a separate toilet room the toilet does not have the required 800mm clear space beside the toilet but when the red non-load bearing wall with no power or plumbing is removed the 800mm becomes available between the toilet and the vanity. Please note this is just a sample layout and there are many toilet and bathroom configurations that meet the Lifemark Design Standards.

## Design Considerations

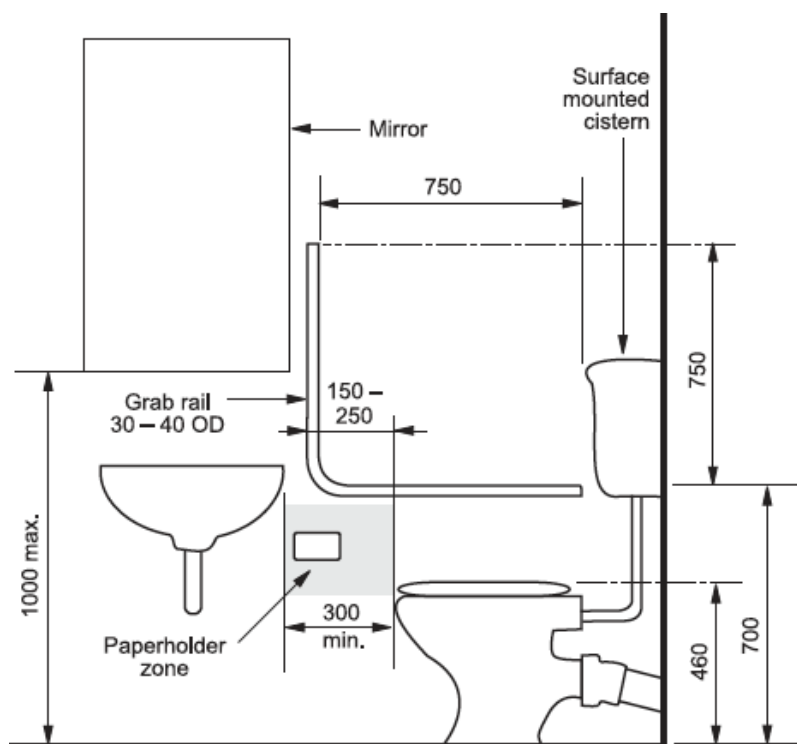
Where Lifemark homes are designed with a separate toilet and bathroom, the designs should allow easy adaptation without having to relocate any major fixtures (i.e. by removing a 'loose fit' dividing wall only).

If walls are to be removed to provide future circulation space, then they need to be non-structural, independent of the integrity of waterproofing systems and not contain plumbing or electrical fixtures.

Ensure the construction program allows for full floor waterproofing where the toilet and bathroom are initially divided, waterproofing of the floor should be contiguous, independent of

any wall between the bathroom and toilet. If a separating wall is used, it needs to be fitted after the waterproofing. Similarly, waterproofing should continue below the bath hob to enable easy removal of the bath in the future if required (to gain circulation space). Careful management of the construction process will be required.

The location and dimension of bathroom doors and the impact of door swings on clearances within the bathroom are best considered in the initial planning of the home.



Toilet unit fittings - position of grab rail and toilet roll holder

Reinforcing walls for the future installation of grab rails or a shower seat cost no more than a small piece of wood, a few nails and the time it costs to nail gun it in place. Whereas the cost of reinforcing walls after the build can run into thousands of dollars. Grab rails are rails used to steady, stabilise or support the full weight of a person who is changing position. The method of fixing grab rails or a shower seat to their support shall be capable of sustaining a force of 1100N (110kg) applied in any direction at any point. The force shall be applied for a period of 2 minutes after which there should be no sign of fracture of the fixing points nor shall there be deformation greater than 5mm. With the force removed there shall be no permanent deformation greater than 1mm.

## 16

## Shower

The primary living level has a bathroom with a shower that supports easy and independent use for occupants and visitors

		POINTS
16.1a	Dwellings shall have the space for the future installation of a shower on the primary living level that includes a level entry shower recess with minimum dimensions of 1200x1200mm, drainage for the shower recess located in the corner of the room, a clear space that provides for a 1500mm turning circle and 800mm clear space beside the shower seat.*	5
16.1b	Dwellings shall have a shower on the primary living level that includes a level entry shower recess with minimum dimensions of 1200x1200mm, drainage for the shower recess located in the corner of the room, a clear space that provides for a 1500mm turning circle and 800mm clear space beside a shower seat.	20
16.1c	A bathroom on the primary living level shall have a code compliant accessible shower.	25
16.2	Dwellings shall have reinforced shower walls on the primary living level for the future installation of grab rails and a shower seat.*	5
16.3	Dwellings shall have slip resistant flooring in all bathrooms.*	5

*\*required standard for a 3-Star Lifemark*

### Why an easy to use shower is important

The bathroom is the most expensive room in the house to adapt later on, but it is also arguably the most expensive, so it's important to get this right at the design stage.

The first shower standard is once again about independent living. It provides for the future or initial installation of a suitable shower that will

enable someone to remain living independently in their home. The second and third standards are all about safety. The bathroom is the highest risk area of a house for slips, trips and falls and providing for grab rails and a shower seat in the future as well as ensuring slip resistant flooring is in place will significantly reduce the risk of injury.

#### Slips, Trips and Falls

About 45 New Zealanders die every year resulting from a fall on the same level due to 'slipping, tripping or stumbling'. Injury from all types of fall is the major cause of hospitalisation for injury in New Zealand. These statistics show the importance of providing grab rails and safe walking surfaces in dwellings to protect users from slipping and tripping.



### Design Considerations

Lifemark bathrooms need to provide sufficient space, remove trip hazards and allow for future fixtures as required. The bathroom is one of the key areas for potential injury through slips, trips, falls and scalding. The bathroom should therefore be designed to reduce the risk of injury. Level entry and slip resistant flooring in bathrooms and showers will reduce the risk of trips and strengthened walls will allow for the

future fitting of grab rails if required. See Section 15 for more information regarding grab rail specifications.

Thresholds at bathroom doors: often include a level change between tile and carpet surfaces, resulting from the different thickness of materials over the slab. This is a trip hazard and may limit access for some people. It is marginally more

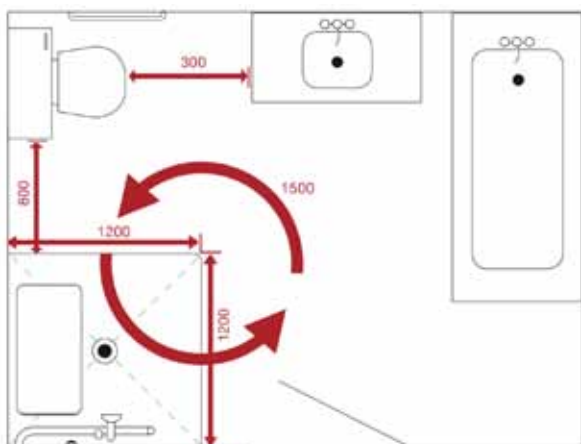
expensive, but a much preferred approach, to set down the slab in the area of the bathroom.

The location of floor wastes will influence the tracking of water across normal movement paths within the room. Consideration can be given to the layout of fixtures to avoid creating unnecessary hazards. Plumbing regulations should also be considered.

The location of the shower rose and taps in particular should be positioned to minimise the risk of scalding. Typically this is achieved by locating the taps adjacent to the shower opening, rather than on the facing wall, and by directing the shower rose away from the entry to the shower.

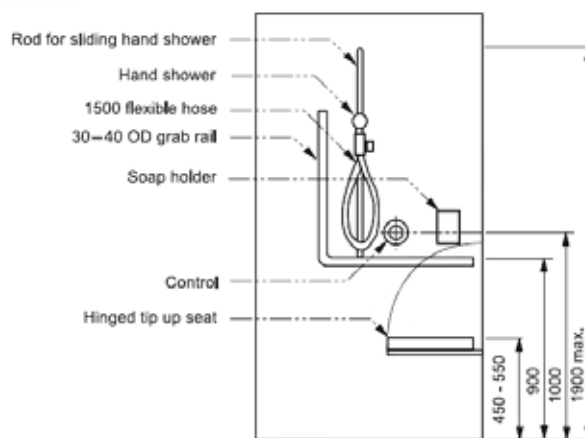
Ensure the construction program allows for full floor waterproofing where the toilet and bathroom are initially divided, waterproofing of the floor should be contiguous, independent of any wall between the bathroom and toilet. If a separating wall is used, it needs to be fitted after the waterproofing. Similarly, waterproofing should continue below the bath hob to enable easy removal of the bath in the future if required (to gain circulation space). Careful management of the construction process will be required.

The location and dimension of bathroom doors and the impact of door swings on clearances within the bathroom are best considered in the initial planning of the home.



In this 'minimum dimensions' sample there is a shared 800mm clear space beside the toilet and beside where a shower seat could be installed in the future.

The shower unit without solid walls on the side enables a 1500mm turning circle for wheelchair users to manoeuvre.



This diagram shows the recommended dimensions for shower fittings.

## 17

## Stair Lift or Platform Lift

Enable access to multi-storey dwellings above or below the entrance level now or in the future

		POINTS
17.1a	Multi-storey dwellings shall have reinforced stairway walls for the future installation of a stair lift.*	4
17.1b	Multi-storey dwellings shall have the space to provide for the future installation of a 1200mm x 1200mm platform lift.	8
17.1c	Multi-storey dwellings shall have a stair lift installed.	12
17.1d	Multi-storey dwellings shall have a minimum 1200mm x 1200mm platform lift installed.	15

\*required standard for a 3-Star Lifemark

### Why this is important

Single level living is the most accessible for people with any type of mobility constraint. This becomes more important as people get older. Having living, sleeping and bathroom spaces on one accessible level will mean that people who are or become movement impaired – whether permanently or for a short period – will be able to live independently. The concept behind Lifemark homes is that design should not compound already difficult life-transition events.

As allotment sizes decrease, there is increasing pressure to plan bedrooms and bathrooms on upper floors (e.g. in a smaller two storey town-house). Because of such constraints on space, some house types will be more suitable as a Lifemark home than others. However, homes with bedrooms and bathrooms upstairs can still be designed for full access by making provision for a future stair lift or platform lift.

### Design Considerations

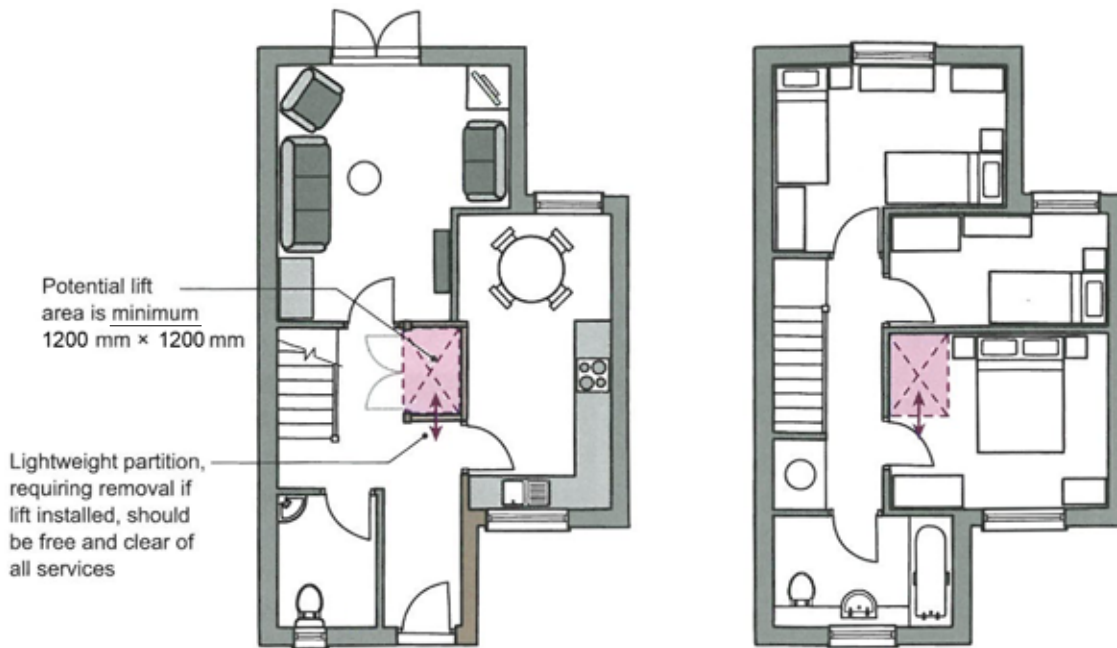
To minimise adaptation costs and disruption, the potential lift route and the potential lift entrances and exits should be clear of services.

It is acceptable for the identified route to require some degree of alteration or moving of light-weight partition walls. If the identified lift route within the dwelling passes through a concrete floor, a 'knock-out' panel should be pre-formed within the floor.

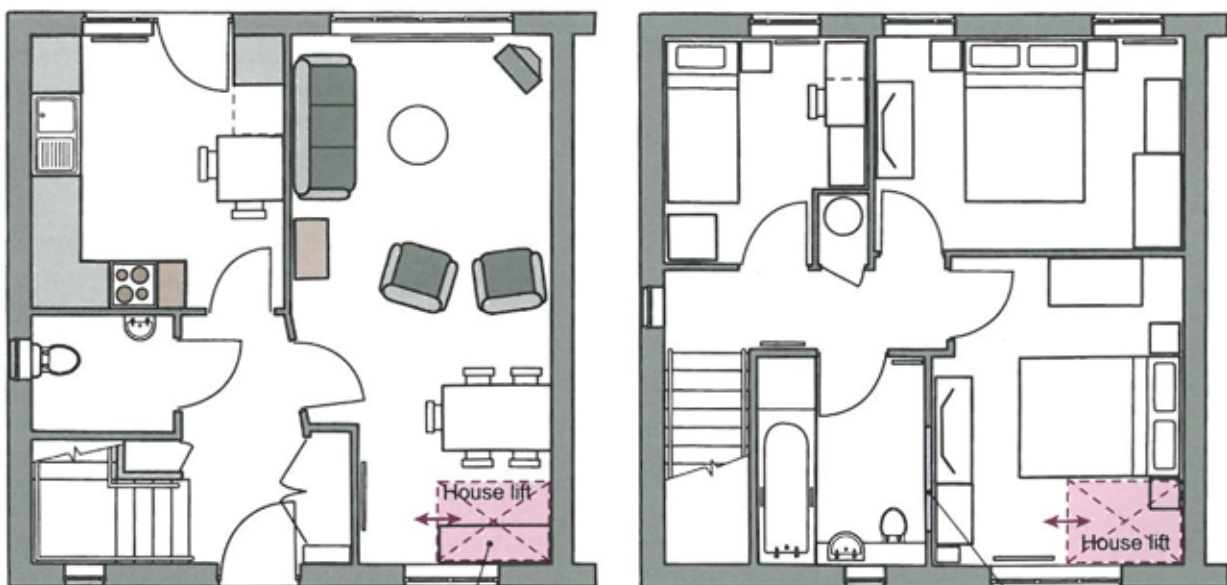
Stair lifts are a mechanical means of ascending or descending stairs. The stair lift track is either fixed to the stairs or to the wall side of the stair-

way. A stair lift either has a chair or wheelchair platform and is usually operated by the occupant. Stair lifts shall comply with BS5776.

Stair lifts are generally less expensive to install on straight stairs, rather than return or curved flights. 'Parking space' for the chair lift should also be considered in the layout of the home.



Potential platform lift route utilising storage space on ground floor



Potential platform lift route, living room-bedroom, requiring moderate adjustment of optimum furniture layout

# 18

## Internal Stairways

Where installed, stairways are designed to reduce the likelihood of injury

		POINTS
18.1	Stairways shall provide a minimum clear width of 900mm.*	4
18.2	Stairways shall be straight in design and not have winder treads or spiral design.*	4
18.3	Stairways shall have consistent tread depth and riser height with a maximum riser height of 180mm and minimum tread depth of 310mm, with no open risers.*	4
18.4	Stairways shall be slip resistant and have a suitable non-slip tread	4
18.5a	Stairways shall have reinforced walls to provide for future installation of code-compliant accessible handrails on both sides.*	5
18.5b	Stairways shall have a code-compliant accessible handrail installed on at least one side.	7
18.5c	Stairways shall have code compliant accessible handrails installed on both sides.	12
18.6a	Stairways shall have a 1200mm x 1200mm unobstructed landing at the bottom of the stairs.	2
18.6b	Stairways shall have a 1200mm x 1200mm unobstructed landing at the top and bottom of the stairs.	3
18.7	Stairways shall have light switches at the top and bottom of the stairs.*	4

\*required standard for a 3-Star Lifemark

### Why internal stairway standards are important

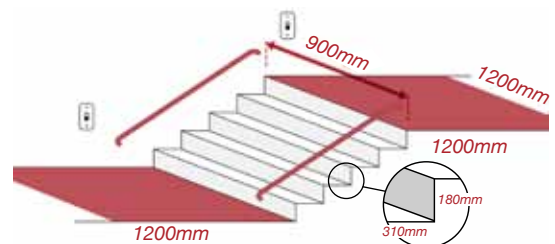
If a Lifemark home is to be truly inclusive its design will enable effective and efficient adaptation works to allow access to levels above and below the entrance level for occupants with less agility and mobility well before they get to the point of requiring a stair-lift or platform lift. As we age, even if we are fully mobile and able to walk unaided, the way we walk changes. We don't lift our feet as high and we are susceptible to slips, trips and falls. Stairs are a particularly common

place for older people to fall and because the falling distance is greater so are the injuries. It is therefore vital that stairways are designed with safety in mind. Wider stairs will assist with movement past a 'parked' chair-lift, aid assisted movement on the stairs, be more convenient for parents carrying children and generally assist with movement of furniture and other objects between levels.

### Design Considerations

Handrails are rails used in circulation areas such as corridors, passageways, ramps and stairways to assist in continuous movement. The method of fixing handrails to their support shall be capable of sustaining a force of 1100N (110kg) applied in any direction at any point. The force shall be applied for a period of 2 minutes after which there should be no sign of fracture of the fixing points nor shall there be deformation greater than 5mm. With the force removed there shall be no permanent deformation greater than 1mm. NZS 4121 Appendix D3.1.4.1 and D3.1.4.2 refer to ideal heights and grip measurements for

handrails. The average preferred handrail height for young and old subjects alike is 927mm. NZBC D1/AS1 also provides guidance on ideal handrail widths for an ideal grip.



These stairs illustrate the minimum dimensions and other standards required to earn points toward your Lifemark rating.



*how to get the*  
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# The Certification Process



Design a home  
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Standards

Submit with your  
plans to **Lifemark** for  
assessment

Your plans  
are awarded a  
**Lifemark** level  
based on the  
5-star rating  
system. A **Lifemark**  
Design Certificate  
is issued



Adjust  
plans

**RESUBMIT**

**PASS**

Build your  
dream home

**FAIL**

A **Lifemark** Adjustment  
Report is issued

A **Lifemark** Certificate is  
awarded to a completed home

Download **Producer**  
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# LIFEMARK DESIGN STANDARDS ASSESSMENT FORM

The Lifemark Design Standards have been created to achieve a design solution based on the Lifetime Design Principles of Usability, Adaptability, Accessibility, Safety and Lifetime Value. The rating system below determines whether a design will achieve the 3-Star, 4-Star or 5-Star Lifemark. Scores are based on specific design features that illustrate a design standard is currently being met, OR is provisioned to be easily adapted so it can be met in the future. For example, 'able to be adapted' scores lower points than 'actually has'. A design can only accrue points that meet one option of each standard, for example, one cannot get points for achieving 1.1a and 1.1b.

**The Lifemark "Entry Level" is a 3-STAR RATING which requires certain minimum mandatory standards be met earning 140 points out of a possible 300 points for a single storey dwelling, or 165 points out of a possible 350 points for a multi-storey dwelling. Mandatory standards are indicated below in the BLUE PANEL COLOUR you see here.**

For the 4-Star rating designs must meet the 3-Star standards and earn a further 40 points (single storey) or 45 points (multi-storey).  
For the 5-Star rating designs must meet the 3-Star standards and earn a further 100 points (single storey) or 110 points (multi-storey).

## ACCESSING THE DWELLING

<b>1 CAR PARKING</b> Where the parking space forms part of the dwelling access it shall allow a person to open their car doors fully and easily move around the vehicle		POINTS AVAILABLE	POINTS GAINED
1.1a	At least one car parking space is <b>able to be adapted</b> to a minimum width of 3500mm;	4	
1.1b	At least one car parking space <b>actually has</b> a minimum width of 3500mm;	7	
1.1c	At least one car parking space <b>actually has</b> a minimum width of 3500mm and length of 5000mm.	10	
1.2a	At least one car parking space is <b>able to be adapted</b> to have a level, firm, slip resistant flat surface with a slope not exceeding 1:20;	3	
1.2b	At least one car parking space <b>actually has</b> a level, firm, slip resistant flat surface with a slope not exceeding 1:20.	5	
<b>2 PATHWAYS</b> Occupants can easily and safely access the dwelling entrance		POINTS AVAILABLE	POINTS GAINED
2.1a	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is <b>able to be</b> installed with a minimum clear width of 1200mm;	3	
2.1b	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with a minimum clear width of 1200mm.	6	
2.2a	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance is <b>able to be</b> installed with a level, firm, slip resistant surface with a maximum slope of 1:20 and a crossfall of not more than 1:50;	5	
2.2b	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with a level, firm, slip resistant surface with a maximum slope of 1:20 and a crossfall of not more than 1:50.	10	
2.3	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with a light switch at the dwelling entrance for pathway lighting.	1	
2.4	A pathway from EITHER the front boundary of the property OR a car parking space to a dwelling entrance <b>is installed</b> with sensor lighting for the pathway.	3	
<b>3 THE ENTRANCE</b> Occupants can easily and safely enter and exit the dwelling		POINTS AVAILABLE	POINTS GAINED
3.1	The dwelling entrance <b>shall provide</b> an entrance door with a minimum clear opening width of 810mm (door leaf 860mm).	10	
3.2a	The dwelling entrance <b>shall provide</b> an entrance door with a maximum threshold of 20mm;	5	
3.2b	The dwelling entrance <b>shall provide</b> an entrance door with a level transition.	15	
3.3	The dwelling entrance <b>shall include</b> an external landing area measuring 1200mm x 1200mm.	2	
3.4	The dwelling entrance <b>shall include</b> an external landing area that is level with a 1:50 fall or shallower.	2	
3.5	The dwelling entrance <b>shall include</b> an external landing area that provides shelter from the weather.	2	
3.6	The dwelling entrance <b>shall include</b> an external landing area that is slip resistant.	3	
3.7a	The dwelling entrance <b>shall include</b> an external landing area with switch operated lighting;	1	
3.7b	The dwelling entrance <b>shall include</b> a landing area with sensor lighting.	3	
<b>Required for 3-Star</b>		<b>35</b>	
<b>Subtotal Accessing the Dwelling Score</b>		<b>72</b>	

## GETTING AROUND

4	<b>INTERNAL DOORS</b> Facilitating comfortable and unimpeded movement between spaces	POINTS AVAILABLE	POINTS GAINED
4.1	ALL doorways to ALL rooms on the primary living level <b>shall provide</b> a minimum clear opening width of 810mm (door leaf 860mm).	15	
4.2	ALL doorways to ALL rooms on the primary living level <b>shall provide</b> a level transition and threshold. This accepts difference in floor materials either side of the doorway.	8	
4.3	ALL doorways to ALL rooms on the primary living level <b>shall provide</b> a 300mm return wall on the door handle edge of the door facing the side the door swings towards.	5	
5	<b>CORRIDORS</b> Facilitating comfortable and unimpeded movement between spaces	POINTS AVAILABLE	POINTS GAINED
5.1	ALL internal corridors or passageways <b>shall provide</b> a minimum clear width of 1050mm.	15	
5.2a	ALL internal corridors or passageways <b>shall provide</b> light switches at both ends of any corridors;	3	
5.2b	ALL internal corridors or passageways <b>shall provide</b> sensors to automatically turn lights on at night.	5	
<b>Required for 3-Star</b>		<b>38</b>	
<b>Subtotal Getting Around Score</b>		<b>48</b>	

## FITTINGS AND FIXTURES

6	<b>LIGHT SWITCHES</b> Light switches are located at heights that are easy to reach for all occupants	POINTS AVAILABLE	POINTS GAINED
6.1	Light switches and other service controls (eg. security systems, intercommunication systems, air-conditioning controls) <b>shall be</b> horizontally aligned with door handles at 900-1200mm above finished floor level.	10	
6.2	Light switches and other switches (eg. security systems, intercommunication systems, air-conditioning controls) <b>shall be</b> toggle, rocker, push pad, or push button in design.	2	
7	<b>POWERPOINTS</b> Powerpoints are located at heights that are easy to reach for all occupants	POINTS AVAILABLE	POINTS GAINED
7.1a	Powerpoints, TV, phone and computer outlets <b>are installed</b> at a consistent height not lower than 300mm above the finished floor level;	2	
7.1b	Powerpoints, TV, phone and computer outlets <b>are installed</b> at a consistent height between 500-1200mm above the finished floor level.	8	
7.2	Powerpoints, TV, phone and computer outlets <b>are installed</b> at least 500mm from an internal corner.	2	
8	<b>WINDOWS</b> Window controls and sills are installed at a height that enables home occupants to operate the window and view the outdoor space from either a seated or standing position	POINTS AVAILABLE	POINTS GAINED
8.1	Window controls <b>shall be</b> lever handles and be able to be operated with one hand.	5	
8.2a	Window controls and sills in the primary living areas <b>shall be</b> no higher than 1200mm above the floor;	5	
8.2b	ALL window controls ON ALL LEVELS <b>shall be</b> no higher than 1200mm above the floor.	7	
8.3	Fit security stays on windows to prevent them from obstructing paths or walkways outside.	2	
8.4	Fit security stays on windows that are lower than 900mm where it is possible to fall one metre or more.	2	
9	<b>DOOR HARDWARE</b> Occupants are able to easily and independently open and close doors	POINTS AVAILABLE	POINTS GAINED
9.1	All door handles <b>shall have</b> a lever action.	5	
9.2	All door handles <b>shall be</b> horizontally aligned with light switches at between 900-1200mm above finished floor level.	5	
10	<b>TAP FIXTURES</b> Occupants are able to easily and independently use plumbing controls	POINTS AVAILABLE	POINTS GAINED
10.1	All plumbing controls <b>shall be</b> lever, push button or electronic.	5	
10.2	All plumbing controls <b>shall have</b> a single spout.	2	
11	<b>ALARMS</b> A smoke alarm system is installed	POINTS AVAILABLE	POINTS GAINED
11.1a	A smoke alarm system <b>is installed</b> that enables future adaptation to both audible and visual warnings;	2	
11.1b	A smoke alarm system <b>is installed</b> that is hard wired to provide both audible and visual warnings.	5	
<b>Required for 3-Star</b>		<b>32</b>	
<b>Subtotal Fixtures &amp; Fittings Score</b>		<b>60</b>	

## BEDROOMS

12	<b>BEDROOMS</b> Bed space and bedrooms support ease of movement around the bed by occupants	POINTS AVAILABLE	POINTS GAINED
12.1a	There is space on the primary living level where a standard single bed (measuring 900mm x 1900mm) can fit with a minimum 800mm clear space available around one side and the foot of the bed. A clear minimum 800mm wide path is also required from the door to the side of the bed;	5	
12.1b	There is space on the primary living level where a standard double bed (1350mm x 1900mm) can fit with a minimum 800mm clear space available around both sides and the foot of the bed. A clear minimum 800mm wide path is also required from the door to the side of the bed;	10	
12.1c	There is at least one bedroom on the primary living level where a standard double bed (1350mm x 1900mm) can fit with a minimum 900mm clear space available around both sides and the foot of the bed. A clear minimum 900mm wide path is also required from the door to the two sides of the bed. This path also must accommodate a 1500mm turning circle.	15	
12.2	Light switches are provided at the entry door and on both sides of the bed in the case of the master bedroom.	5	
<b>Required for 3-Star</b>		5	
<b>Subtotal Bedrooms Score</b>		20	

## DWELLING FACILITIES

13	<b>LAUNDRY SPACE</b> The laundry space is designed to support ease of movement and ease of use of laundry appliances and storage space	POINTS AVAILABLE	POINTS GAINED
13.1a	The laundry space or room <b>shall be</b> large enough to provide at least 1050mm clearance in front of fixed benches and appliances;	2	
13.1b	The laundry space or room <b>shall be</b> large enough to provide at least 1200mm clearance in front of fixed benches and appliances.	4	
13.2	The laundry space or room <b>shall be</b> large enough to accommodate appliances at ground level.	2	
13.3	The laundry <b>shall include</b> slip resistant flooring.	5	
14	<b>KITCHEN SPACE</b> The kitchen space is designed to support ease of movement between fixed benches and ease of use of appliances and storage space	POINTS AVAILABLE	POINTS GAINED
14.1	The kitchen space is not a main thoroughfare in the home.	3	
14.2	The kitchen space is located next to the dining area.	3	
14.3a	The kitchen space includes at least a 1200mm clearance provided in front of fixed benches, major appliances and fittings;	5	
14.3b	The kitchen space includes at least a 1200mm clearance provided in front of fixed benches, major appliances and fittings which extends to a 1500mm turning circle measured up to at least 250mm above the floor.	10	
14.4	The kitchen space <b>shall have</b> slip resistant flooring.	5	
14.5	The kitchen space <b>shall have</b> task lighting above workspaces.	2	
14.6	The kitchen space <b>shall have</b> easy to use handles on doors and drawers.	2	
14.7	The kitchen space <b>shall have</b> at least half of the storage space below the bench tops consisting of drawers and not cupboards. Bottom drawers shall be a minimum of 250mm from the floor.	2	
14.8	The kitchen space <b>shall be</b> designed with appliances located at least 300mm from internal corners of bench units.	2	
<b>Required for 3-Star</b>		5	
<b>Subtotal Dwelling Facilities Score</b>		40	

## BATHROOMS

15	<b>TOILET</b> The primary living level has a toilet to support easy and independent use for occupants and visitors	POINTS AVAILABLE	POINTS GAINED
15.1a	Dwellings <b>shall have</b> the plumbing and drainage space for the future installation of a toilet on the primary living level that includes a minimum 800mm clear space beside the toilet and a centre line of the toilet pan that is 450mm from the wall;	5	
15.1b	Dwellings <b>shall have</b> a toilet on the primary living level that includes a minimum 800mm clear space beside the toilet and a centre line of the toilet pan that is 450mm from the wall;	10	
15.1c	Dwellings <b>shall have</b> at least one toilet on the primary living level that is compliant with "accessible toilet" dimensions.	20	
15.2	Toilet walls <b>are reinforced</b> to provide a fixing surface for grab rails to be safely and economically installed in the future.	5	

## BATHROOMS continued

16	<b>SHOWER</b> The primary living level has a bathroom with a shower that supports easy and independent use for all occupants and visitors	POINTS AVAILABLE	POINTS GAINED
16.1a	Dwellings <b>shall have</b> the space for the <b>future installation</b> of a shower on the primary living level that includes a level entry shower recess with minimum dimensions of 1200x1200mm, drainage for the shower recess located in the corner of the room, a clear space that provides for a 1500mm turning circle and 800mm clear space beside the shower seat;	5	
16.1b	Dwellings <b>shall have</b> a shower on the primary living level that includes a level entry shower recess with minimum dimensions of 1200x1200mm, drainage for the shower recess located in the corner of the room, a clear space that provides for a 1500mm turning circle and 800mm clear space beside a shower seat;	20	
16.1c	A bathroom on the primary living level shall have a code compliant accessible shower.	25	
16.2	Dwellings shall have reinforced shower walls on the primary living level for the <b>future installation</b> of grab rails and a shower seat.	5	
16.3	Dwellings shall have slip resistant flooring in all bathrooms.	5	
	<b>Required for 3-Star</b>	<b>25</b>	
	<b>Subtotal Bathroom Score</b>	<b>60</b>	
	<b>Total Possible Score Single Storey</b>	<b>300</b>	
	<b>Total Required for Single Storey 3-Star</b>	<b>140</b>	
	<b>Total Required for Single Storey 4-Star</b>	<b>180</b>	
	<b>Total Required for Single Storey 5-Star</b>	<b>240</b>	

## MULTI-STOREY ACCESS

17	<b>STAIR LIFT OR PLATFORM LIFT</b> Enable access to multi-storey dwellings above or below the entrance level now or in the future	POINTS AVAILABLE	POINTS GAINED
17.1a	Multi-storey dwellings shall have reinforced stairway walls for the <b>future installation</b> of a stair lift;	4	
17.1b	Multi-storey dwellings shall have the space to provide for the <b>future installation</b> of a 1200mm x 1200mm platform lift;	8	
17.1c	Multi-storey dwellings <b>shall have</b> a stair lift installed;	12	
17.1d	Multi-storey dwellings <b>shall have</b> a minimum 1200mm x 1200mm platform lift installed.	15	
18	<b>INTERNAL STAIRWAYS</b> Where installed, stairways are designed to reduce the likelihood of injury	POINTS AVAILABLE	POINTS GAINED
18.1	Stairways shall provide a minimum clear width of 900mm.	4	
18.2	Stairways shall be straight in design and not have winder treads or spiral design.	4	
18.3	Stairways shall have consistent tread depth and riser height with a maximum riser height of 180mm and minimum tread depth of 310mm, with no open risers.	4	
18.4	Stairways shall be slip resistant and have a suitable non-slip tread.	4	
18.5a	Stairways shall have reinforced walls to provide for <b>future installation</b> of code-compliant accessible handrails on both sides;	5	
18.5b	Stairways shall have a code-compliant accessible handrail installed on at least one side;	7	
18.5c	Stairways shall have code compliant accessible handrails installed on both sides.	12	
18.6a	Stairways shall have a 1200mm x 1200mm unobstructed landing at the bottom of the stairs;	2	
18.6b	Stairways shall have a 1200mm x 1200mm unobstructed landing at the top and bottom of the stairs.	3	
18.7	Stairways shall have light switches at the top and bottom of the stairs.	4	
	<b>Required for 3-Star</b>	<b>25</b>	
	<b>Subtotal Multi-Storey Access Score</b>	<b>50</b>	
	<b>Total Possible Score Multi-Storey</b>	<b>350</b>	
	<b>Total Required for Multi-Storey 3-Star</b>	<b>165</b>	
	<b>Total Required for Multi-Storey 4-Star</b>	<b>210</b>	
	<b>Total Required for Multi-Storey 5-Star</b>	<b>275</b>	



# Checklist of the Things Most People Forget!

Please use this checklist together with the Standards Assessment Form to double check you have included all the information we need to award you a Lifemark.

<b>SITE PLAN</b>	
Site plans show the different levels on the site and how the carpark and pathways relate to the dwelling.	
<b>Relates to standards:</b> 1.2, 2.2	
<b>FLOOR PLAN</b>	
Floor plans should include all measurements in millimetres and include measurements for the external landing area, driveway, car park and pathways.	
This allows anyone to safely access the dwelling entrance. <b>Relates to standards:</b> 1.1, 1.2, 2.1, 2.2, 3.1, 3.3	
<b>ELEVATION PLAN</b>	
Elevations showing doors and windows on all levels.	
Shows possible dangers caused by windows, and that they have been addressed to meet the standards. <b>Relates to standards:</b> 2.2, 3.4, 3.5, 8.1, 8.2, 8.3, 8.4	
<b>DOOR AND WINDOW SCHEDULE</b>	
A door and window schedule or a note on the relevant plan regarding handle pipes and heights, window widths and heights and treshold heights, all noted in millimeters.	
This allows anyone to safely get around the dwelling. <b>Relates to standards:</b> 3.1, 3.2, 4.1, 4.2, 4.3, 9.1, 9.2, 14.6	
<b>ELECTRICAL PLAN</b>	
Electrical plan or a note on applicable plan with switch and powerpoint heights (and distance from internal corners) and a note on the type of smoke alarm installed.	
To ensure subcontractors will install correctly, the first time. <b>Relates to standards:</b> 2.3, 2.4, 3.7, 5.2, 6.1, 6.2, 7.1, 7.2, 9.2, 11.1, 12.2, 14.5, 18.7	
<b>OTHER NOTES - Please either provide the following information on the applicable plan or attach a copy of the relevant page from the specifications</b>	
Notes on: the type of switches to be used for powerpoints, lights, TV and internet points; the type of handles to be used for drawers, cupboards etc; and the type of plumbing controls used (including whether single or dual spout).	
<b>Relates to standards:</b> 6.2, 9.1, 10.1, 10.2, 14.6, 14.7	
Note whether the entrance area, car park, kitchen, laundry, bathroom and stairs (if applicable) have slip resistant flooring.	
<b>Relates to standards:</b> 1.2, 2.2, 3.6, 13.3, 14.4, 16.3, 18.4	
Note whether the bathroom walls are reinforced for future installation of grab rails and/or a showerseat. If non-load bearing partition walls with no electrical or plumbing are included in the house with the intention of being able to remove them later, (e.g. between separate toilet and bathroom) this needs to be noted.	
<b>Relates to standards:</b> 15.2, 16.1, 16.2	
Note dimensions of the shower(s) on the primary living level. For future installation, a dotted line is sufficient.	
<b>Relates to standards:</b> 16.1	
Note the width, tread depth and riser height of stairs and provisions for handrails, a stairlift or platform lift.	
<b>Relates to standards:</b> 17.1, 18.1, 18.3, 18.5	

# Acknowledgements

Lifetime Design would like to thank everyone who has assisted us with this handbook and the development of the Lifemark 5-Star rating process.

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Layout and Design: Trends Ltd

Photography: George Passmore Photography Ltd

Location of Lifemark Standard Compliant Photographs: Summerset by the Park, Manukau City

Location of Lifemark Standard Non-compliant Photographs: Various New Zealand locations



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