



Industry Factsheet

Landscape modification

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When considering ways of improving accessibility of a home an alternative to ramps and lift can be modifying the landscape leading to the front or rear entrance of a home. Landscape modification involves improving accessibility by redesigning the garden and changing the slope of the pathways between street and home entrance.

Landscape modifications have a number of benefits, including maintaining the original look of the home; however use can be limited because it is only possible where site gradient, level and housing type allow.

What options are there to provide access to homes?

There are three main ways of providing access to the home where stairs limit accessibility; they being ramps, lifts and landscape modifications;

A **ramp** is an inclined built surface (usually of concrete, timber or aluminium) on a continuous path with handrails and a maximum gradient of 1:14.

A **platform lift** is a mechanical device designed to raise/lower people to access a veranda or a vertical lift between floors of a multi-storey home.

A **landscape modification** is the redesign and regrading of the pathway between street, garden and front/rear/side home entrance to enable a continuous walkway incline 1:20. A properly designed landscape modification may not require handrails, can incorporate replanting and be designed to fit in with the façade of the home and reduce garden maintenance.

Introduction

The provision of a graded walkway has not been widely employed in the Australian Home Modification setting. This document provides an overview of the benefits of landscape modification and provides an approach to designing best practice landscape modifications.

For all references and further information on landscape modification, please refer to the original published paper titled “**Landscape modification as an alternative to ramps and lifts in the home**” and available through the Home Modification Clearinghouse website www.homemods.info.

Benefits of a landscape modification approach

A landscape modification can provide a number of benefits in addition to direct access between garden path and front door. A landscape modification can be designed to blend with existing architecture. This maintains perceived house values and avoids obvious signs of vulnerability. Also, at the time of modification, accessible design features can be applied throughout an entire site, enabling a holistic approach to access from street to front door and throughout a garden.

A holistic consideration of the landscape in combination with the entrance of the home will achieve the following:

- Level entry access for all who live and visit the home.
- Improved accessibility of the garden.
- Improved functionality of the garden by reducing maintenance.
- Improved aesthetic of accessible pathway and entrance.

Where is landscape modification appropriate?

There will be cases where a re-landscaped, accessible front entrance solution is possible. The ability to modify the access through the garden is determined by the type of homes (in particular the building’s relationship to the street). Other considerations include site features, including available land area, existing site, vegetation, topography, water drainage and run-off and soil conditions.

Is landscape modification more costly than other access options?

There is limited research investigating the cost comparison between landscape modifications, ramps and lifts. In general, the steeper the land around the home the more complex and expensive a landscape modification would be.

For an accurate comparison, the site will require an assessment and quotation for each access option.

Permissions and tenure

A landscape modification may require additional council and planning permissions from the relevant local government authority. Before embarking on a modification, please check that you are in a position to obtain consent.

In addition to planning consent, whether a home is owned or rented has a large part to play in the type of home modifications that can be carried out. Permissions need to be sought from relevant land and home owners.

How to determine whether a landscape modification is possible:

An assessment in the form of a two-stage site and accessibility analysis can be performed to help determine whether a landscape modification is appropriate for a site.

Stage One: Site analysis

This process analyses some important site characteristics such as location of entrances relative to streetscape, available land area and gradient from the standpoint of accessibility requirements as set out in Australian Standards: AS 1428 (2009).

Stage Two: Accessibility analysis

Following the initial Site Analysis, the second stage of the assessment overviews how landscape elements interact and affect accessibility.

Site analysis

Given the diversity of site conditions this factsheet presents a simplified approach to site assessment.

A site assessment will identify any obvious site limitations and identify potential problems that will need to be addressed before accessibility features can be considered.

The site assessment results may indicate that the home and garden are unsuitable for an accessible landscape approach.

Assess the site based upon the following 7 points (A-G):

A. Entrances: Assess and analyse existing entrances

Locate the entrances. There will most likely be more than one entrance point to a house.

Assess level changes at entrances. Each entrance point should be analysed in terms of changes in level in relation to the base street level (vehicle access).

Review existing hardscape. Assess the existing hardscape (concrete pathways, stairs etc.) leading to each entrance.

B. Site slope

For accessible entrances, the topography and slope are critical to successful design and construction. Level access entry becomes increasingly challenging as the gradient of the site slope increases. Steep sites require careful consideration of the contours for an appropriate design response and acknowledgement that a solution will most likely be less economical.

Three best practice landscape design strategies used on sites include:

- balance cut and fills.
- avoid retaining walls being higher than one metre.
- build along contours.

C. Spatial Requirements: Assess available area for landscaped walkway

Of the three accessible options (ramp, lift and graded walkway), graded walkways require the most land area for a given change in height.

Reducing the slope of a steep gradient requires land area, and consideration must be given to available space leading to the entrance of a home.

For longer distance gradients, horizontal landings are required. These provide a rest platform. AS 1428.1 (Australian Standards, 2009) requires that a straight walkway of gradient 1:20 requires a landing every 15 metres.

These lengths given are for a single direct slope towards the entrance. Ramps and walkways can incorporate a switchback design, which makes better usage of a limited space. There are

additional space/length requirements for the inclusion of required landings. These are included in original published paper titled “Landscape modification as an alternative to ramps and lifts in the home” and available through the Home Modification Clearinghouse website.

D. Utilities assessment –overhead and underground infrastructure

All underground services, infrastructure and overhead utility cables such as overhead wires, or underground utilities are best identified early in the site selection and site analysis stage.

Other utilities that need to be identified include sewer gully’s, sewer inspection outlets and stormwater easements.

E. Ground conditions

Urban soil conditions are a crucial element influencing a landscape modification. Erosion and sediment controls should be in place before design, excavation or regrading begins.

F. Water and drainage

Site drainage and runoff impacts the design of a sustainable and accessible solution. As a Priority, consideration needs to be given to the drainage patterns of a site including:

- overland flow and channel flow pattern
- ground water management
- soil erosion, sediment transport and deposition.

Protecting the existing buildings and neighbouring properties from changed drainage conditions as a result of landscape modification is important to minimise future problems with moisture and pests.

G. Existing vegetation

Existing vegetation on site can impact how a redesign can be implemented. In many cases vegetation may obstruct access, or the proposed landscape change. Considerations should be given to the following regarding existing vegetation on site;

- Planning restrictions for native vegetation in a Vegetation Protection Overlay. (The State of Victoria, Department of Sustainability and Environment, 2010).
- Planning restrictions for removal of trees with significant overlay area (size and height), heritage status or protected species.
- Costs incurred to remove vegetation (in particular large established trees).

- Ratio of hard run-off areas to green areas (i.e. concrete to grass/gardens) is also a requirement in some council areas.

Designing accessible built environment elements

Once a preliminary Site Assessment confirms a site's suitability for landscape modification to improve accessibility, the accessible pathway requires careful consideration with respect to the full range of elements within the designed solution. The range of access considerations are described in more detail in the paragraphs below.

Assess the accessibility of a landscape modification by considering the following points (A-H).

A. Planting of the front garden

An accessible landscape can be low maintenance in addition to being compliant with gradient requirements. A low maintenance landscape will incorporate planting that is drought resistant to minimise water usage, require minimum care to maintain plant growth and weed management, and will not easily grow or creep onto walkways becoming an obstruction or hazard.

Modifying a front or back garden is an opportunity to improve plant types, removing any toxic plants or weeds and planting low maintenance, drought resistant native species.

Further information of sustainable planting and planting guidelines can be found in Appendix 2 of the original landscape modification paper.

B. Inclusive garden design elements

Modifying the front garden landscape of a home gives the opportunity to improve levels of participation in the garden. This can be achieved through the incorporation of a number of design elements aimed at enabling an outdoor garden experience for all and might include:

- Raised and vertical gardens -providing gardening and horticultural access for those in a wheelchair if unable to kneel to floor level.
- Considered selection of sensory plants for the visually impaired.

C. Walkway design

For a walkway to be accessible it must comply with strict requirements as determined by Australian Standards AS1428 (2009).

Achieving an accessible graded walkway at an entrance may require a variety of landscape architecture and construction techniques, depending on the existing site features. These techniques will enable the site gradients to be adjusted and the existing buildings to be protected.

Appropriate gradients may be achieved by incorporating the following landscape approaches:

- Bridging
- Berms, earth fill, cut and fill
- French drains & swales
- Retaining walls
- Accessible slope

For a walkway to be considered accessible the gradient (slope) must not be steeper than 1:20. A gradient steeper than 1:20 will be considered a ramp and must include all associated ramped requirements such as handrails and kerbs.

Crossfall

Crossfall is also referred to as cross-slope, and is defined as the slope across a width of pathway. Some crossfall is required for drainage purposes but too much will make navigating an incline difficult. Crossfall across a pathway should be no steeper than 1:40 in concrete, and 1:33 in bitumen.

Horizontal rest platforms

Also known as landings, horizontal rest platforms should be provided along an accessible route between street and front door. These landings have quantity and size requirements which depend upon the length and design of a walkway. Specific landing requirements are set out in Australian Standards AS1428¹.

In line with Australian standards, where a walkway is raised above surrounding ground level, a raised path will need a kerb or an apron on the same level to prevent falling from a height. Elevation of over 1000mm will require a handrail (balustrade).

¹ **Australian Standard 1428.1-2009**

Design for access and mobility - General requirements for access - New building work Purchase AS 1428.1-2009

Walkway width

Australian Standard AS1428.1 requires that the width of a walkway be a minimum of 1000mm (unobstructed by lights, fittings awnings, windows etc.). The walkway leading to the front door of a house will benefit from widening as it leads to the front door, as this part of the path is where people tend to pass or gather to enter or exit.

Walkway surfaces

The surface finish of a walkway is important and must be stable and non-slip. In order to comply with Australian Standards, surfaces require a smooth transition with no stepping. This is important where concrete sections join on a pathway, and also in the correct laying of bricks and pavers. Abutting surfaces should have a maximum of 3mm height difference in alignment.

Site regrading for walkway – soil introduction

For the purposes of maintaining local ecology, minimising contamination and waste, the introduction of foreign soils or fill should be avoided where possible. As a best practice measure, where possible, the amount of soil removed should be balanced with the amount of soil used to create berms in a site modification design.

D. Threshold and entrance landing design

Turning area and door access

Thresholds and entrances require level area to allow for rest, manoeuvrability for turning, accessing keys, placing bags and opening doors.

Weather protection

As a best practice in accessible design, a front entrance or front threshold will benefit from weather protection as well as enough level space to allow for manoeuvring or storage of a mobility aid.

E. Stairs

When designing stairs for accessibility, consideration should be given the proportionality between tread, riser and other dimensional elements. Please refer to the original paper on Landscape modification for references.

F. Providing vehicle and parking access

Vehicle access and parking are considered to be important indicators of housing quality, particularly for older people and those living with a disability.

G. General garden and utilities access

Consideration should be given to accessibility for lawnmowers and garbage bins.

H. Elements that can support accessibility

Lighting contrast

Poor illumination of a walkway will contribute to the likelihood of falls. Lighting that defines the pathway edges and reduces glare will improve safety and negotiability.

Removal of hazards/obstacles on pathways and access points

The removal of obstacles along a pathway is important to ensure accessibility and safety. There should be no overhanging obstacles below a height of 2000mm above the path. This would include overhead obstacles as well as trip risks such as untrimmed edges and creeping plants.

Conclusion

There is an untapped potential for graded walkways to provide accessible home entrances within the provision of Home Modification services. This factsheet outlines a range of important aspects of successful residential landscape modification.

Landscape modification has the potential to provide an accessible solution that:

- Is fully accessible for people who use a wheelchair or mobility aid.
- Can be designed to cater specifically for visually impaired people.
- Is sensitive to the existing architecture of the home.
- Maintains a garden aesthetic.
- Provides opportunities for improving a garden's design and reducing ongoing maintenance.

In addition to these benefits, a landscape modification approach has none of the negative side effects of a ramp or lift installation, such as increasing vulnerability and being an eye-sore in the front garden. This further highlights potential for a landscape solution to be considered as an option when home modifications are being carried out.

***This information was correct at time of printing.*