



Track structures - steps, boardwalks & ladders G-13.2

Hard access structures such as boardwalks and steps can improve access to coastal areas and enhance recreational experiences. These structures can also provide protection for sensitive areas and landscapes whilst allowing visitors access to enjoy these environments. Hard access structures are expensive to install and require a high level of ongoing maintenance. They should only be installed where land managers have the resources to maintain them. Natural Resource Management (NRM) officers within local councils can provide advice and assistance.

Use these guidelines in conjunction with the information provided in Chapter 13 when planning works and engaging consultants and contractors to ensure the proposed works use the most effective methods and minimise the risk of causing damage to coastal values.

When to install hard access structures

Steps can provide access over the foreshore whilst minimising erosion to fragile foredune areas. Steps should be provided in high use areas.

Foredunes in lower use areas can be protected by board and chain walkways. Hind dune and level dune accessways do not normally require hard structures.

Environmental and cultural considerations

Structures erected on the foreshore require disturbance of the shoreline and as such have the potential to impact on vegetation communities, wildlife habitat, Aboriginal and maritime heritage values and threatened species.

It is important to identify all natural values that may be affected. Seek advice from specialists. Vegetation and fauna assessments may be required.

It is important to identify all cultural values that may be affected. Contact Aboriginal Heritage Tasmania, an assessment and permit may be required. If a new relic is discovered stop work and contact Aboriginal Heritage Tasmania.

Planning

Structures cannot be erected on public land without the authority of the landowner or manager. Identify the land manager and undertake any necessary assessments and approvals. Land managers must agree to ongoing maintenance.

Consult with the local community, user groups and any local community groups over the community's recreational track and access needs and other community and coastal values.

Consider the demographics of the area. Steps with hand rails are usually better than sand ladders for elderly users.

Consider access for mobility impaired users where appropriate, particularly at coastal access points such as viewing points and beaches. Sand ladders can provide access for wheelchairs.

Ensure all track infrastructure is designed, classified, built, audited and maintained according to the Australian Standards for *Walking Track Classification and Signage (AS 2156.1-2001)* and conforms with the Australian Standards for *Infrastructure Design on Walking Tracks (AS 2156.2-2001)*.

Consider potential sea level rise and ensure new structures are constructed above the latest Intergovernmental Panel on Climate Change (IPCC) projections for their life span and away from the threat of storm waves and coastal inundation.

Steps and boardwalk design

Adapt the design and placement to the site conditions. Avoid perching structures on top of dunes. Use existing blowouts and gullies for structures.

Align boardwalks and stairs that are exposed to onshore winds away from the direction(s) of the prevailing winds, to reduce wind erosion.

Protect the edges of boardwalks with scrub, jute mesh or similar materials and consider handrails or fencing alongside to encourage people to stay on the track.

A 'sacrificial' lower section on boardwalks, steps and stairs will save money, as only the lower part of the structure will be damaged by storm surges. The lower section is separate from the upper section and can be replaced.

Steps are relatively expensive structures to construct and maintain. It is preferable to locate them at the more protected ends of beaches where severe wave erosion is less likely.

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Sand ladder design

Sand ladders are better than steps on some steep dune faces (e.g. on eroding beaches). Ladders work best if erosion is mainly by walkers or wind rather than waves.

Ensure board and chain slats are a suitable distance apart for easy walking (e.g. 150–200mm between 100mm wide boards). As a general guide, increase the spacing on steeper slopes so that people can climb it safely.

Sand ladders on sand dune faces need to be non-rigid and free to move, so they can adjust (or be adjusted) to the changing dune profile (e.g. after storm waves).

Viewing platforms

Viewing platforms can protect sites from over-use.

Integrate them with existing structures such as stairs and boardwalks, and ensure they are easy for visitors to find.

Design viewing platforms to Australian Standards.

Viewing platforms should be aesthetically pleasing and be made from materials that blend into the landscape, where possible.

Materials

Timber has traditionally been used for hard access structures but there are new materials being developed all the time, such as recycled plastic products that should be considered on a site by site basis.

Hardwood boards are expensive but will outlast pine in some circumstances and are less inclined to warp and become hazardous.

Quality hardwood can be hard to source; oversized pine can last about 15 years. The durability of the timber is improved by treatment with preservative followed by surface coating.

Installation

Minimise impacts on coastal values during installation.

Ensure all works staff and contractors are briefed on minimising environmental impacts and provide adequate supervision to ensure best practice environmental standards are being implemented.

Avoid disturbance to wildlife. Schedule works to avoid significant wildlife events such as shorebird and penguin breeding season where appropriate.

Minimise the amount of excavation of the shoreline and the damage to coastal vegetation. Do not alter dune profile.

Clean soil and plant material off machinery, tools, boots and personal equipment before and after works to avoid introducing weeds and diseases.

Rehabilitation

Rehabilitate any disturbance to surrounding vegetation as soon as possible.

Assess the need for revegetation. If there is no natural vegetation nearby to supply seed, plant the area with appropriate local native species or use direct seeding once track has been constructed.

Mulch or jute matting can be used to prevent weeds whilst native plants re-establish.

Maintenance

Incorporate regular inspections and maintenance of structures into existing maintenance programs.

Carry out regular safety inspections in accordance with Australian Standards specifications.

Inspect track structures after extreme storms and coastal inundation events such as King tides for hazards.

Structures subject to sand burial such as sand ladders will need regular lifting and adjustments to compensate for shifting sands.

More Information

AS 2156 Part 1 Walking tracks. Classification and Signage

AS 2156 Part 2 Walking tracks. Infrastructure Design

Coastal Management Specifications Manual. Green Skills Inc 2010

Tasmanian coastal works manual: Chapter 13, Page & Thorp 2010

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Checklist



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Hard access structures such as boardwalks and steps require careful planning and design. They have the potential to impact on coastal values such as vegetation and foreshore stability. If poorly sited they can be easily damaged by storms and waves and become hazardous and expensive to maintain. It is important to consider and manage the impacts of installing access structures on the coastal values in the area and to consider the commitment and cost of ongoing maintenance. Seek advice from your NRM officer in local council.

Use this checklist in conjunction with the accompanying Guideline and the information provided in Chapter 13 when planning works and engaging consultants and contractors to ensure the proposed works use the most effective methods and minimise the risk of causing damage to coastal values.

PLANNING

Is a hard access structure required?

- Access over foreshore required whilst minimising erosion to fragile foredune areas.
- High use area, formal access required.
- Low use area, however access causing erosion.
- Consultation with the local community and recreational user groups undertaken.
- Consultation with local community care groups undertaken.
- Access for mobility impaired considered where appropriate.

Will coastal values be impacted on?

- Natural values identified.
- Any required vegetation and fauna assessments undertaken.
- Cultural values identified. Contact Aboriginal Heritage Tasmania and Heritage Tasmania.
- Any required heritage assessments and permits granted.

Will coastal processes affect the structure?

- Latest IPCC sea level rise projections considered in siting and design and structures located away from the threat of storm waves and coastal inundation.
- A 'sacrificial' lower section on boardwalks, steps and stairs considered in areas potentially affected by wave action.
- Steps located at the more protected ends of beaches where severe wave erosion is less likely.

Approvals and ongoing responsibilities

- Permission from land manager granted and all approval processes undertaken.
- Commitment from land manager for ongoing maintenance.

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DESIGN

- Australian Standards for *Walking Track Classification and Signage (AS 2156.1-2001)* used in design.
- Track infrastructure design conforms with the Australian Standards for *Infrastructure Design on Walking Tracks (AS 2156.2-2001)*.
- Demographics of the area considered in design. Steps with hand rails are usually better than sand ladders for elderly users. Sand ladders can provide access for wheelchairs.

Steps and boardwalks

- High use area.
- Structure located in existing blowouts and gullies where possible. Avoid perching structures on top of dunes.
- Structure aligned away from the direction(s) of the prevailing winds, to reduce wind erosion.
- Edges of boardwalks protected with scrub, jute mesh or similar materials. Handrails or fencing considered alongside to encourage people to stay on the track.

Sand ladders

- Sand ladders considered instead of steps on some steep dune faces or low use areas.
- Board and chain slats are a suitable distance apart for easy walking (e.g. 150–200mm between 100mm wide boards).
- Sand ladders are non-rigid and free to move, so they can naturally adjust or be adjusted to the changing dune profile.

Viewing platforms

- Viewing platforms integrated with existing structures such as stairs and boardwalks. Easy for visitors to find.
- Designed to meet Australian Standards.
- Designed to be aesthetically pleasing and blend into the landscape.
- Mesh platforms considered to allow light through to vegetation.



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Hard access structures such as boardwalks and steps require disturbance to the foreshore during installation and as such have the potential to impact on coastal values such as vegetation and foreshore stability. Contractors and staff undertaking works in foreshore areas need to be aware of any important environmental and cultural values in the area. It is everyone's responsibility to ensure that their work activity minimises any impacts on coastal values.

Use this checklist in conjunction with the accompanying guidelines and the information provided in Chapter 13 when undertaking works and engaging consultants and contractors to ensure works adhere to the most effective methods and minimise the risk of causing damage to coastal values.

ON THE JOB

Materials

- Durable timbers selected. The durability of the timber is improved by treatment with preservative followed by surface coating
- Oversized fixtures selected and secured tightly to reduce warping
- Natural local materials used where possible (such as in the construction of viewing areas)

Installation

- All works staff and contractors briefed on minimising impacts on coastal values and alerted to any permits or restrictions to work activities
- Adequate supervision provided to ensure best practice environmental standards are being implemented and permit requirements are being adhered to
- Disturbance to wildlife avoided. Works scheduled to avoid significant wildlife events such as shorebird and penguin breeding seasons where appropriate
- Excavation of the shoreline minimised
- Damage to or removal of coastal vegetation minimised
- Machinery, tools and personal equipment (such as boots) cleaned to minimise spread of weeds and disease
- If a new Aboriginal relic is discovered stop work and contact Aboriginal Heritage Tasmania

Rehabilitation

- Rehabilitation of any disturbance to surrounding vegetation undertaken
- Revegetation undertaken if there is no natural vegetation nearby to supply seed

Maintenance

- Regular safety inspections in accordance with Australian Standards specifications scheduled
- Hazard inspections undertaken after extreme storms and coastal inundation events such as king tides
- Regular lifting and adjustments to compensate for shifting sands scheduled for structures subject to sand burial, such as sand ladders
- Shoreline protection measures may be required to protect the infrastructure from wave action. Consider natural local materials or geotextile sand containers. Seek specialist advice

More Information

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