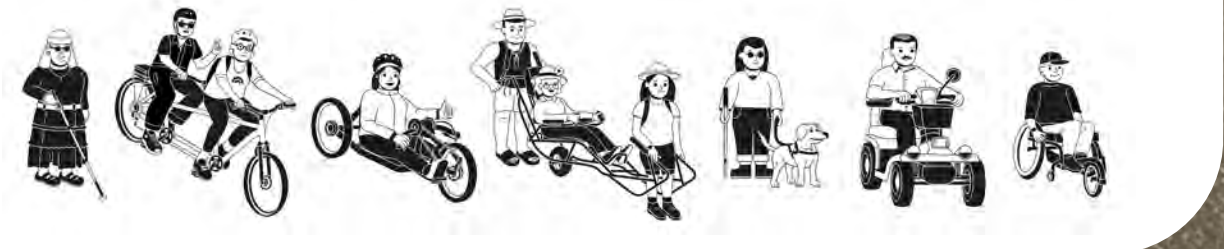




February 2025 (version 1.0)

Outdoors Accessibility Design Guidelines



These guidelines have been funded by Sport New Zealand's Disability Inclusion Fund and developed by Recreation Aotearoa in collaboration with the Accessible Outdoors Working Group, with additional support from the Global Sports Mentoring Programme.



Acknowledgments

Special thanks to the Accessible Outdoors Working Group, and the following organisations and individuals who have provided notable contributions to the development and/or review of these guidelines.

Accessible Outdoors working group

- » **Andrew Leslie**, Nuku Ora (Chair)
- » **Dave McCalman**, Halberg
- » **James Littlejohn**, #AdaptMTB
- » **Jeff Dalley**, Department of Conservation
- » **Jeza Williams**, Making Trax
- » **Katie Barry**, Recreation Aotearoa
- » **Kimberly Graham**, Access Matters & Grab your Wheels
- » **Mark Mandeno**, Adventure Works
- » **Mark Inglis**, St. James Cycle Trail
- » **Matt McKone**, Pollen Studio
- » **Quentin Smith**, Queenstown Lakes District Council
- » **Raewyn Hailes**, CCS Disability Action
- » **Simon Alefosio-Tuck**, Rotorua Lakes Council

» **Scott Savage**
Report layout,
design and
illustration.

Image credit:
Cover photo ([previous page](#))
Auckland ILead Committee
participating in William Pike
Challenge, Opanuku Stream
Walkway. Credit - ILead.

Wider contributors

- » **Andrew Mackenzie**, Re Nature
- » **Brian Dobbie**, Department of Conservation
- » **Brianne Lindsay**, Base Insights
- » **Brielle Gillovic**, Auckland University of Technology
- » **Carl Pavletich**, Accessibel
- » **Catriona McBean**, dsport
- » **Chris Mildon**, MTB Skills Clinics
- » **Chloe Bishop**, Sport New Zealand Ihi Aotearoa
- » **Daniel Harborne**, Deaf Aotearoa
- » **David Haliday**, Wellington City Council
- » **Donna Kennedy**, Riding for Disabled
- » **Emily Tilley**, Disabled Persons Assembly
- » **Emmily Broadhurst**, Wellington NZ
- » Fish and Game New Zealand
- » **Fran McEwen**, Sport New Zealand Ihi Aotearoa
- » **George Stilwell**, University of Canterbury
- » **Glen McGovern**, Sport New Zealand Ihi Aotearoa
- » **Ike Rakena**, CCS Disability Action
- » **James Anderson-Pole**, Deaf Aotearoa
- » **Janette Brocklesby**, Sport New Zealand Ihi Aotearoa
- » **Josh Clark**, Tauranga City Council
- » **Jemma Drake**, Blind Sport New Zealand
- » **Justin Muschamp**, Sport New Zealand Ihi Aotearoa
- » **Katrina Barkle**, Get Smart Global
- » **Kiran Dixon**, Halberg
- » **Kristina Pinto**, Ministry of Education
- » **Laura Edwards**, Active Southland
- » **Lee Patrick**, Autism NZ
- » **Mark Beardsley**, Department of Conservation
- » **Nigel Morritt**, Christchurch City Council
- » **Ngā Haerenga**, New Zealand Cycle Trails
- » **Recenia Kaka**, CCS Disability Action
- » **Robyn Coburn**, Lumin
- » **Roni Nuku**, Waka ama
- » **Rowan Sapsford**, Bike Taupō
- » **Steven Peter**, Trail Fund
- » **Tan Phuangdokmai**, Tauranga City Council
- » **Tracey Corker**, Parafed Taranaki
- » **Zanta Jones**, Sport New Zealand Ihi Aotearoa

Peer review

The accessible outdoors design guidelines have been peer reviewed by our friends at Be.Lab (**Angelo Samuels**) and BarrierFree (**Findlay Sloane and Katie Bourke**).



References

Several international resources have been referenced for the development of these guidelines. A full list of references is available on [pg. 182](#). Notable resources include, **Disability Sport Northern Ireland's** ['Accessible Outdoor Places Guidelines \(2021\)'](#), **Paths for All and Sensory Trust's** ['Outdoor Accessibility Guidance \(2023\)'](#), **Irish Wheelchair Association and Sport Ireland's** ['Great Outdoors Guide for Accessibility \(2018\)'](#).

Version 1 —
February 2025.

Contents

page	8	1	<u>Introduction</u>
	9		<u>Te Whai Oranga</u>
	9		<u>Development of the guide</u>
	10		<u>Context</u>
	10		<u>What do we mean by the ‘outdoors’?</u>
	11		<u>What do we mean by ‘Kaupapa Whai Oranga’?</u>
	12		<u>Disability in Aotearoa New Zealand</u>
	14		<u>Outdoor recreation participation and experiences</u>
	15		<u>Language</u>
	15		— <u>‘Disabled person’ versus ‘person with a disability’</u>
	16		— <u>Te Ao Māori view</u>
	17		— <u>Language in these guidelines</u>
	18		<u>Guiding principles, mindsets and values</u>
	18		— <u>Te Tiriti o Waitangi — the Treaty of Waitangi</u>
	18		— <u>Mana Taurite (a just society)</u>
	18		— <u>United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)</u>
	18		— <u>Recognising and responding to ableism</u>
	20		— <u>Inclusion</u>
	20		— <u>Accessibility</u>
	21		<u>Adventure and the ‘right to risk’</u>
	21		— <u>Tolerance for risk and unexpected challenges</u>
	22	2	<u>Planning, processes and consultation</u>
	22		<u>Internal policy, processes and plans</u>
	26		— <u>Funding</u>
	27		<u>‘Nothing without us’ — consultation, co-design and collaboration</u>
	28		— <u>Disability organisations</u>
	29		— <u>Inclusive outdoor organisations</u>

31	– Training opportunities and accessibility advice
31	– Online learning and resources
32	3 Inclusive trails
33	Trail accessibility information
35	– Important trail attributes
40	– Ways to capture and share trail information
44	– Considerations when preparing trail information
46	Trail signage and information boards
46	– Important information to include
47	– Sign design considerations
53	– Interpretation and storytelling signage
56	– Communication boards
57	Wayfinding
58	– Trail layout and design
59	– Maps
60	– Directional signage
60	– Technologies
62	Inclusive trail design
64	– Upgrading trails within an existing trail network
67	– Equipment and accessibility supports for trail users
68	– Types of equipment and supports
71	– Enhancing equestrian access on trails
73	Inclusive trail guidelines
73	– Alignment to existing NZ standards
74	– Inclusive trail examples
76	Key trail variables
76	– Trail width/tread width
78	– Sight-lines and corridor widths
80	– Turning/corner radius
83	– Trail gradient

86		— Cross slope/camber
88		— Drainage
92		— Trail surfacing
102		— Structures: bridges and boardwalks
110		— Trail maintenance
113		— Steps and short step landings
118		— Tactile trail features
118		— Sensory trail features
119		Gates and barriers at access points
128	4	Facilities and amenities
130		Car parking
132		— Sealed car parks and dedicated mobility parking
136		— Informal parking spaces
137		Toilet and changing facilities
137		— Toilet design considerations
144		— Showers and changing facilities
146		Additional amenities
146		Picnic tables
150		Shelters
151		Seating
155		Barbeque and cooking facilities
156		Drinking fountains and water stations
158		Rubbish facilities
159		Multi-purpose spaces
160	5	Water-based outdoor recreation spaces
161		Important considerations for all water-based recreation places
161		— Information, communication, and signage
162		— Whole journey of water-based recreation activities
162		— Connectivity to surrounding areas
163		Jetties and pontoons

164	Fishing
164	— Fishing platforms
167	Maimai
169	Waka Ama and paddle craft
169	— Launch systems
170	— Transfer benches
171	Sailing
172	River and lake access
173	Beaches
174	— Accessible beach routes
175	— Ramp access
178	— Access mats
180	— Beach accessibility equipment
182	References
186	Appendix
186	Inclusive trail case studies
186	— New-build Trail: Trash Panda – Woodhill Mountain Bike Park
189	— An existing inclusive gem: Mokopuna Trail, Titokorangi Forest, The Redwoods
193	— Improving connection to community and mobility scooter hire: New Plymouth District Council (NPDC) coastal walkway accessibility
196	Beach accessibility case study
196	— Waihi Beach: beach access mats, equipment and improved amenities
202	Diagram appendices
203	Diagram 1: Inclusive trail guidelines: pedestrian walking trails
204	Diagram 2: Inclusive trail guidelines: mountain biking
205	Diagram 3: Decision-making matrix for existing barriers on-trail
209	Diagram 4: Maimai indicative plans
211	Diagram 5: Lake Mangamahoe casting platform indicative plans

1 Introduction



In Aotearoa New Zealand, we are fortunate to be surrounded by an outstanding natural environment. It is vital that everyone has the opportunity to access these outdoor spaces, regardless of their age, gender, sexuality, location, ethnicity or ability. This can foster a lifelong connection to te taiao (environment) and enhance overall quality of life.

Currently there are significant barriers which prevent disabled people from accessing outdoor recreation spaces and places of their choosing, but [demand for access is high](#).

These guidelines are intended for anyone involved in the provision, planning, development, management or design of trails, and outdoor recreation spaces and places. They aim to equip kaimahi (workers) with the tools and knowledge to enhance wellbeing by breaking down barriers to accessing te taiao (environment). These guidelines focus on improving the accessibility of outdoor recreation spaces and places across Aotearoa, New Zealand for all people with impairments.

A complementary resource has also been developed for kaimahi involved in the delivery of outdoor recreation programmes. [‘Accessibility and inclusion in outdoor education and recreation - A guide for outdoor providers and educators’](#) is available on the Sport New Zealand [Inclusivity Hub](#).

◀ **Photo**

Two people, one with walking poles approaching a sandy beach area from the grass. (WNZ Regional Trails, Te Onepoto, 2024)
Credit - Capture Studios, Wellington, NZ

Te Whai Oranga

We acknowledge and celebrate the role of mātauranga Māori (Māori knowledge) and an Aotearoa-centric world view that honours Te Tiriti o Waitangi and te ao Māori (the Māori world) in shaping more accessible outdoor spaces and places in Aotearoa, New Zealand.

Te Whai Oranga — the pursuit of wellbeing through recreation — is the strategic plan of Recreation Aotearoa. Its vision is to create a mutually flourishing connection between atua (deities), whenua (land) and tāngata (people). It envisions an Aotearoa where mātauranga Māori (Māori knowledge) is celebrated and the mana of the respective world views of Tāngata Whenua (Māori) and Tāngata Tiriti (non-Māori) are mutually respected and flourishing together.

These guidelines incorporate aspects of Te Whai Oranga. We encourage everyone who engages with this document to consider how Te Whai Oranga can help to inform the way accessibility is enhanced in outdoor recreation.

Development of the guide

The following mahi (work) has informed the development of this guide:

1. A review of existing trail standards and international outdoor accessibility guidelines.
2. Persona mapping of the intended users of these guidelines.
3. Survey of intended users.
4. Several webinar and in-person engagements with trail groups and providers of outdoor recreation spaces and places.
5. Accessibility in the outdoors research and insights gathering workshop with representatives from the disability community, whānau, and representatives from the recreation and disability sectors.
6. National Outdoor Recreation Accessibility Survey in partnership with the Department of Conservation.
7. Review and testing of existing trails with the guidelines by #AdaptMTB, and people with a lived experience of disability.

Context



What do we mean by the ‘outdoors’?

The terms ‘outdoors’ and ‘outdoor recreation’ mean different things to different people. For some, outdoor recreation might involve flying a traditional Māori kite (he manu tukutuku) in a nearby park with whānau. For others, it could be riding a horse along a riverside trail, paddle boarding on the lake, mountain biking in te ngahere (forest), or tramping in the backcountry. These guidelines do not attempt to limit our understanding of what outdoor recreation or the ‘outdoors’ means. Instead, it offers accessibility guidance for various green and blue spaces across Aotearoa, New Zealand.

◀ Photo

Recreate AKL Adventure group crossing a stream over rocks and water.

What do we mean by ‘Kaupapa Whai Oranga’?

The term ‘kaupapa’ refers to an initiative or project. Through the guidelines, we want to illustrate the connection between the concept of Te Whai Oranga, and how it is realised in the practice of creating accessible outdoor spaces. Throughout this document, we have woven strands of ‘kaupapa whai oranga’, which highlights significant perspectives, and un-seen

influences of recreation that can enhance the accessibility of outdoor spaces. These strands highlight the significance of whakapapa and mātauranga Māori, providing a te ao Māori perspective on recreation activities and practices. These concepts strengthen our connection to the land and enhance wellbeing.

► **Diagram**

Shows Te Whai Oranga, accessibility and inclusion, and recreation as the three key elements of achieving greater access to the outdoors.



Disability in Aotearoa New Zealand

One in four New Zealanders have been identified as having an impairment, including 11% of young people under the age of 15 and more than half of people aged over 65.

The [United Nations Convention on the Rights of Persons with Disabilities \(UNCRPD\)](#) defines disability as any long-term physical, mental, intellectual or sensory impairment. These impairments, combined with various barriers, can prevent people from fully participating in society. This definition sees disability not as an identity but rather, as people's experience of their impairments and the physical and social barriers they face. This is referred to as the **social model of disability**.

This is in contrast to the previously accepted **medical model of disability**, which suggests that a person's impairment is the barrier, and therefore the impairment is what needs 'fixing'.

We can use the social model of disability to focus on removing barriers to accessing outdoor spaces and places, rather than assuming access is impossible, as the medical model suggests.

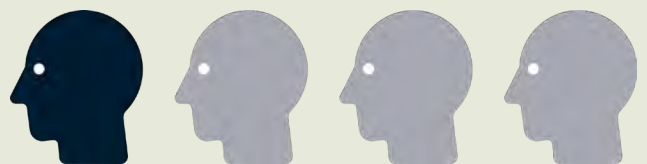
People's experience of disability is highly varied, and can be influenced by the:

- » nature of their impairment
- » types of barriers that they face, which can be compounded by their gender, age, ethnicity and culture.

Many impairments can't be easily identified by others. These are known as invisible impairments. Some people who have an impairment may not identify as being disabled or having a disability.

The experience of disability occurs when:

- » People with impairments are excluded from places and activities many people take for granted.
- » Infrastructure and systems do not accommodate diverse abilities and needs.
- » People's attitudes prevent people with impairments from being able to participate in society on an equal basis with non-disabled people.



One in four New Zealanders have been identified as having an impairment

Just over half of all disabled people in New Zealand experience more than one type of impairment.

Some common types of impairment include:



Walking, lifting or bending



Communication, mixing with others or socialising



Learning, concentrating or remembering



Hearing, even when using a hearing aid



Seeing, even when wearing glasses or contact lens



Using your hands to hold, grasp or use objects

Outdoor recreation participation and experiences

The [Active NZ survey](#) captures the responses of more than 30,000 New Zealanders and allows us to understand more about the experiences of people with impairments participating in sport and recreation. From the 2024 survey, we know that:

- » Across the board, disabled people are **less likely** to participate in physical activity in outdoor locations (for example, at the beach, lake, bush, off-road biking or walking tracks) than non-disabled people.
- » **1 in 5** disabled young people **would like to try or do** more tramping or bush walks.
- » For disabled adults, the **biggest difference** in physical activity locations in the outdoors is on walkways. **Only 16%** were physically active on walkways, compared to **26%** of non-disabled adults.
- » **24%** of adults with an impairment would like to try day tramping over the next 12 months.

The [2024 Outdoor Recreation Accessibility Survey \(ORAS, 2024\)](#)¹ delivered in collaboration with the Department of Conservation also allows us to understand the experiences of disabled people participating in recreation in outdoor locations.

From this survey, we learnt:

- » **72%** of respondents agreed ‘A lot’ or ‘Totally’ that they **would like to engage** in outdoor recreation more often.
- » Finding a outdoor location that is suitable for an individual’s needs was the **biggest barrier to participation** in outdoor recreation (**59%**).
- » **Only 50%** of participants agreed that facilities at the outdoor location **met their accessibility needs**.
- » **60%** of respondents would like places to **provide additional facilities and services** to improve their outdoor recreation experiences.

Data from Ngā Haerenga, The New Zealand Cycle Trails, also tells us that:

- » People with impairments can report more positive effects of being physically active on cycle trails, compared to non-disabled people.²
- » The [Cycle Tourism Insights report \(2021\)](#) estimates that **41%** of the Cycle Tourism market have some form of disability or impairment.
- » **29%** of Great Ride trail users reported some form of disability or impairment in the [2021 Evaluation of Great Rides](#).

1. Department of Conservation & Recreation Aotearoa (2024) Outdoor Recreation Accessibility Survey. <https://dxcprod.doc.govt.nz/about-us/our-role/managing-conservation/recreation-management/visitor-research/survey-of-new-zealanders/outdoor-recreation-accessibility-survey-2024/>

2. Ngā Haerenga, New Zealand Cycle Trail — Annual Visitor Data (2023), Get Smart. All New Zealand Cycle Trails Data



▲ Photo

Two trail users. One using one walking pole, one using two walking poles, side by side. (WNZ Regional Trails, Te Onepoto, 2024). Credit - Capture Studios, Wellington, NZ

Language

Much thought and discussion has informed the language used throughout this guide. We recognise the importance of respecting individual preferences, and we acknowledge the historical, cultural, social and personal aspects of disability. Some of our community prefer person - first language **“people with disabilities”** and others, identity-first language **“disabled people”**. Some people prefer language relating to their specific needs or impairment, and others prefer terms such as **“people with access needs”** or **“people of all abilities”**.

'disabled person' versus 'person with a disability'

The [New Zealand Disability Strategy](#) adopts the **‘social model of disability’**. The social model states that a person **does not have a disability, they have an impairment**. An impairment only becomes a disability when a person is unable to participate fully in society due to physical, social or systemic barriers. Therefore, people are ‘disabled’ by society’s inability to cater to their needs. The term ‘disabled person’ is used by [Whaikaha](#), the Ministry of Disabled People, and acknowledges this model.

➤ [Learn more about the social model and the medical model of disability.](#)

Te Ao Māori view

‘[Tangata Whaikaha](#)’ is a term that has been embraced by some disabled Māori. ‘Whaikaha’ is a strength-based term that means ‘to have ability’ or ‘to be enabled’.

Whānau hauā is another term embraced by some disabled Māori. This term describes disabled Māori who feel a sense of belonging to a collective. This might be iwi, whānau, or another community group. This term is connected through whakapapa to disabled Māori atua (deities).

Ike Rakena (Waikato / Ngaati Whaatua / Te Wai-o-Hua / Ngaati Tahu), Pou Arahi aa Motu (Māori Development and Leadership) at CCS Disability shares their whakaaro on the kupu (words) **‘whānau hauā’**:

“ While the term has previously been mis-interpreted to mean ‘crippled’, ‘lame’ or ‘invalid’, through whakapapa to Tāwhiri-matea, the term **‘whānau hauā’** instead represents the unique life force that each individual has. Tāwhiri-matea is known as the God of the winds and elements. He was the sole opposition to the separation of his parents Ranginui and Papatūānuku. Within Tūhoe tribal lore about the creation theory, Tāwhiri-matea was so angry at his brothers for separating their parents. In his anger, Tāwhiri-matea tore out his eyes, crushing them and throwing them into the heavens to clothe his father, hence creating Matariki or mata-ariki (eyes of God), at the same time. The result of his action’s meant that Tāwhiri-matea no longer had eyes to be able to see.

Tāwhiri-matea had many children that made up the different ‘hau’ (winds) such as te hauātakataka (cyclone), te hauāwhiowhio (hurricane), te hauāuru (west-wind), te hau-pukeri (violent wind), te hau-maiangi (light wind) and te hau-mārire (peaceful wind), to name a few. Therefore, the children of Tāwhiri-matea were ‘hauā’; each wind being unique in their own way.

This kupu and whakapapa now forms the foundation of the identity of CCS Disability Action. **‘Te Hunga Hauā Mauri Mō Ngā Tāngata Katoa’** was gifted to the organisation by kaumatua Kihi Ngatai (QSM. Ngai-te-Rangi/Ngāti Ranginui/Ngāti Puukenga) and their kaahui kaumatua which means that **‘all people have a unique life force, and that we value every person equally’**. ”

— Ike Rakena

Māori Development and Leadership at CCS Disability.

Language in these guidelines

For consistency within this resource, and to align with the social model of disability, we use the terms ‘people with impairments’ and ‘disabled people’ or ‘people who experience disability’.

Where possible, we have used language that avoids perpetuating the medical model of disability. We have instead used neutral or strength-based language. You will also see the terms tangata whaikaha, and whānau hauā used throughout.

Other terms are used in this resource when reflecting information from other sources, or the personal views of people with lived experience of disability. Whilst care has been taken to choose inclusive language within this resource, language’s constant evolution and the individual nature of language might affect how this is viewed now, or in the future.

Some people may experience fear and anxiety around using the ‘correct’ language — **don’t let the fear of saying the wrong thing get in the way of engaging with your community on your outdoor project.**

- » Always be respectful of individual language preferences.
- » If in doubt, use the language of the person with lived experience.
- » Language is ever evolving, continue to learn and respond to change.

“

I wanted to ensure the people I was working with felt comfortable in the trail environment. I was nervous of accidentally overstepping to offer help and support, or saying the wrong thing and causing offence, but everyone I had the privilege to meet [through our project to enhance trail accessibility information], has opened my eyes to the access challenges on our network and were genuinely grateful and supportive of the work being done. I’m really grateful for what I have learnt through their input. ”

— **Emmily Brodhurst**

Remutaka Cycle Trail Advisor, Wellington Regional Trail Advisor.

Guiding principles, mindsets and values

The following concepts provide important context for how you can start to develop more accessible, and inclusive outdoor spaces.

Te Tiriti o Waitangi – The Treaty of Waitangi

Te Tiriti o Waitangi serves as a foundation for creating an equitable, inclusive society that embraces diversity and social cohesion. Te Tiriti promotes inclusion by emphasising Mana Ōrite (Partnership), Mana Māori (Protection), and Mana Taurite (Participation). This ensures that the voices, rights, and identities of all people in Aotearoa are respected and valued.

Mana Taurite

Mana Taurite (a Just Society) is a key principle of Te Tiriti o Waitangi. When using [a Te Tiriti — Informed approach for the provision of spaces and places](#), this core principle ensures spaces and places are inclusive of, and consider, people of all ages, genders, cultures, and abilities. Under this principle, particular consideration is given to how spaces will be accessed equitably.

United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)

It is the social right of disabled people to access public outdoor spaces and places.

New Zealand is a signatory of the UNCRPD. Two articles from this Convention express the right of disabled people to access outdoor recreation spaces and places.

1. Article 9 – Accessibility

[Article 9](#) states that persons with disabilities have the right to access the physical environment, transportation, public services and facilities, information and communications. The identification and elimination of obstacles and barriers to accessibility (including in outdoor facilities), is one measure outlined in this article to uphold this right.

2. Article 30 - Participation in cultural life, recreation, leisure and sport

[Article 30](#) states that persons with disabilities have the right to participate in recreational, leisure and sporting activities.

Recognising and responding to ableism

Ableism is the discrimination against disabled people due to biases that favour able-bodied people. Some forms of ableism are subtle and deeply ingrained in society. When enhancing the accessibility of outdoor spaces, it's important to become aware of how ableism shows up.

- ▶ [‘Assume That I Can’](#) is a powerful (90 second) video highlighting the significance of ableist assumptions, and their impacts.

Hot tip: this can be used as an advocacy tool to help shift attitudes and mindsets around disability and ableism.

Ableism and assumptions in the outdoors



It is often assumed that disabled people don't want to participate in outdoor recreation or 'would not be able' to.

These inaccurate assumptions can mean that disabled people are not considered in the design of outdoor recreation spaces (either consciously or unconsciously).

As a result, accessible design is not considered in the development and management of outdoor spaces.

Often, this means that outdoor spaces which could have otherwise been accessible to more people, have instead been designed with barriers to access. For example, 1 or 2 steps along an otherwise accessible trail.

But what if we always assumed that disabled people wanted to, and could, access outdoor recreation spaces and places?

Disabled people would be consciously considered in the design of outdoor recreation spaces.

Accessible design is proactively applied in the development and management of outdoor spaces, and outdoor spaces are designed to meet the access needs of people with impairments.

More outdoor spaces become more accessible to more people. This also benefits people who are injured, elderly people, pregnant women, and whānau with young children.

Inclusion

Inclusion is creating an environment where all people feel welcome, safe, and able to fully participate in the way that they choose. Inclusion is achieved in the provision of outdoor spaces by proactive behaviours, options and actions that make all people feel like they belong.

Both inclusion and accessibility are key principles of the [Sport New Zealand Spaces and Places Framework, Te Pou Tarāwaho Takiwā me ngā Wāhi](#).

Inclusive Design considers the usability of a space regardless of age, ability or circumstance. Inclusive design creates spaces for friends and whānau (family) to enjoy the space, together and alongside each other.

Accessibility

Accessibility is the usability of a space for all people regardless of ability.

[Accessibility is better for everyone.](#)

Accessible Design considers the specific needs of people with access needs or impairments, and the diverse needs of users within this group.

Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, or ability.³

The [Universal Design Personas](#) created by [Auckland Design Manual](#) help us to understand the basic human design needs.

➤ Read more about [Universal Design and Accessible Design](#).

▼ Cover Photo

Two happy boys after a swim in the lake.
Credit - 'Using Māori Language - How to guide',
2024 (New Zealand Story website)



Adventure and the ‘right to risk’

Often the desire to access outdoor spaces also includes the desire to experience a sense of adventure.⁴

Taking considered risks is an important part of the human experience. In the outdoors, positive risk taking contributes to an overall sense of adventure that promotes wellbeing and can lead to an increase in confidence.

While there is a need and desire for the outdoors to be more accessible, **this does not always mean making nature as accessible as possible⁵ or designing trails to accommodate people with impairments that only cover a very short distance.⁶**

Positive risk taking (or risk enablement) is linked to the concept of self-determination within the [Enabling Good Lives Framework](#) which asserts that disabled people should be in control of how they participate. Enabling Good Lives is an equity framework designed to give disabled people more choice and control over the support they receive and how they live their lives.

Another concept used in outdoor recreation is the challenge by choice philosophy, which empowers people to personalise how they participate in an activity.

Tolerance for risk and unexpected challenges

- » **35.5%** of respondents seek to **encounter** some risk and 70% seek to **avoid** risk.
- » **67%** of respondents want to **adapt** to unexpected challenges.
- » **72%** of respondents seek to **eliminate** unexpected challenges.

- (ORAS, 2024)

Prior communication about outdoor spaces and their accessibility is vital, so people can be empowered to make decisions that are best for them.

-
3. Universal Design Principles, Waka Kotahi. <https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/design/pedestrian-design-principles/universal-design-principles/>
 4. Wall-Reinius et al., (2023) Access to Nature for Persons with Disabilities: Perspectives and Practices of Swedish Tourism Providers, Tourism Planning & Development
 5. Zhang et al., Department of Geo Sciences and Natural Resource Management, University of Copenhagen (2017) Health-Promoting Nature Access for People with Mobility Impairments: A Systematic Review. <https://www.mdpi.com/1660-4601/14/7/703>
 6. Godtman Kling & Ioannides (2019). Enhancing accessibility in tourism and outdoor recreation: A review of major research themes and a glance at best practice. <https://www.diva-portal.org/smash/get/diva2:1381010/FULLTEXT01.pdf>

2

Planning, processes and consultation



Inclusive and accessible outdoor spaces are more than just their design. Inclusivity and accessibility must be embedded within the planning, processes, consultation and co-design of outdoor spaces.

Internal policy, processes and plans

Embedding accessibility within your internal policies, plans, processes and strategies is an essential part of achieving greater accessibility on the ground.

Accessibility policies, action plans and strategies

Having a shared commitment to disability inclusion and accessibility in your context can help to enable greater accessibility.

◀ **Photo**

Two people ride a tandem bike up a wide, sealed trail. (WNZ Regional Trails, Te ara o Whareroa Queen Elizabeth Park, 2024). Credit - Capture Studios, Wellington, NZ

“ [Napier’s Disability Strategy](#) has been integral in improving accessibility in our city. We’ve worked hard to raise awareness amongst our Council colleagues, including providing [BarrierFree training](#). There’s now a real commitment to building accessibility considerations into our projects. Recent examples of where this has come to fruition include improving access to our Marine Parade gardens and pathways. ”

— **Napier City Council’s Community Strategies Team.**



▲ **Front cover:**

Napier Disability Strategy. 2019-2023 (Napier City Council)

Tauranga City Council’s [Accessible Tauranga Action and Investment Plan](#) is another example.

“ The Accessible Tauranga Action and Investment Plan provides a strategic foundation to advocate for change and lead accessibility initiatives across the city. It prioritises accessible and inclusive design in public spaces, improves access to information, and ensures the needs of older people and disabled communities are reflected in council decisions. With this plan, I can more effectively influence policy, guide discussions, and embed accessibility into Tauranga’s development. ”

— **Tan Phuangdokmai,**
Strategic Advisor: Disability and Ageing,
Tauranga City Council

Checkpoints for accessibility

Accessibility is everyone's responsibility.

It's essential to establish systems and processes that don't depend solely on a single advocate or advisor to ensure accessibility in your projects. How can you make sure that accessibility is not overlooked in your projects?

Hot tip: consider what stages and processes your projects must go through before implementation. Which of these stages could have accessibility embedded as part of the project requirements?

Design briefs and procuring contracts

You don't have to have all the answers! Make sure you include your wider stakeholders and contractors in your mission to enhance accessibility. Include accessibility and inclusion as priorities within your design briefs and contracts for services, so contractors can also commit to enhancing the accessibility of the space.

Win-win: This improves the accessibility of the service or product you're purchasing. It also helps to deepen stakeholders and contractors' knowledge for further contracts.

“As a team of landscape architects, accessibility is one of the most important considerations of our projects—finding ways for communities to appreciate and connect with the outdoors together is incredibly rewarding.

Having accessibility included as a key aspect of project briefs helps us to identify shared values with clients and communities we love to work alongside. We also believe it encourages the ongoing development and centering of inclusive design in public realm projects — encouraging a snowball effect of best practice as we build new solutions.”

— **Pollen Studio Landscape Architects**

Example: The seven stages in the lifecycle of Spaces and Places outline the steps required to ensure quality and opportunities and experiences are delivered.⁷ Use these stages to consider how accessibility and inclusion can be embedded within your projects.



1 Identify the challenge: What have you already heard from people with access needs about the space? Consider what feedback is already available through resident surveys, Snap Send Solve data or complaints and submissions that highlight opportunities for improvement.

2 Proof of need: Use supporting evidence such as the Outdoor Recreation Accessibility Survey or Active NZ data, and insights from the local disability community to clearly outline the specific needs within the space.

3 Proof of viability: Collaborate with your local disability community to explore a range of potential solutions to address the identified challenges. Accessibility consultants can provide valuable insights at this stage, highlighting potential challenges or opportunities. Prioritise solutions which provide access for all users, regardless of ability, and ensure the long-term maintenance required to meet the desired accessibility standard is part of the plan at this early stage.

4 Design: Develop designs with active input from your local disability community, and accessibility guidelines. Involve accessibility consultants early in this phase to ensure key design considerations are met.

5 Build: Ensure accessibility is a priority in procurement processes. During the construction or upgrade phase, monitor progress to confirm that accessibility requirements are met and no shortcuts are taken that could reduce the space's inclusiveness.

6 Operate: Promote the new accessible features to your community. Share detailed accessibility information with a wide range of users to enhance its usability. Plan activation events for the space, involving people with lived experience of disability to connect people and place. Maintain the asset to its intended accessibility standard, by developing and implementing a maintenance plan.

7 Improve: Measure performance against the initial inclusion and accessibility goals. Seek feedback to identify ongoing opportunities for improvement. When considering future upgrades, ensure they enhance, rather than limit, accessibility by consulting with the local disability community.

For example, following feedback from the community, you may consider adding a gate or barrier at the entrance to an otherwise accessible space, to prevent motorbikes entering. However, this could unintentionally create a new obstacle for some users. To ensure this improvement doesn't compromise accessibility, the solution should be developed in consultation with the local disability community. This way, any changes made enhance both safety and access for all users.

-
7. Sport New Zealand (2024) Places and Spaces Framework. <https://sportnz.org.nz/resources/new-zealand-spaces-and-places-framework-2024/#:~:text=What%20is%20the%20New%20Zealand,decisions%20about%20spaces%20and%20places>

Funding

Improving the accessibility of outdoor spaces doesn't always cost more, and sometimes, simple changes can make a big difference — especially when accessibility is considered from the outset of a project. If you need additional funding however, the following funds and resources may be useful.

[Herenga ā Nuku – Funding Basics: understanding how to secure funds for your trail projects](#)

Includes a presentation on the different types of funding available, information on grants and funding applications, and useful [links to different funders and databases](#).

[Herenga ā Nuku Enhanced Access Grants](#)

For projects that improve public access to the outdoors.

[Lotteries Community Facilities](#)

For improving or building new facilities for communities and for feasibility studies.

Hot tip: some funders may fund the difference between minimum standards and best practice inclusive design as part of their desire to invest in equity outcomes. Make sure you demonstrate the importance of inclusive design in your applications.

‘Nothing without us’⁸ — Consultation, co-design and collaboration

When designing, developing, or upgrading outdoor spaces and/or relevant policies, it’s important to:

- » **Genuinely consult and collaborate with disabled people, their whānau, and professional accessibility consultants** within the planning, design, development, upgrade and renewals processes of outdoor recreation spaces.
- » **Ensure ongoing collaboration** with the disability community throughout the entire project. Engage and collaborate on ideas regularly, not just at the beginning or end. Disabled people’s perspectives should be integrated at every stage of the development process.
- » **Hot tip:** when developing your project plan, outline at this point who you are going to collaborate with, and when, throughout the project timeline.
- » **How inclusive and accessible are your community consultation processes** to ensure that people with impairments can provide feedback and be involved in consultation processes, regardless of their access needs or communication preferences?



▲ **Photo**

Two people, one in a wheelchair are on a sealed path in a park.
(WNZ Regional Trails, Tanes Track, 2024)
Credit - Capture Studios, Wellington, NZ

8. ‘Nothing About us, Without us’ is an iconic phrase from the Disability Rights Movement. In recent times it has evolved to ‘nothing about us’. This recognises that all topics, projects and policies impact disabled people, and should include disabled people in their consideration and decision-making.

Disability organisations

Connecting with local and specialist organisations can provide valuable support. Forming ongoing relationships with the following organisations and groups can enhance inclusive practice in the development of outdoor spaces.

- » [Age Concern](#) — provides expert information and support services in response to older people's needs.
- » [Autism New Zealand](#) — provides services, support, education and information for autistic people and family/whānau, caregivers, and professionals who engage with them.
- » [Blind Citizens NZ](#) — the national advocacy organisation for blind people in Aotearoa.
- » [Blind Low Vision NZ](#) — provide support for New Zealanders who are blind, deaf blind, or have low vision and advocate for accessible and inclusive communities.
- » [CCS Disability Action](#) — the largest pan-disability support and advocacy organisation in Aotearoa.
- » [Cerebral Palsy Society](#) — provide programmes, support and advice for people living with Cerebral Palsy (CP) – Hōkai Nukurangi in New Zealand
- » **Council Disability Advisory Groups** — many local authorities have a network of disability services and advisory groups they work closely with on Council accessibility and inclusion initiatives. This can be a good place to start for contacts and organisations in your local area.
- » [Deaf Aotearoa](#) — the national organisation representing the voice of Deaf people in Aotearoa, offering resources, trainings, and interpreting services.
- » [Disability Connect](#) — disability information and advisory service based in Auckland.
- » [Disabled Persons Assembly NZ](#) — not-for-profit, pan-impairment disabled people's organisation run by and for disabled people.
- » [I.Lead](#) — A disabled youth movement led by youth for youth. They aim to amplify the voices of disabled young people.
- » [Muscular Dystrophy Association New Zealand](#) — a support group for whānau affected by neuromuscular conditions, offering resources, support, networking and advocacy.
- » [People First NZ, Ngā Tangata Tuitahi](#) — a disabled people's organisation run by and for people with learning disability.

Inclusive outdoor organisations

The list below is not exhaustive, but these organisations all have experience in offering specific adapted programmes or inclusive outdoor opportunities.

- » [#AdaptMTB](#) — The home for adaptive mountain biking in New Zealand, working to build equity for people to access and enjoy mountain biking.
- » [Adventure Works](#) — Offering outdoor leadership opportunities and training programmes.
- » [Adaptive Surfing New Zealand](#) — Information on adaptive equipment, have-a-go days, events and competitive pathways.
- » [Auckland Climbing Youth Development Club](#) — Inclusive climbing centre that runs youth-led programmes for disabled young people.
- » [Blind Sport New Zealand](#) — The national organisation for blind, deafblind and low vision sport and physical recreation.
- » [First Step Outdoors](#) — Outdoor activity provider based in Waikato with experience in inclusive practice.
- » [The Halberg Foundation](#) — Supporting sport and recreation opportunities for tamariki and rangatahi with physical disabilities.
- » [New Zealand Riding for the Disabled](#) — A member-associated organisation of over 40 riding groups in local communities throughout Aotearoa New Zealand.
- » [Outward Bound](#) — Short courses available for people aged 13-plus years with impairments.
- » [Paddle Able](#) — Developing an inclusive paddle community by working with clubs and providers, offering education, resources, systems and equipment.
- » [The ParaFed Network](#) — A group of regional organisations that provide sport and recreation opportunities for disabled people. They loan equipment and deliver sport and recreation within their local regions.
- » [Recreate NZ](#) — Runs recreation programmes for young people with intellectual disabilities across Aotearoa New Zealand.
- » [Sailability and Blind Sailing](#) — Non-profit organisations around Aotearoa New Zealand that offer specialist sailing groups.
- » [Scouts Aotearoa](#) — Welcomes all young people aged 5 to 26 years and is committed to inclusion through its Diversity and Inclusion Strategy, Youth Advisory Group, and inclusive resources.
- » [Whenua Iti Outdoors](#) — outdoor activity provider based in Tasman with experience in inclusive practice.
- » [Wish4Fish](#) — A charity which provides boating activities for individuals with health and wellbeing limitations on their purpose-built fully accessible catamaran.



Training opportunities and accessibility advice

Professional training can help to bring everyone on the same page with your approach to inclusion and accessibility, and detailed design advice can help to ensure you haven't missed any opportunities to enhance the accessibility of your outdoor space.

- » [Barrier Free](#) — provide training, advice and consultancy focusing on a combination of compliance requirements and Universal Design principles.
- » [Making Trax Foundation](#) — an Independent Adaptive Advisory Service, specialising in inclusive adventure tourism.
- » [Grab Your Wheels, Let's Travel](#) — an online resource, specialising in accessible and inclusive travel reviews.

Online learning and resources

- » [CCS Disability Action e-Learning](#) — online disability awareness is provided by CCS Disability Action. Check out their free online Disability Awareness taster session.
- » [American Trails Accessibility Hub](#) — includes webinars, resources and examples of trail accessibility projects from the United States.
- » [Move United Education Hub](#) — has a series of American Trail Access Webinars you can sign up to access for free.

◀ Photo

Two people on a tandem bike.
Credit - Blind Sport NZ

3 Inclusive trails



Taking part in a trail-based recreation activity is just one part of the journey for a trail-user.

To ensure inclusive and accessible experiences for all trail-users, the whole journey of participating must be considered. This includes: preparing for the activity, arriving at the location, undertaking the trail activity, using any associated infrastructure or amenities at the site, and returning safely.

The following section includes:

- » [Trail accessibility information to support decision making](#)
- » [Trail signage](#)
- » [Wayfinding](#)
- » [Trail users, equipment, and accessibility supports](#)
- » [Important trail variables and design considerations](#)
- » [Gates and access points](#)
- » [Inclusive trail design guidelines:](#)
 - » [Pedestrian | walking](#)
 - » [Mountain biking](#)

◀ **Photo**

Young person walking along a trail with a guide.
Credit - Blind Sport NZ

Trail accessibility information

Trail accessibility information includes the information that's shared about a trail to help trail-users make an informed decision about the activity they would like to undertake, whether it can be accessed by the individual, and what equipment and additional support might be necessary. ^{9 10}

This includes the information available prior to undertaking a trail experience. For example, online trail destination websites, trail brochures, or on trail-head markers or individual trail signs.

Challenge

Finding information to plan an outdoor recreation activity is among the top five barriers to participating in outdoor recreation for disabled people in Aotearoa.

- (ORAS, 2024)

Trails in Aotearoa New Zealand have generally not been built or maintained to consider the accessibility needs of people with different impairment types, or the design differences of adaptive trail equipment.

As a result, the lack of information currently available about trails:

- » impacts decision making and participation and can contribute to a feeling of fear and unease.
- » can increase the risk to participate if trail users are unable to make an informed decision or are not well prepared due to a lack of trail accessibility information.

9. Wisconsin Office of Outdoor Recreation (2023). Small Changes, Big Impact for a More Accessible Outdoors Webinar.

<https://www.youtube.com/watch?v=Jb9SlQPh3Ks>

10. U.S. National Recreation and Park Association. Equity in Parks, and Recreation — a Historical Perspective.

<https://storymaps.arcgis.com/stories/5727e40084614c559bf0440dc5a21f7f>

Not knowing what obstacles may be encountered can also keep people from accessing nature all together. ^{11 12}

Many people with impairments have found the information on a venue's website to be misleading, confusing, inaccurate, or inaccessible. ¹³

Only 29% of respondents agreed 'A lot' or 'Totally' that the manager of their most recent outdoor recreation activity location provided accurate and up-to-date information on conditions and facilities.

21% of respondents with an impairment encountered unexpected barriers at the location which prevented them from completing their outdoor recreation activity as planned.

15% of respondents with an impairment encountered a significant difficulty/ hazard that was not expected on their most recent outdoor activity.

- (ORAS, 2024)

“ Autistic people often need as much information as possible about a new activity or environment to prepare for the new experience, and it can be less stressful to give up on the idea of a new experience if you can't find enough information on exactly what the experience will be like. ”

- Autism NZ

-
11. Corazon et al., (2017) I Would Really like to Visit the Forest, but it is Just Too Difficult: A Qualitative Study on Mobility Disability and Green Spaces. <https://sjdr.se/articles/10.16993/sjdr.50>
 12. Department of Conservation (2017) Understanding the needs and aspirations of the disabled and ageing community
 13. Euan's Guide (2021) Access Survey. <https://www.euansguide.com/campaigns/the-access-survey-previous-survey-results/>
 14. Information variables collated from international guidelines, interviews with people with lived experience of disability from Base Insights and the 2024 Outdoor Recreation Accessibility Survey.

Opportunity

Increased information about the accessibility of trails, and outdoor spaces and events, will help increase the participation of people with impairments and others in the outdoors.

“ The more specific the access information, the better — I don’t need everywhere to be accessible, but I need to know the details so that I can make proper decisions. ”

— Euan’s Guide (2021)

Access to prior information that is clear, digitally accessible, accurate and up-to date about outdoor spaces and activities can support people to make informed decisions about where they want to go.¹¹

Solutions

Improving the information about your trail can enhance accessibility, without making any physical changes to the trail.

Trail users should have as much information as possible about the trail, to help with planning and preparation.

The following section describes the trail accessibility information that can support decision making for all trail users, and outlines methods of capturing and sharing trail information.

Important trail attributes

The **top six factors** people with impairments consider when choosing a trail activity. In order of importance, these are:

1. Trail structures (barriers, gates, bridges, steps, fences, ditches)
2. Trail surface
3. Trail gradient
4. Trail camber
5. Trail length
6. Trail width.

- (ORAS, 2024)

At a minimum, these top six trail variables should be provided on signage at the start of a trail and in the general trail information online and in trail brochures. For mountain biking trails, information about turning radius should also be provided.

[Table 1 \(overleaf\)](#) describes these trail factors, and the additional trail information that can help all trail-users to make an informed decision about their trail-based recreation activity.¹⁴

Table 1: Trail information to support decision-making

Information	Description
Finding the trail head/arrival point	<ul style="list-style-type: none"> » How do you get there? » Is public transport available? » Is the road sealed or gravel? <p>A link to the Google Map location can also be useful to include.</p>
Parking	<ul style="list-style-type: none"> » Where do you park? » Are mobility parks available? » What is this distance from the car park to the trail? » Is there a clear path and/or signage to the start of the trail entrance from the car park?.
Amenities at the car park or trail entry point	<ul style="list-style-type: none"> » Are there toilets, seating, or drinking water facilities available at the start of the trail or car park? » Where are they located? What is the access like to these amenities?.
Trail Structures (barriers, gates, bridges, steps)	
Gates/barriers	<ul style="list-style-type: none"> » What does the entry point of the trail look like? » What types of gates and other barriers are on the trail? » Are there bollards at the start of a trail forming a pinch point? » Where are these located on the trail? » What is the clearance width of the barrier or gate structures? » Are there any locks or latches?.
Handrails	<ul style="list-style-type: none"> » Are there any other sections of the trail that have handrails, such as steeper trail sections? » Where are these located?.
Steps and landings	<ul style="list-style-type: none"> » Are there steps on the trail or is it step-free? » If there are steps, where are they located on the trail, how many sets of steps are there? » How long is each set? » Do the steps have handrails provided? » What style of steps are they? (for example, wooden box steps, boardwalk-style steps).
Bridges and boardwalks	<ul style="list-style-type: none"> » Do all water courses have a bridge? » Is there step-free entry to the bridge or boardwalk? » What is the minimum width of the bridge or boardwalk? » What is the surface like? » What is the gradient of the structure?.

Information	Description
Trail design	
Trail surface	<ul style="list-style-type: none"> » What is the trail surface made of? » Is it paved/concrete, loose material, packed/hard packed, or unstable with muddy sections? » Are there obstructions or gaps in the surface to be aware of? (examples include tree roots and exposed rocks, or trail erosion) » Is the trail clearly defined with good contrast in colour or texture to the surrounding environment? » Are there tactile warnings on the trail surface at key points?.
Trail width	<p>Typical and minimum track width should be recorded. Identify where on the trail the minimum points occur.</p> <ul style="list-style-type: none"> » What obstacles contribute to this? (for example, a gap between two trees).
Trail gradient (average and max)	<p>Average gradient across the entire trail (both uphill and downhill) and the steepest section of trail that is longer than 10m. It's useful to know where the max gradient is, and how long this stretch of maximum gradient goes for.</p>
Cross slope/camber (average and max)	<p>The steepness of the trail on horizontal axis. The average cross-slope/camber across the entire trail, and the steepest cross-slope.</p>
Length	<p>Entire trail distance in kilometres/metres, including distance to turn around points and rest stops.</p>
Duration	<p>The estimated time it takes to complete the trail. If trail duration is included, there should be a clear explanation of what this allows for and what it is based on.</p>
Elevation and elevation gain	<p>Starting and total elevation of a trail.</p>
Trail type	<p>Loop trail, two-way, one-directional, in and out, whether it's a downhill/uphill trail or shared-used trail.</p>
Trail navigation and signage	<ul style="list-style-type: none"> » What navigation tools or signage is on the trail? » What markers or landmarks can help with orientation? » What colours are the markers, do they stand out for users with low vision? » Is there tactile and/or braille signage available?.

► Table continued overleaf.

Information	Description
Broader trail considerations	
Seasonal changes	» Are there any seasonal, weather-related impacts on the trail that users should be aware of? (for example, areas prone to flooding in winter, higher river crossings etc.).
Amenities along the trail ¹⁵	<ul style="list-style-type: none"> » Are there any seats or rest stops located along the trail? » Is there any shade at the rest stops? » Are there any accessible toilet facilities along the trail? » Are there any sources of power or drinking water along the trail? » Where on the trail are these facilities located?.
Shade, lighting and weather protection	<ul style="list-style-type: none"> » What shade is available on the trail? » Are there notable exposed areas without any shade or weather protection? » Is there sufficient natural light across the whole trail?. ¹⁶
Trail users	<ul style="list-style-type: none"> » What other users will be on the trail? <p>Consider other riders, walkers, e-bikes, dogs, horses etc.</p>
Sensory trail features ¹⁷	Photos and descriptions of what you can expect to see, hear, smell and touch.
Safety considerations	<p>Highlight potential trail hazards. For example, unguarded drops, cliffs, steep side slopes.</p> <ul style="list-style-type: none"> » What other safety considerations should be communicated? » Is the trail in a tsunami zone? » Is there signage to indicate this?.
Cultural and historical context of the outdoor place	<ul style="list-style-type: none"> » Sights of significance and where these are located — including visual descriptions of any key sights. » How are the sights accessed? » Are they off the main trail?.
Trail highlights and features	<ul style="list-style-type: none"> » What are the highlights and features of the trail? » What can users look out for to have a memorable trail experience?.
Dog friendly	<ul style="list-style-type: none"> » Are dogs allowed on the trail? <p>If pet dogs aren't allowed on trail, make it clear that service dogs are still welcome. Certified service dogs are allowed on conservation land when assisting someone and only need a permit if the area requires one.</p>
Mobile phone service	<ul style="list-style-type: none"> » Is there mobile phone service along the trail? » Are there any parts which are out of reception?.
Land manager details	<ul style="list-style-type: none"> » Who can we contact for more information, if required?.

Hot tip: Start by reviewing your existing information. Does this accurately reflect the accessibility of your trail? Check that promotional trail information isn't misrepresenting the experience. For example, 'an easy scenic route to a stunning lookout point' may include a narrow trail section with steps, and limited signage.

15. Signage, accessible toilets, mobility car parks, potable water supply/drinking water, shelters, seating and tables were the most important services for people with impairments when choosing an outdoor recreation location (ORAS, 2024).
16. For people with low vision, light sensitivity, or challenges with depth perception, having information about the amount of natural light along the trail can be crucial.
17. Example of how to display sensory trail information. <https://www.stwater.co.uk/our-visitor-sites/carsington-water/carsington-sensory-guide/>

▼ **Photo**

Adaptive mountain bike at a pinch point in a trail with boulder.
Credit - #AdaptMTB



Ways to capture and share trail information

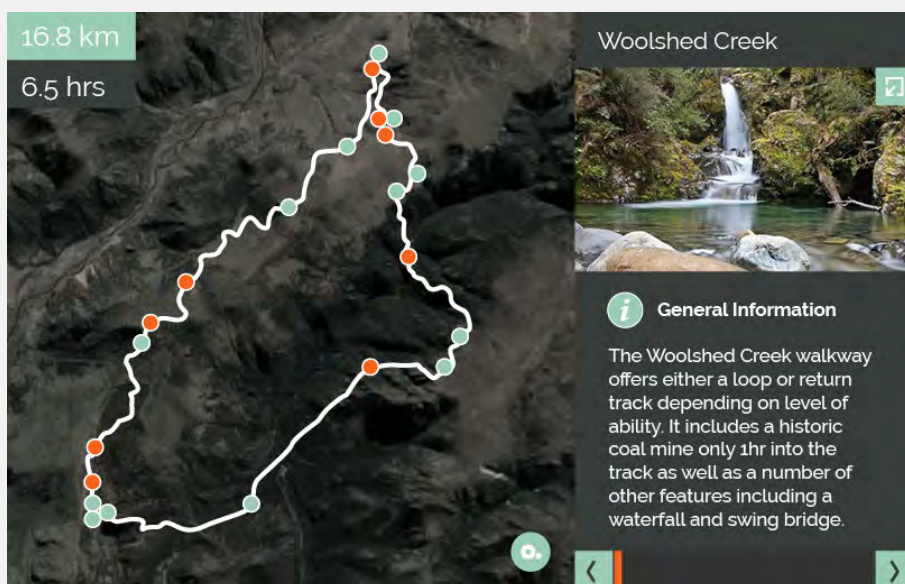
Online tools and maps

Objective online information with supporting photo, video and audio descriptions can enable trail users to make an informed decision about the suitability of a trail experience.

[Accessibel](#) and [#AdaptMTB](#) are two organisations in New Zealand that can help to capture and display online Trail Accessibility Information.

Accessibel

Accessibel uses a mobile application to map the trail information everyone needs to plan their outdoor adventure. Using a combination of photo and detailed location-based text information about accessibility, Accessibel highlights points along a trail journey that impact experiences using an online map.



▲ Woolshed creek map and info
(Accessibel website)



▲ Path photo with accessibility info
(Accessibel website)

Accessibel and AdaptMTB are continuing to improve the information that's available to trail-users through their sites. We encourage trail managers to capture and share information using these methods.

➤ See how [Wellington NZ](#) and [Plan My Walk by Mountain Safety Council](#) have used Accessibel and AdaptMTB to share more detailed trail accessibility information on their sites.

#AdaptMTB

#AdaptMTB provides trail information for adaptive mountain biking experiences by using [voiced-over trail videos](#), detailed text descriptions, and diagrams of key trail variables.

Videos with good audio description of the trail and surrounding areas and amenities can be a great way of sharing information about the accessibility of a site or trail, by visually and audibly demonstrating what a place has to offer.



▲ #AdaptMTB ride through of the 'Trash Panda' track (Woodhill Bike Park)

The video has a descriptive voiceover of the trail with closed captioning as well as overlay graphics indicating distance, speed, location and gradient.

Hot tip: improve the accessibility of your videos by providing text captions and by describing key visual features. Make sure you provide key information in text along with the video, for people who cannot use the captions or audio. Adding NZSL into your videos can also help to relay audio information to Deaf trail users.



AdaptMTB have also prepared an [aMTB Riders Guide](#) to help aMTB riders to understand the New Zealand aMTB trail grading system.

◀ Front cover:

Adaptive mountain bike trail grades riders guide (#AdaptMTB)

Access guides

Developing an accessibility guide with comprehensive information available about your trail and its' amenities, along with nearby facilities and attractions, is another way to share information with trail users.

Access guides can be particularly useful for longer, tourist destination trails. This information can be useful to add in an 'accessibility' tab or section on your website. A QR code on your trail map that links back to the access guide can support users to keep track of any changes.

Check out the comprehensive guide from the [West Coast wilderness trail](#).



▲ **Front cover:**
Accessible Ride Guide (West Coast Wilderness Trail)

➤ Check out '[Visit England](#)' for more information on accessibility guides.

“ As a person with disability from motor neurone disease, riding New Zealand's scenic trails with friends and family is important to my wellbeing. Riding a three-wheeler, my ideal is a track that is always at least a metre wide without squeeze bars or narrow bridges or boardwalks. However, I know that is not always possible, and having information that helps me work out the sections I can do, and what to avoid makes a big difference to me. The accessible guide for the West Coast Wilderness Trail helped me plan my riding with measurements and photos particularly useful. An accessible guide also makes me feel welcome, that my needs have been considered. That's part of why I've ridden parts of it a few times now. It's a beautiful trail that makes me very happy. ”

— [Natalie Gauld](#)



► **Photo**
Wheelchair user on
Whakarewarewa Forest
Loop Great Ride.

Considerations when preparing trail information

Allow visitors to make their own decision

Avoid information that doesn't allow people to make their own decision, or that assumes people's ability. Descriptions such as 'not suitable for wheelchairs' do not consider the range of abilities of wheelchair users, or the differences in technologies. Avoid labeling trails or amenities as 'accessible' as it can have different meanings for different users.

Community input and feedback is essential

- » Any solutions must have the input and feedback from people with a lived experience of disability, to ensure its meeting their diverse needs and is relevant for your local community and trails.
- » Reviews from other people with lived experience of disability are trusted as being useful, often because they are more up to date, and are a credible peer review. ¹¹

Information should be digitally accessible and up to date

- » Make sure the information is kept up to date with any changes to your trail.

Hot tip: displaying dates of when the information was last reviewed and updated can help build trust in the information.

- » **Only 39%** of respondents agreed 'totally' or 'a lot' that they were able to do all their own research to find an outdoor recreation location.
- (ORAS, 2024)

It's important that information is accessible to everyone, and available in different formats, where necessary. This includes making sure that online information is digitally accessible and can be accessed by people using different digital accessibility tools and with different access needs.

- » Sport New Zealand provides a wide variety of useful [accessibility resources](#) to help with digital and document accessibility, including
 - » [Accessible websites](#)
 - » [Accessible documents](#)
 - » [Accessible marketing and communications](#)
- » Presenting information in different ways helps a variety of access needs.

Photos are useful for people that need to see the trail before going. Video walk/ride throughs can be useful for people to familiarise and orient themselves in advance. Someone with a vision impairment may need descriptive information of an area.

- » Any visual information (such as maps and photos) must also be accompanied by text-based descriptions. If you are using photos in your online information, add [alt text](#) descriptions so they can be interpreted by screen-reader technology.
- » Alternative formats are particularly important for any safety messaging about your outdoor space. Alternative formats support people with different information needs to access the same level of information that is offered to the rest of the community. These formats include:
 - » Large Print
 - » New Zealand sign language
 - » Braille
 - » Easy read
 - » Audio
- » If you'd like to learn more about Digital Accessibility, Aotearoa's experts in digital accessibility, [Access Advisors](#) can help.
- » If you'd like to learn more about alternative formats and how to get your information translated, visit the [MSD website](#). Find out more about these formats in the [interpretation and storytelling signage section](#).

Make sure people know you have accessibility information available

- » Information is only useful if people know about it and have access to it. Your information should be well promoted and easy to find via yours (and others) websites and social media channels.

» **Family, whānau and friends are the most trusted source of information for people with impairments.**
- (ORAS, 2024)

How are you engaging with your local disability communities and whānau networks, to make sure they know where to find your trail accessibility information?

» **Specialist visitor information websites catering for people with their disability are also a trusted source of information.**
- (ORAS, 2024)

Share your trail information with different disability groups and organisations to share with their communities.

Trail signage and information boards

Signage at the start of a trail may be the first and only information trail users have to make an informed decision about their trail activity. It's important that signage is carefully considered, and key details are clearly communicated to all trail users.

Signage was rated as the **most important** service for respondents when choosing an outdoor recreation location.

- (ORAS, 2024)

Important information to include

Trail information signs at the start of any trail should include the following information to support decision-making for all trail users:

1. Any trail structures or obstacles (for example, barriers, gates, bridges, steps)
2. Length of trail, or trail segment
3. Type of trail and permitted users (for example, cycles only, two-way trail, shared use)
4. Trail surface type
5. Typical and maximum trail gradient/running slope
6. Typical and maximum cross slope
7. Typical and minimum trail width
8. Typical and minimum turning radii (particularly important for cycling trails)
9. Any potential hazards to be aware of (such as, exposed edges or drop-offs, low head clearance etc.).



▲ Photo

Example from #AdaptMTB of additional aMTB information added to existing on-site mountain biking trail signage.

Upper and lower case text should be used on all signage. Words in all upper case can be difficult for people to read.

Hot tip: word recognition is increased (and faster) for all users when lower case letter structures are used.

➤ Check out another [example of key trail accessibility information on signage](#), provided by Beneficial Designs in the U.S.

Sign design considerations

The following inclusive design considerations are recommended for all trail and outdoor recreation signage, including temporary signs, for example, for trail closures or rāhui (temporary restricted access).

Language

We support the use of bilingual signage in the outdoors. Providing important information that is clear and concise in both te reo Māori and English, can improve the inclusivity and accessibility of your signage.

Māori and Pacific disabled people would like to see spaces that better incorporate their culture and language. ¹⁸

Hot tip: [Te Taura Whiri i te Reo Māori \(Māori language commission\)](#) have a register of translators on their website. It's important to work alongside your local iwi for any te reo translations.

Signs should be in [plain language](#). Plain language uses simple words and sentence structures to make information more accessible and easier to understand.

Use language that matches the inclusive trail. For example, simply stating 'dogs not allowed' may unintentionally exclude people with service dogs. Being clear that service dogs are welcome acknowledges their rights to be in public spaces, and ensures the message is more inclusive.



◀ **Photo (cropped)**
Example from sign on Mauao, Tauranga City Council

Symbols

Using consistent, universal symbols is a useful way to share key messages with visitors who may not be able to understand or read written text.

However, it is important symbols clearly represent their intended meaning. To avoid any confusion, pictorial and symbol elements on signs should be supported by accompanying text. ¹⁹

This approach is particularly helpful for people with dementia, who may no longer associate symbols with what they represent. For example, gendered people icons are often used to signify a toilet, but the absence of an actual toilet symbol could be confusing for someone who has lost this association. ¹⁶

18. Perry et al., (2021) "Enticing" but Not Necessarily a "Space Designed for Me": Experiences of Urban Park Use by Older Adults with Disability. <https://www.mdpi.com/1660-4601/18/2/552>

19. Paths for All (2019) Dementia and the Outdoors Guidance Note, Dementia Friendly Walking. <https://www.pathsforall.org.uk/resource/dementia-and-the-outdoors-guidance-note>

Font size

The size of the text should be related to the distance it should be read from. If you want key messaging to be seen from the car park, consider the distance. Use the table below to calculate the suggested font size.

Letters should have a minimum height of 15mm.

To be viewed from more than 3m away, text should have a height of 5mm for each metre of viewing distance.

For example, 3m away = minimum height 15mm (approx. 48pt font size). ²⁰

Viewing distance (in metres)	Letter height (based on lower case 'x', in mm)	Approximate font size (pt)
1-3m	15mm	48pt
3-4m	20mm	60pt
4-5m	25mm	80pt
5-6m	30mm	85pt
6-7m	35 mm	100pt
7-8m	40mm	115pt
8-9m	45mm	130pt
10-11m	50mm	142pt

▲ **Table 2:** Suggested letter size and height relative to the viewing distance on a sign.

Font type

Choose a standard sans-serif font typeface.

For example, Arial, Calibri, Aptos.

Avoid writing in all capitals and italics, as these can be difficult to read. A mixture of both capital and lower-case letters that are left-aligned is recommended.

Avoid writing text over photos, patterns or graphics.

Use of colours

Make sure the signage does not blend in with the surrounding environment.

Hot tip: You don't always want your signage to 'clash' with the colours of the natural outdoor space. Adding a neon background colour to a sign is one way to help it stand out. This way, you can keep an outdoors colour for your sign, such as a forest green, but the neon format of the colour will make it more visible to trail-users.

The colour of your written text and symbols should also provide a strong contrast with the background colour of the sign.²¹ Signs with poor colour contrast are more difficult to read for everyone, and can be particularly challenging for older populations, and people with dementia or low vision.¹⁶

The [Monsido colour contrast checker](#) is a free tool to help you check your chosen colours. Input the colour codes of your text (foreground colour) and background colour.

Generally, red and green can be difficult colours for people who are red/green colour blind to read (even on a white background).

Plain white backgrounds can also be difficult for people with dyslexia to concentrate on what they need to read. Consider other lightly coloured backgrounds using the contrast checker above.²²



▲ Design

Mountain bike signage example from Whakarewarewa Forest Loop with good colour contrast.

20. Blind Low Vision NZ (2018) Accessible Signage Guidelines. <https://blindlowvision.org.nz/resources/accessibility-guidelines/accessible-signage-and-spaces/>
21. Colour contrast is the degree of difference between one colour and another on the colour wheel: the more visually different the colours, the greater the contrast. (2018, [Blind Low Vision NZ Accessible Signage Guidelines](#))
22. Learning Differences Aotearoa Trust, Dyslexia Friendly Communication Guide. https://www.dyslexiasupportsouth.org.nz/site/assets/files/1511/dyslexia_friendly_communication_guidelines.pdf

Braille and tactile lettering

- » Accessible signs should include embossed/raised contrast print letters, as well as braille, so more people can read your signs by touch. For detailed guidance on braille and raised lettering check out the [Blind Low Vision signage guidelines](#).
- » For support and more information, email AFPRequests@blindlowvision.org.nz or phone: 0800 24 33 33.

Hot tip: tactile indicators (such as a kickboard) under the sign can help to indicate braille signage is available.

QR codes

- » Adding QR codes to your sign is a useful way to share more information with trail users, if mobile service is available at your site. If QR codes are added to a sign, the [approach](#) to the sign must be accessible.

Hot tip(s): add a QR code to your trail signage that links back to your detailed online trail information or access guide. This keeps trail-users up to date with changes and allows the information to be downloaded to refer to during the trail journey.

- » Add a comment below the QR code: “scan here for detailed trail accessibility information and updates” or “scan here for a downloadable map” so users know what to scan for.
- » Even better, add ‘QR here’ in braille by the code so it can be accessed by a braille reader.

Sign position

Height

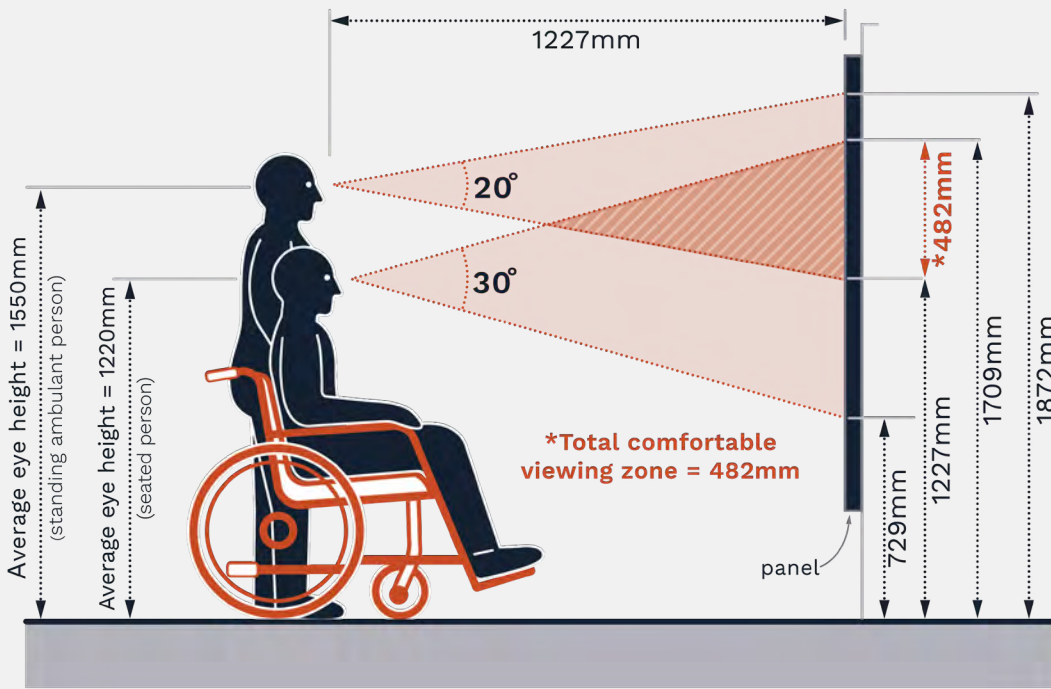
Signs and important messaging (including any temporary signs) must be at a height that can be accessed by people in a seated or standing position. Consider how far away you want your sign to be viewed from:

- » For signs read at a short distance, the centreline of a sign should be between 1200-1600mm from the ground level.
- » For signs designed to be read from a distance, use the following measurements so the information stays within the accessible cone of vision (see Table 3 below).²³

Viewing distance	Lowest point not below	Highest point not above
1000mm	800mm	1850mm
2000mm	700mm	2150mm
3000mm	650mm	2400mm

▲ **Table 3:** Suggested heights of a sign relative to how far away it is being viewed from.

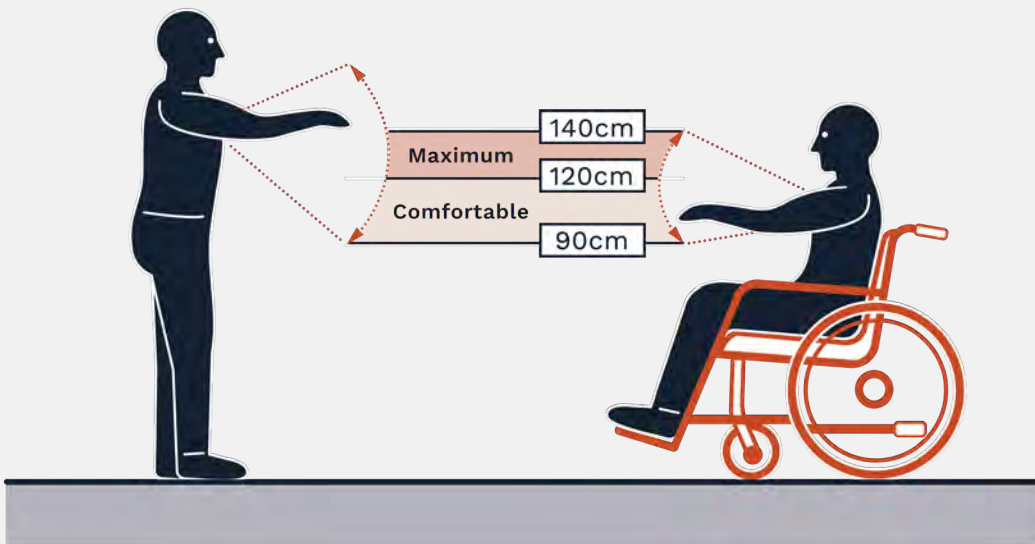
23. Disability Sport Northern Ireland (2021) Accessible Outdoor Places Design Guidelines. <https://www.dsni.co.uk/wp-content/uploads/2021/07/Guide-5-Accessible-Outdoor-Places-Design-Guidelines.pdf>



Hot tips: if you're using braille and tactile lettering, the optimum reading height for most people is 1400mm above the ground, from the top of the upper-case tactile characters.

▲ **Diagram 1:** Signage — accessible cone of vision (zones for common viewing)

Modified from: National Endowment for the Arts | Needs Assessment Survey Instrument, produced by National Access Centre, U.S.A.



Hot tips: signs at a height of 900-1200mm from the floor to the bottom line of braille or text are an optimum height for children and wheelchair users.

▲ **Diagram 2:** Signage — reach zones

Modified from: Outdoor Accessibility Guidance – supporting inclusive outdoor access in the UK (Paths for All and Sensory Trust, 2023).

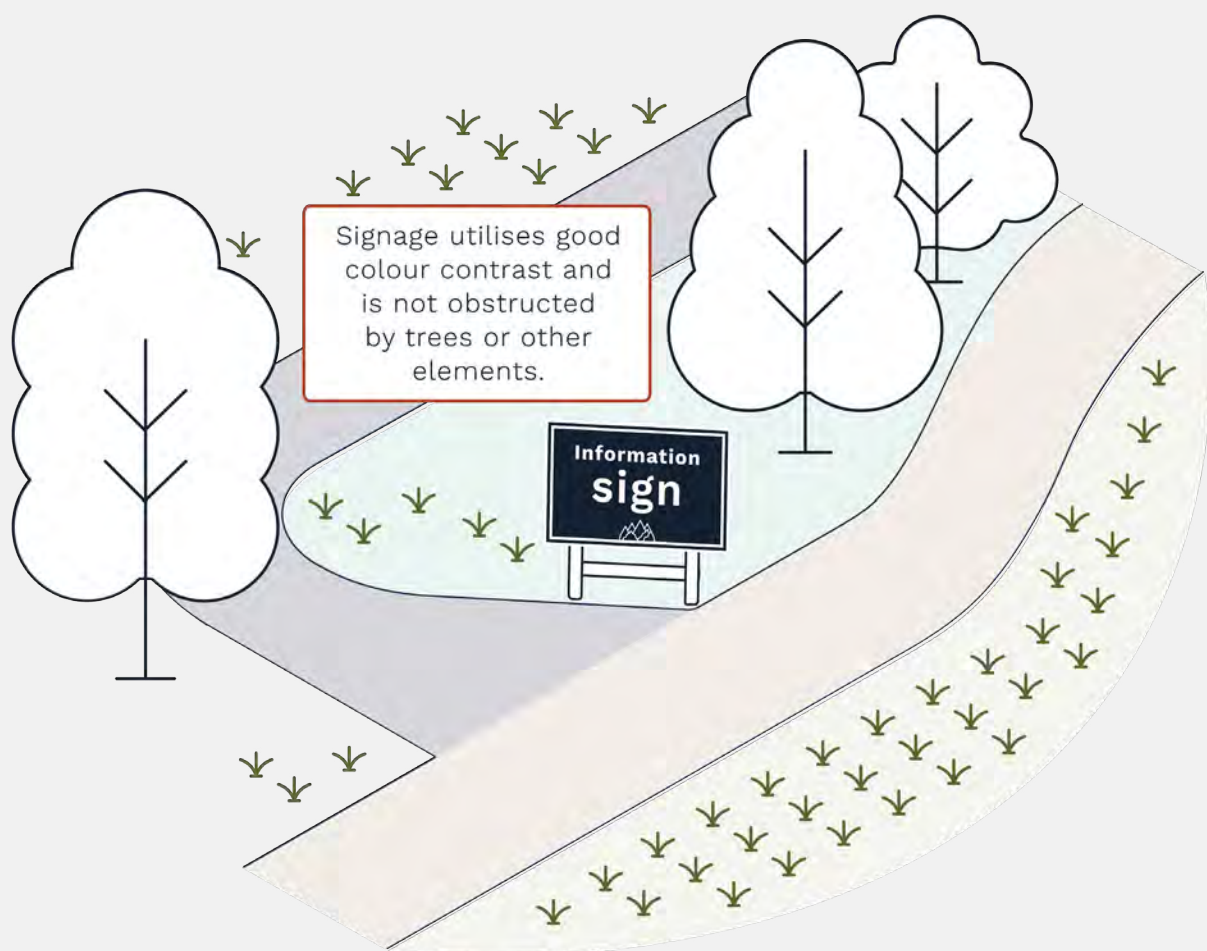
Approach

- » Keep the approach to the sign clear of any obstacles (such as overhanging branches or vegetation).
- » Signs must be located on a firm, level ground surface to allow everyone to get up close to the sign.

Hot tip: avoid planting at the base of signage or nearby where growth will restrict visibility, or the ability to get up close to the sign to read it.

Make sure your sign isn't an obstacle

- » Your sign should not be in the path of travel, and should not restrict the minimum tread width of the trail.
- » Avoid overhead informational signage.
- » Signs should be positioned to the left of a trail.
- » Providing a kick board on the ground beneath the Information display board or sign can alert people with a vision impairment, who are using a cane, that the sign is there.



▲ **Diagram 3:** Approach and clear space around a sign.

Interpretation and storytelling signage

Interpretation and storytelling at place is an important part of outdoor recreation experiences. The design and implementation of your interpretation and storytelling signage must consider how all people can engage and connect with the pūrakau (stories), and information shared.

Whakapapatanga

Understanding the pūrakau and history of a place and its people helps to build relationships with the whenua (land), and atua (deity/gods). Sharing pūrakau in an inclusive and accessible way can enhance connection, understanding and support greater access to outdoor spaces.

It is important to work with your local disability community and whānau hauā to ensure interpretations meet their needs, in a way that is appropriate for the place.

The following guidance aims to help provide more accessible and inclusive interpretation and storytelling.

New Zealand Sign Language

New Zealand Sign Language (NZSL) follows a different sentence structure to written and spoken English. This can make lots of written text or pūrakau (story) about an outdoor place difficult for some Deaf people to understand. Providing more detailed information (such as on information panels and interpretation boards) in NZSL is one way to enhance accessibility for the Deaf community.

Hot tip: Access to this information via a QR code is useful for in-person access. Providing the NZSL video via the website is also helpful for research ahead-of-time. A reminder that mobile reception is required to access NZSL videos – there are some outdoor locations where it may not be possible to do this.

Could you be the next case study for accessible interpretations in the outdoors? We are not aware of any outdoor recreation examples (yet) but for an example of how a museum provides NZSL translations of important cultural and historical information, visit [Te Papa's website](#).

[Deaf Aotearoa](#) can provide advice on making your information accessible to the Deaf community through their [translation team](#).

[Deaf Radio](#) can also support with translation services. They combine NZSL expertise with the latest technology to deliver a range of products and services:

- » [Seeflow](#), an online NZSL translation service to/from English
- » [Infowave](#), a platform for delivering translations in a variety of languages, including NZSL, via text, video or audio to smart devices. Designed for use in physical spaces such as information boards or brochures.

Easy read

Easy Read is an alternative format which combines straightforward language, clear sentence structure and supporting pictures. Easy Read supports people with learning (intellectual) disability and others who find standard written information hard (such as English language learners, people with low levels of literacy) to understand information, make decisions, and participate in communities and spaces.

Easy Read translations are recommended for information about outdoor spaces, and how to engage with these outdoor spaces. This ensures more people can engage with the local pūrako, history, and important information about a place to support their connection and decision-making in the outdoors. Panels and signs should be in [plain language](#).

[People First New Zealand Ngā Tāngata Tuatahi](#) provide an Easy Read translation service. Their [Make It Easy](#) team can advise you about the translation process.

The Department of Conservation have an easy read example of the [Land Safety Code](#).

Audio descriptions

Audio description is narrated commentary for people who are blind or have low vision, providing descriptions of the visual elements of a particular setting. Trained audio describers can develop recorded descriptive audio files. These can be made available to all visitors using a QR code or smartphone apps.

Audio description is recommended for any interpretation panel where you are connecting a story to an outdoor setting or lookout point. For example, the interpretation panel may be describing the history of a pā site (Māori village or defensive settlement) which prompts readers to look at physical features of the pā to connect with key parts of the story. Audio description could describe the visual setting of the pā site or look out point (along with key information on existing signage) to visitors with a vision impairment to enhance their access to the pūrakau.

[Audio Described Aotearoa](#) can provide high quality audio description for a range of outdoor settings, including te reo Māori descriptions.

Technology & interactive interpretations at site

If you're using app-based interpretations at geo-located spots make sure digital accessibility is considered from the outset, ensuring there are appropriate audio-descriptions of key sites and information, and that the technology meets the [web content accessibility guidelines \(WCAG\)](#).

Hot tip: when you're working with external contractors, it's useful to include accessibility as an important part of your design brief to ensure it's considered and implemented from the outset of design.

Braille

Braille can be used on interpretation and signage panels to help communicate important information. Braille has been used overseas on railings in the outdoors to help communicate the view and/or look out point to people who are blind or have low vision.



◀ **Photo**

Braille on railing at lookout point in Italy.
Credit - sourced from Euronews (2010), braille railing in Naples at Castel Sant'Elmo (St Elmo Castle).

Contact [Blind Low Vision NZ](#) for their recommended New Zealand suppliers to support with your Braille interpretations.

Hot tip: People need to know there is inclusive interpretation with alternate formats available, or they may not find them — it is useful to include this information in your prior information online, and tactile cues such as guard rails or guiding ropes to the interpretation board can help people who are blind or have low vision.

Communication boards

Communication Boards (Core boards/ Kupu Atua) are a tool to help non-speaking people to communicate. They contain a range of symbols, pictures and words that represent the most frequently used words of a language. Using Communication Boards in public spaces increases accessibility and inclusivity for people with communication needs.

Adding QR codes that link to a PDF version of the communication board is a useful way to make these boards portable, if mobile service is available at your site. Alternatively, consider having some smaller printed versions available for the user to take with them.

Contact TalkLink Trust on 0800 825 554 or visit the [TalkLink website](#) for ready to order large English versions or discuss custom layout options.

There are a range of ways a communication board can look especially when incorporating Te Reo Māori. It is important to work with your local iwi and tangata whaikaha Māori on the suitability of displayed vocabulary, appropriate for your location and region.

It is recommended to have the printing of the boards in Te reo Māori on one side and in English on the other (or alternatively side by side). This allows displaying cultural and linguistic differences appropriately when selecting the words and designing the boards.

Hot tip: Make your communication boards available to download directly from your online platform, so they can be pre-downloaded prior to arriving at the site.



Enhancing access

A hard, level surface around the sign ensures that people can approach the board easily to point to the icons and read the text.

◀ **Photo**

Example of [communication board in Gisborne Botanical garden](#) with Te reo Māori and English boards side by side.

Wayfinding

Wayfinding is the way we navigate and find our way around a space. It is an important part of any outdoor experience, particularly when using trail networks and wide-open spaces.

Challenge

Wayfinding and navigation in outdoor environments can be a significant barrier for people with impairments in the outdoors, particularly for people with vision or cognitive impairments. This challenge can be heightened for individuals with dementia or an intellectual impairment, who may have an increased risk of getting lost.

Reported challenges with wayfinding include ²⁴:

- » Not being able to find entry/exit points or navigate independently around parks and open outdoor spaces
- » Having no tactile landmarks for wayfinding
- » Unsafe entry points (via car parks with no dedicated pathway)
- » Maps and signage which are inaccessible
- » Complex trail systems
- » Unclear or inconsistent signage
- » No tactile signage or indicators
- » Lack of appropriate navigation data.

Opportunity

We know that better navigation and wayfinding support would significantly improve trail-users' confidence to explore the natural environment. ²¹

The use of appropriate wayfinding tools can help people to feel more secure in the outdoors, and compliments inclusive design. Spaces that are designed to have clear and intuitive circulation paths, as well as visible entrances and exits can support ease of navigation for people with dementia or people with vision, or intellectual impairments.

Solutions

Inclusive wayfinding should use spatial, physical, sensory and environmental clues to help people navigate. As a rule, **more than one sensory cue is recommended to support navigation and wayfinding.** ²⁰

For example, a person who is colour blind, may find it difficult to rely solely on colour-coded maps. However, they could more easily navigate a clearly defined path that includes clear directional signage along the trail.

24. Bandukda et al., (2020) UCL Interaction Centre, Global Disability Innovation Hub. Places: A Framework for Supporting Blind and Partially Sighted People in Outdoor Leisure Activities. https://discovery.ucl.ac.uk/id/eprint/10109857/1/ASSETS20_PLACES.pdf

▼ **Table 4:** Sensory orientation cues.

Type of sensory cues	Examples
Visual	<ul style="list-style-type: none"> » Distinct landmarks (architectural, cultural, historical). » Signs, information panels and maps. » Clearly defined paths and trails. For example, contrasting trail edge colour. » Colour coding on maps and wayfinding signage, colour contrast and use of symbols. » GPS technology.
Audible	<ul style="list-style-type: none"> » Signs with bi-lingual audio description, describing key visual features and sights of significance. » Nearby sounds such as rivers, road traffic to left or right. » Beacons that are compatible with assistive technology. ²⁵ » Use of sensory water features. » A pre-recorded audio video map (available in the online trail information) to guide trail users to key points along a trail outlining key sensory cues.
Scent	<ul style="list-style-type: none"> » Planting and flowers. » Encouraging trail users to smell at various route markers.
Tactile	<ul style="list-style-type: none"> » Embossed tactile signage and Braille where practicable. » Changes in trail surfacing. For example, tactile markers/information paving at key features. » Sensory touch features. For example, tactile maps, sensory panels. » Tapping rails and guiding handrails or rope. » Tactile plantings with encouragement to touch at various markers.

Modified from: Disability Sport Northern Ireland (2021) Accessible Outdoor Places Design Guidelines.

Trail layout and design

- » Site and trail layouts that are intuitive can reduce the need for additional signage, such as using clear path surfaces to define a particular area or trail.
- » Tactile wooden strips, tapping rails/kick boards, or a clear contrast in the surfacing along the edge of a trail can support wayfinding for cane users and people who have low vision.
- » For narrow sections of trail next to a drop-off or fall hazard, both colour contrast and tactile edging along a trail are recommended.

Maps

Clarity and simplicity

A well-designed map should clearly show the trail route, access points, important amenities and features (for example toilets, lookout points, available drinking water). Simpler maps are easier to interpret for everyone, while overly complex maps can be distracting and difficult to follow.

Consistency and familiarity

Use consistent symbols and terminology that match the signage around the place or on-trail. Incorporate internationally recognised symbols to ensure easier understanding for everyone.

Photos can also help relate the map to the actual place and points of interest.

Hot tip: Making your map available for people to download from a website enables people to print or use them in a way that suits them best. Online maps should also have alt text and a written narrative that highlights key landmarks and decision-points, for anyone who cannot see the map.

“ Narratives of a map can help people with vision impairments to create an image of the map in their mind. Once I’ve read the information, I can picture how the trail or outdoor place will be like. I mind map things. ”

— **Angelo Samuels,**
Be. Lab.

Tactile maps

[Touch mapper](#) is an online tool which uses OpenStreetMap to convert a park or trail network into a tactile 3D printed map to support wayfinding for people with low vision. You can either print the map yourself at no charge using a 3D printer, or you can order a 3D print.

Important note:

Simply making something tactile does not guarantee it will be helpful. Be sure to check and test the map design with your local community and experts for review. Just like 2D maps, it’s important to provide a narrative alongside the tactile map to explain key information and landmarks.

25. UNWTO (2021). Accessibility and inclusive tourism development in nature areas: Compendium of best practices. <https://www.e-unwto.org/doi/pdf/10.18111/9789284422777>

Directional signage

Clear and consistent directional signage and markers can improve wayfinding for visitors in the outdoors. This is particularly important for people who are less familiar with the area or trail.

- » Avoid using a lot of waymarking arrows on a single post as this can be confusing.
- » Directional signage and markers should be at any decision-making point, such as at trail intersections.
- » At complex junctions, it can be useful to also include overspill signage (past the decision point) that indicates if trail users have missed a turning or have gone the wrong way.²⁶
- » Provide an example of your directional signage at the start of the trail and in your online information, so users know what markers they need to follow.
- » Way markers at regular intervals along a trail can be a useful information and navigation tool (for example, markers at each 1km indicating how far users have gone if it's a longer trail). These can also be useful navigation points if trail-users need to call for help.
- » A combination of text and symbols enhances accessibility.
- » Yellow can be a useful colour to draw someone's attention to wayfinding markers.
- » Tactile signage is also important. This could include raised/embossed lettering or symbols for key information. For example, having 'turn right to the pinnacles' in raised lettering.

“ I don't know when I'm getting to a decision-making point [along a trail] because everything is blurred for me. It all looks the same. Having a dedicated colour marker to follow for each trail — particularly when there are multiple routes along the same trail — would be helpful to know where to go. If I know I'm looking for a blue marker to stay on the trail, I'll know what to follow. ”

— **Angelo Samuels,**
Be. Lab.

Hot tip: It's valuable to test your signage and wayfinding with people unfamiliar with the trail or outdoor space. Working with your local community is essential to identify the most suitable wayfinding methods for the site and its intended users.

➤ [Learn about the Yellow Trail](#) in the UK which installed vibrant and tactile painted posts, co-designed by people with lived experience of disability.

Technologies

Video and audio navigation information

Providing a video with audio descriptions that explains how to access the start of a trail or key amenities from the car park or drop-off point can be a useful way to orient trail-users. Including key landmarks and tactile cues in the description will enhance accessibility for all users.

Hot tip: using a sign language avatar on trail videos can help enhance sign language accessibility for the Deaf community. Check out the avatars developed by [Kara Technologies](#)

Technologies used overseas to support wayfinding also include: ²³

- » Bluetooth transmitters/beacons in parks and along outdoor trails which help people to detect certain information points through their phone application, such as entry/exit points, intersections on trails etc.
- » GPS-based audio tours, such as [stqryapps](#) which can provide audio content to an app user based on GPS technology. Consider how you might use this technology to provide wayfinding support as well as storytelling information.
- » Navigation applications such as [Blind Explorer](#) which enable land managers to input trail route data to support navigation for people who are blind or have low vision.

26. Bell (2018). Sensing Nature, Designing with Sight Impairment in Mind. <https://sensing-nature.com/news/designing-sight-impairment>

► **Photo**

Two people, one in a wheelchair are together on a gravel bush trail.
(WNZ Regional Trails, Tanes Track, 2024)
Credit - Capture Studios, Wellington, NZ



Inclusive trail design

Now that potential trail users have all the information they need to plan their activity accordingly, the physical trail accessibility must be considered.

Challenge

Trails have traditionally been designed for people without impairments, and do not consider the accessibility needs of people with different impairment types, or the design differences of adaptive trail equipment used to access trails (most significantly the width and turning radius).

As a result, people with impairments and users of adaptive cycles and assistive/mobility equipment often experience a higher degree of difficulty (and consequently a higher degree of risk) on existing trails.

The lack of accessible trails is not only an issue for people with impairments; it also impacts entire whānau or friend groups accompanying them. Trail accessibility affects a wide range of trail-users.⁵³

“Because we could access part of the pathway on Taranaki Maunga, we were able to learn more about the history of the maunga, and the wildlife there - like the opportunity to hold a Pūriri moth for the first time. For some whānau hauā it was also an opportunity to learn more about their own history.”

— **Paparina Burgoyne,**
Senior Coordinator Karanga Maha,
CCS Disability Action.

Opportunity

Making improvements to the accessibility of trails, enhances the participation opportunities for all trail users.

Kaupapa Whai Oranga

Enhancing the accessibility of trail networks can also be an opportunity to reconnect kaumatua (elders) and pakeke (older adults), along with their mātauranga (knowledge), to te taiao (environment). Strong relationships between people and place can enhance wellbeing, and provides opportunities for intergenerational knowledge sharing.

An example of this philosophy in action can be seen in the development of an inclusive trail within the [Vailima Botanical Garden in Samoa](#). This initiative has encouraged elders to return to their local park, enabling them to share their indigenous knowledge about rare native plant species back with both the community and the park. By creating an accessible environment, the project has facilitated a valuable exchange of indigenous knowledge and hononga (connections) between people and the natural world.

Enhancing access can also provide opportunities for whānau hauā to learn about, and from, sites that are significant to them, in their rohe (region).

Choice and variety of experiences

Like many trail users, people with impairments seek a range of recreational trail experiences - from short duration, low-risk activities to those which are longer duration and more challenging, with a higher degree of risk.

Myth

“ Disabled people only want short-trail experiences. ”

The most preferred duration of outdoor recreation experiences is ‘1-3 hours’ (35.6%). 30% prefer 30 minutes- 1 hour and 13% prefer half-day experiences.
- (ORAS, 2024)

Solutions

The following Inclusive Trail Guidelines aim to reduce barriers to participate in trail-based recreation experiences by addressing the key physical trail barriers and technical specifications.

Use the following Inclusive Trail Guidelines when:

- » Designing new trails or upgrading existing ones. The guidelines should be a first port of call for new trails and should be used in areas where the natural environment allows, without significant ecological impact.
- » Reviewing your existing trails to see which trails align, or most closely align to the suggested specifications. Trails that closely align to design guidelines should be prioritised for upgrading.

When ecological impact or the natural environment prevents achieving an inclusive grade, consider:

- » If a section of the trail can meet inclusive grade and clearly communicate this to trail users.
- » Evaluating how the trail or development can be made as inclusive as possible using the guidelines (e.g., creating a step-free trail, or providing suitable adaptive equipment for the site).

For guidelines on **accessible streets and urban cycle facilities**, please see the [NZTA Waka Kotahi Accessible Cycling Infrastructure Design Guidance Note](#).

Upgrading trails within an existing trail network

We know that not every trail in your network will - or should - meet the inclusive trail guidelines. It's important to review which trails should be upgraded or re-designed to be more accessible for all trail-users.

When reviewing existing trail networks, consider the following factors ²⁷ to help prioritise which trails are re-developed to meet the inclusive trail guidelines. This can help to form a short-list of suitable trails, to upgrade and redevelop over time. These factors should also be considered for any new trail.

» Community Input

It's important to work alongside your local community with lived experience of disability to determine which trails should be prioritised for upgrading and re-development in your area – it's best not to assume what trails the community would most like access to.

Hot tip: It can be useful to begin with a short list of trails which are feasible to upgrade, without significantly 're-engineering' the natural site.

» Sites of significance

Which of your trails enable access to important cultural and historical landmarks or pā sites? How can you prioritise trails which provide an opportunity for whānau hauā to access these significant places? ([see 'whakapapatanga' for more info](#)).

➤ [Read about the Te Pae o te Rangi - Coastal pathway extension](#) and how New Plymouth District Council are working with local hapū to extend a popular trail to reconnect tangata whenua to natural resources, heritage, spiritual, traditional and cultural values.

» **Other services and amenities**

What types of facilities are available at, or nearby, your trail sites? (car parking, drinking facilities, toilets etc.) Sites where there are existing (or planned) accessible facilities available should be prioritised.

- ▶ See how Hastings District Council upgraded an existing trail to improve links to the nearby facilities, [watch this video from Sport Hawke’s Bay](#).

» **Proximity to potential users**

Who are you wanting to develop the inclusive trail experience for? Where would most of your trail users be traveling from? Which trails have public or active transport links nearby? Which trails are most accessible via private vehicle?

Learn how the New Plymouth District Council has improved the active transport links to their popular coastal Walkway in [Appendix](#).

» **Popular trails**

Think about the most popular trails in your network, which of these align most closely to the inclusive trail guidance? Your ‘feature’ trails should be a starting point for reviewing against the guidance – it may be that there’s only a couple of ‘pinch points’ that need to be addressed.

» **Variety of experiences**

Consider the range of inclusive trails available in your area and the experiences you’re wanting to create for trail users. Are your inclusive trails currently all low risk, ‘easy’ experiences? Or ‘advanced/expert’? Remembering that people with impairments seek a range of experiences in the outdoors, what gaps do you have in your network to help meet this need?

» **Environmental considerations**

Which of your trails require minimal re-development, - with the least ecological impact – to enable greater access?

27. List Modified from Paths and Recreation Ontario (2014). Pathways to Recreation: learning about Ontario’s Accessibility Standard for the Design of Public Spaces. <https://accessibilitycanada.ca/wp-content/uploads/2016/01/Pathways-to-Recreation.pdf>

Whakapapatanga

Providing whānau hauā with greater access to significant Māori sites through the provision of more inclusive trails is a meaningful way to help foster relationships and connections between atua, spaces, and pūrākau at these important locations.

“Tūhonoa au i te taiao he wā ki te karakia, ki te tūhono i te Atua.”

I connected to the environment, it is a time to invoke and set our intentions, and to connect to our atua (deities).

– Highlight of a participant’s experience in the Outdoor Recreation Accessibility Survey.

Whakapapa can also help inform which sites might be appropriate for the development of inclusive trails. Just as Māori place names have informed our water safety practices²⁸, the names and whakapapa of outdoor spaces can also help inform our inclusive trail practices. For example, a place name that translates to ‘Slippy Mountain’, could indicate the place is likely to have a surface not suitable for an inclusive trail.

Equipment and accessibility supports for trail users

It is important to understand the diverse needs of trail users – including what equipment and supports they may be using - to inform your inclusive trail design.

Advancements in equipment and accessibility supports have significantly increased access to outdoor spaces and trails for people with access needs.

Future outdoor recreation areas must be designed, developed, and maintained with these tools and diverse users in mind, to enhance trail accessibility and inclusivity for all.

Trail-based equipment and supports are ever-evolving. It is important to keep up to date with the technology and equipment used on trails including:

- » why people are using them
- » how this equipment enables access
- » how you can develop spaces to ensure their equitable use on-trail.

28. Phillips (2020). Wai Puna: An Indigenous Model of Māori Water Safety and Health in Aotearoa, New Zealand. <https://scholarworks.bgsu.edu/cgi/viewcontent.cgi?article=1564&context=ijare>

Providing participants with access to specialised adaptive or assistive equipment at an on-site or nearby location can also improve access to trail experiences.

[Te Kaiwhakare - TrailRider provided by Tauranga City Council](#) has provided greater access to Mauao summit. This was previously inaccessible to anyone who was unable to walk up steep terrain. Tauranga City Council website includes an instructional video on how to use the

Trailrider, along with links to the booking forms and user reviews. There are no costs to users to loan the equipment. The TrailRider is available to loan from the nearby Holiday Park who manage the booking process on behalf of the Council.

[Making Trax Foundation and the Gentle Cycling Company](#) in Nelson provide a modern Adaptive e-assist Mountain Bike for rental and tours around the Nelson Tasman area, including the Great Taste Trail.



▲ **Photo**

Group of people going up Mauao with the trail rider, Credit - Tauranga City Council.

Types of equipment and supports

* all examples are not to relative scale



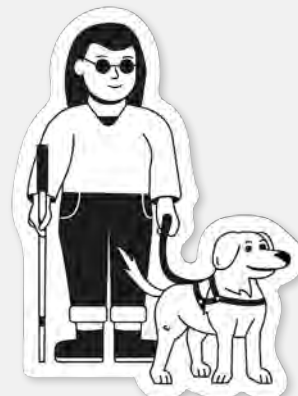
▲ Ambulant person using crutches/
walking poles to aid mobility

1.2m width.



▲ Ambulant person
with sighted guide

1.2m width.



▲ Ambulant person with
guide dog and/or service dog

1.1 m width.



▲ Person using a
wheelchair

0.9m (width),
1.5m (turning circle).



▲ Wheelchair user with
power-assist mobility
attachment

0.9m (width), approx
500mm (additional length).



▲ Wheelchair user with
freewheel attachment

0.9m (width),
approx 500mm (additional length).



▲ Powerchair

0.9m (width), 1.2m (length).



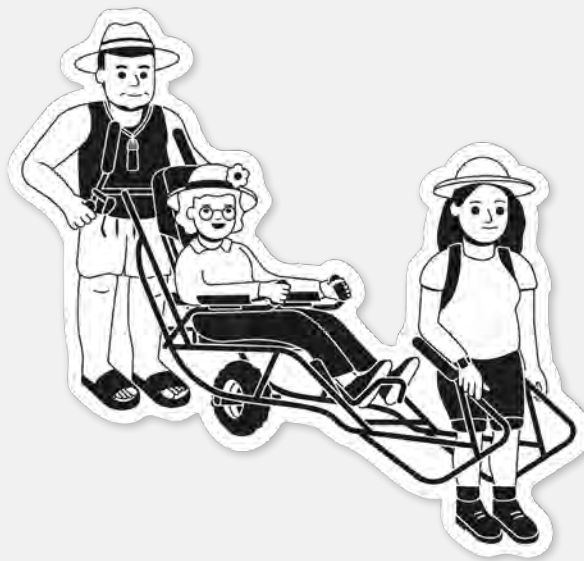
▲ All-terrain wheelchair

0.7m (width), 1.9m (length)
(with push bar size L),
push bar 1 m (height).



▲ Mobility scooter

0.85m (width), 1.6m (length),
3.6m (turning circle).



▲ Trail Rider

0.6m (width), 2.7m (length),
2m (turning circle, with front handles on),
1m (turning circle, with front handles off).



▲ **Off-road wheelchair –
Rig or Grit All-terrain chairs**
0.9m (width), 1.7m (length), 2.3m (height).



▲ **Person riding a horse**
0.5m (width),
3.7m (clear space height).



▲ **Two-wheeled mountain bike**
0.65m (width), 1.8m (length),
2.2m (eye height).



▲ **Recumbent cycle**
0.9m (width), 1.6-2m (length),
0.8m (eye height), 3.5m min (turning circle).



▲ **Two deaf people
signing to each other**
1.2m width.



▲ **Person with buggy
(double pushchair)**
1m width.



▲ **Trike**
0.8m (width), 1.8m (length).



▲ **Tandem cycle**
0.65m (width) 2.4m (length),
turning circle - 3.15m (Outer radius),
2.25m inner radius).



▲ **Motom**
0.95m (width), 1.42m (length),
0.65m (height).

Adaptive mountain bike (AMTB)

Up to 1.1m (width), between 1.7m-1.94m (length), 1m (sight line), minimum 3.5m (turning circle).

One-wheel front (Lasher)



Two-wheel front (Bowhead)



Analog mountain bike + trailer attachment

▼ Kids trailer



Kids trailer

0.85m (width), 2.8m (length).

Buggy attachment

0.85m (width), 3.6m (length).

▼ Buggy attachment

(rehab buggy, adult)



Turning circle (both):

2.65m (outer radius), 1.5m (inner radius).



▲ Omeo

0.87m (width), 0.74-0.9m (length), 0.99m (height), off-road kit.



▲ Segway

0.87m (width), 0.5m (length).

When considering inclusive design criteria based on the supports and equipment people may be using on trails, we recommend using Highways England's Cycle design vehicle: an inclusive concept that captures all shapes and sizes of cycles, defined as **2.8m long and 1.2m wide.** ²⁹

Enhancing equestrian access on trails

» For some people with impairments, horses are their primary means to recreate in the outdoors and to access outdoor trails.

- (ORAS, 2024)

- » Yet, equestrian representation or input is often overlooked when exploring public space and trail opportunities. ³⁰
- » Horses can generally access trails and terrain which may otherwise be unsuitable for other mobility devices or adaptive equipment, but they are often restricted access to public trails and outdoor spaces.
- » Increased public land access (trails, beaches, forests and parks) for equestrian activity would significantly enhance the accessibility of trails for people who otherwise cannot engage in outdoor recreation, without the support of the horse.

“ My legs cause me considerable pain and disability, and my horse (more or less) replaces them for long trips. I would like the opportunity to ride alongside friends who are walking / hiking / tramping. I would love to do multiple day trips with friends. ”

– ORAS participant

▼ Photo

Person riding horse on a wide trail with support people.
Credit - New Zealand Riding for the Disabled.



29. Wheels for Wellbeing (2020). A guide to Inclusive Cycling: 4th Edition. https://wheelsforwellbeing.org.uk/wp-content/uploads/2020/12/FC_WfW-Inclusive-Guide_FINAL_V03.pdf

30. Visitor Solutions Ltd, Sport New Zealand, Equestrian Sports New Zealand, New Zealand Pony Club (2023). National Equestrian Facilities Strategy. <https://sportnz.org.nz/media/zkshczth/national-equestrian-facilities-strategy.pdf>

Design considerations

- » Installing mounting blocks in areas where riders may need to mount or dismount, such as at the start of a trail, parking areas, or near gates, can assist riders in getting on or off their horses.
- » Wider trails enable horse riders to be led by another person beside them, if they cannot ride independently.
- » Head clearance of 3.7m recommended.
- » Consider the access points: horses can't cross cattle stops, and gates requiring riders to dismount (like standard farm gates) can be a barrier for some riders.
- » Ensuring adequate shade, hitching rails for tying up horses, and access to drinking water.
- » [Parking provisions](#) for floats and trailers.



◀ **Photo**

Concrete mounting block next to gate.
Credit - Gary Wheaton, Senior Ranger, Battle Hill, Greater Wellington Regional Council



◀ **Photo**

Wooden hitching rail behind park dog, next to wooden fence.
Battle Hill, Greater Wellington Regional Council

Inclusive trail guidelines

The inclusive trail guidelines aim to account for the higher degree of technical difficulty and risk experienced by people with impairments, and people who use adaptive and assistive equipment and technology on trails.

For mountain biking, this means that in some cases, the inclusive trail grades may not align exactly with existing grading numbers. For example, an existing grade 2 mountain biking trail may be an inclusive mountain biking grade 4.

Accommodating the diversity in experiences sought by individuals, while at the same time addressing their crucial accessibility requirements, has been a key consideration for the development of the trail standard.

➤ Check out #AdaptMTB's [Basics of aMTB Accessible trails](#).

Alignment to existing NZ standards

The Inclusive Trail guidelines should be used alongside existing standards, with the aim to be integrated into future trail standards.

To support this, the inclusive trail guidelines have been aligned to the Recreation Aotearoa Mountain Biking Guidelines, The New Zealand Handbook for Tracks and Outdoor Visitor Structures (SN HB 8630:2004), and the Ngā Haerenga New Zealand Cycle Trails Design Guide.

Tables 4 and 5 show how existing trail grades align and overlap with the inclusive trail guidelines. This alignment is based on the experiences of people with a lived experience of disability on the trail.

Shared-use trails

It's recommend land managers maintain shared-use trails to the highest standard of accessibility that's achieved between the pedestrian and mountain biking grades. In most cases, this will be with the aMTB grades, which account for wider turning radii and trail width. However, we recommend land managers use the most accessible trail variables possible between the two grades. For example, width might be most accessible according to the mountain biking grades, while cross-slope variables might be more accessible according to the walking grades.

The [inclusive trail guidelines tables](#) also suggest the modifications to trails built to the current standards to meet the corresponding inclusive trail grade.

For example, if you are using SN HB 8630:2004 to create an "Easy Tramping" experience, the Inclusive Trail guide provides advice on how to meet the "Inclusive Easy Tramping" criteria.

Inclusive trail examples

Inclusive trail case study examples are available in the [Appendix](#).

▼ **Table 5:** Inclusive trail guidelines: mountain biking – alignment with existing standards

NZCT		NZCT 1	NZCT 2	NZCT 3	NZCT 4	NZCT 5
RA MTB grading				RA Grade 3		RA Grade 4
		RA Grade 2				
		RA Grade 1				
DOC cycle track		DOC Grade 1	DOC Grade 2	DOC Grade 3	DOC Grade 4	DOC Grade 5
Track standard SNZHB 8630:2004	SNZHB 8630:2004 Path for PWMD	SNZHB 8630:2004 Short Walks				
Inclusive trail guidelines — aMTB	aMTB Grade 0 - All abilities, Easiest	aMTB Grade 1 - All abilities, More challenging	aMTB Grade 2 - Easy	aMTB Grade 3 - Intermediate	aMTB Grade 4 - Advanced	aMTB Grade 5 - Expert

Link to full table 'Inclusive trail guidelines: mountain biking' in [Appendix](#).

▼ **Table 6:** Inclusive Trail guidelines: pedestrian trails – alignment with existing standards

NZCT		NZCT 1			
RA MTB grading		RA Grade 1			
DOC cycle track		DOC Grade 1			
Track standard SNZHB 8630:2004	SNZHB 8630:2004 Path for PWMD	SNZHB 8630:2004 Short Walks	SNZHB 8630:2004 Walking Tracks	SNZHB 8630:2004 Easy Tramping Track/Great Walk	
Inclusive trail guidelines — pedestrians	A0 All abilities - Easiest	A1 All abilities - More challenging	A2 Inclusive walking trail - Intermediate	A3 Inclusive easy tramping trail great walk - Advanced	

Link to full table 'Inclusive trail guidelines: pedestrian | walking' in [Appendix](#).



▲ **Photo**
#AdptMTB bike with trailer attachment
Credit - #AdaptMTB

▼ **Photo**
WELL Education group
Credit - Recreate



Key trail variables

Trail width/tread width

Trail width refers to the horizontal distance between the usable tread of a trail, usually measured perpendicular to the direction of the trail and line of travel.

Challenge

Narrow trails present challenges for individuals using a sighted guide or service dog, as the space may not accommodate side-by-side walking. When forced to walk single-file, it can be hard for blind and vision impaired trail-users to hear the guide in front sharing important trail information and directions.

Narrow trail widths can also be a significant barrier for people using mobility devices, adaptive mountain bikes (aMTBs), tandem trail bikes, and for a wide range of trail users. Trail width limitations can completely inhibit access and create safety hazards. Especially on shared trails, and if users need to turn around on narrow trails with steep drop-offs or side slopes.

On shared-use trails, narrow trail widths can be a significant source of anxiety for some trail users.

Opportunity

Maintaining wider trail widths enables trail users to participate side-by-side, promoting greater social interaction, accessibility, and safety, while also reducing potential conflicts of trail users (particularly on shared trails).

For example, for people who are blind or have low vision, a wider trail enables both the guide and person with a vision impairment to walk side-by-side, facilitating better communication and guidance. Wider trails also enable people using NZSL to communicate side-by-side.

► **Photo**

Group of people signing to each other on a wide trail, Deaf Wellbeing Society group walk.





◀ **Diagram 4:**
Increasing trail widths.

Modified from: Upper Clutha trails trust. Example of an existing trail width of 500mm, to be cut and filled to 1200mm.

Solution

Develop trails to be as wide as practically possible, considering environmental and ecological impacts, and evaluate where it is practically possible to increase the width of your trails to enhance accessibility.

While recognising that wider trails may not always be feasible, especially in environmentally sensitive areas, strive to maintain a minimum width of 1000mm.

Trails that are two-directional and shared use must allow safe passing of trail users, minimum of 2000mm recommended for two-directional trails, wider for shared use trails (3000mm +).

Ensure signage, rest stops, and seating do not limit the minimum clear trail width.

Sight-lines and corridor widths

Sight-lines refer to the unobstructed line of sight along a trail, which allows users to see ahead and anticipate upcoming terrain or obstacles.

Corridor widths are the horizontal space available for movement along a trail. This includes the width of the trail itself and any additional space needed for safe passage and manoeuvring.

► **Diagram 5:** (overleaf)
Corridor widths — recommended clearances.

Modified from: Disability Sport Northern Ireland (2021) Accessible Outdoor Places Design Guidelines.

Challenge

Limited sightlines and narrow corridor widths can pose significant challenges for trail users with mobility devices, adaptive equipment, and people requiring additional space for safe navigation through a trail. Restricted sightlines can also impact communication, navigation and safety for individuals who require a sighted guide (forcing them to walk behind the guide, rather than side-by-side), or for people needing additional time to respond, change direction or avoid trail instructions and other trail-users.

Opportunity

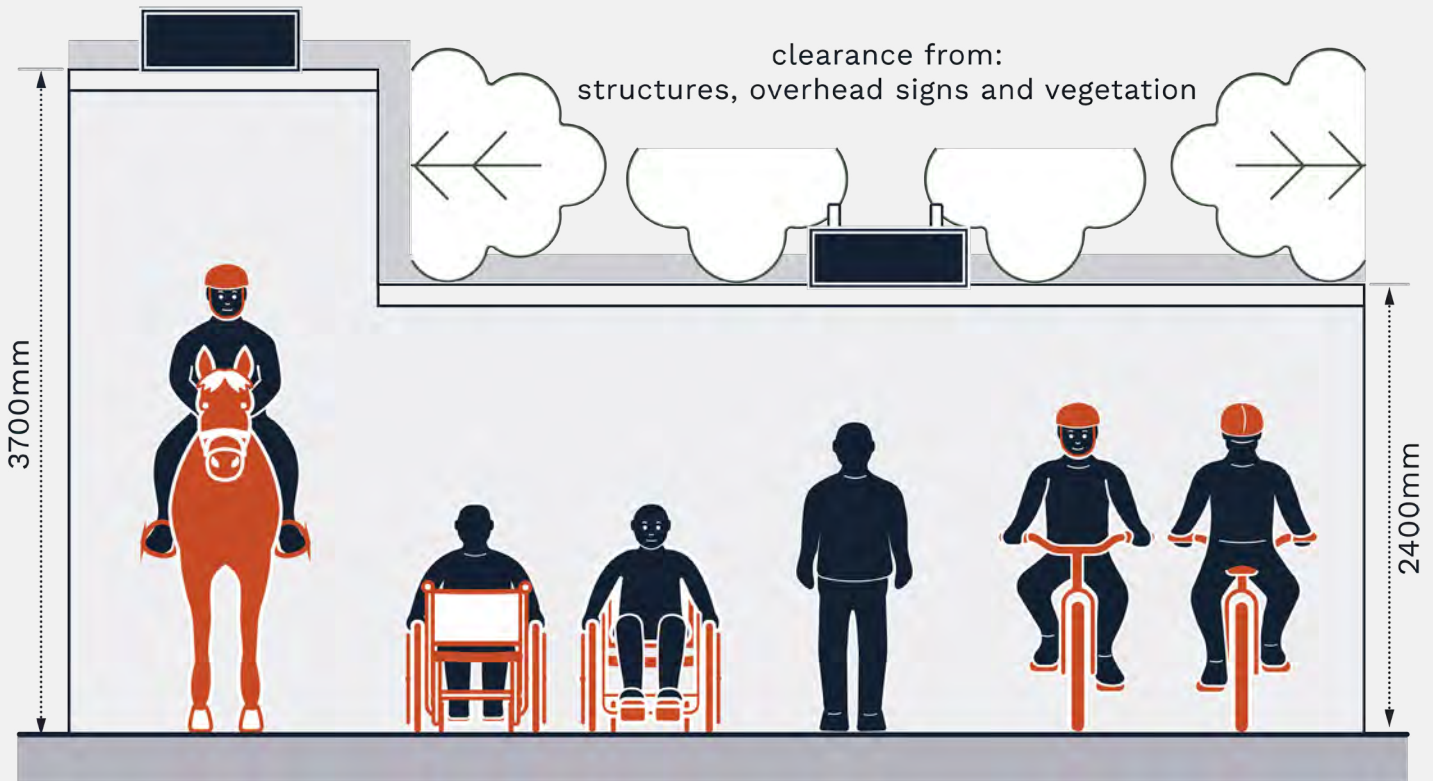
The sightlines of aMTB riders, and users of wheelchairs and adaptive equipment can be much lower (~1m) than ambulant trail users.

Maintaining clear sightlines (for users at differing heights) and wider corridor widths enhances safety, allows for smoother navigation, and promotes inclusivity.

Improved visibility supports users in anticipating and responding to trail conditions and other users, while wider corridors accommodate various mobility aids and trail activity types and promotes social interaction among users.

31. UK Department for Transport (2020) Cycle Infrastructure Design. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf#page=41

32. Recreation Aotearoa (2022) Mountain Bike Trail Design & Construction Guidelines. Figure 7, clearances.



Solution

When designing trails, developing, or maintaining trails:

- » Consider the sightlines on the trail from a seated position to help inform your trail design.
- » Maintain clear sightlines, especially at intersections, corners, and areas with obstacles or trail protrusions.

Where sightlines may be reduced, use appropriate signage or tactile markings to indicate upcoming features or obstacles.

When a trail corridor is limited by a permanent feature (such as, large rocks, signposts, trees etc.) remember people will not be able to use the entire clear width as they will naturally be cautious of walking, pushing or riding right next to a feature. There should be a clear space (150mm-300mm) from the feature to the outer edge of the trail tread. ^{31 32}

Maintaining clear corridor widths, with no protruding vegetation, from the minimum trail width to a clear headroom of 2.4m (3.7m for horse riders), can also support clearer sightlines.

Turning/corner radius

For turns, corners and switch backs on trails, the turning/corner radius is measured from the centre point of the turning circle to the outside of the trail tread.

Mobility devices, aMTBs and tandem bikes require wider turning circles than conventional cycles. For example, the absolute minimum turning radius of a Lasher (type of aMTB) on a flat surface, in full lock is 3.5m.

What do we mean by this?

When turning radius is referenced throughout this guideline, this means the distance from the centre point of the turning circle to the outside of trail tread. Not the tread width of the trail at the apex of the corner.

Using this definition and measurement, it is possible to have a 6m wide turning corner radius, with a trail width that is 2.5m at the apex of the corner.



▲ **Diagram 6:** Turing radius — measuring a wide turning radius.

Modified from: Ngā Haerenga, NZCT cycle trails.

Challenge

Tight turning/corner radii can create significant barriers for people using adaptive or mobility equipment, making it difficult to navigate through the turn. In some cases, users of adaptive equipment or tandem bikes may need to perform a 3-point turn to manoeuvre around a tight corner. This can cause damage to the trail surface, particularly on steep, uphill switchbacks.

When tight corners are combined with a steep drop-off, it poses a serious safety risk for all trail users. In some instances, a turning radius that is too tight may completely prevent people from successfully completing the turn, forcing them to stop or backtrack.

Opportunity

Wider turning radii (3.5m+) enables greater safety and manoeuvrability for a wide range of trail users and can reduce potential trail conflicts and damage to the trail surface.

Solutions

Even if a corner looks to have a wide turning circle, it may not meet the standard required for an adaptive grade. It's important to measure the entire turning circle accurately, and consider how users will ride the corner line, especially when upgrading or designing new corners.



◀ **Diagram 7:** Correctly measuring a turning radius to mark out accessibility enhancements.

Diagram example from Rotorua Lakes Council, Whakarewarewa Forest Loop, shows this in practice. While the corners appeared wide, when a 4m turning radius was measured, it was clear that certain areas needed to be widened to meet an inclusive grade. The corners were upgraded to meet the measured radius.

- ▶ [Watch a video of an adaptive rider](#) successfully navigating the improved corners. Prior to measuring and upgrading the corners, the rider was unable to get around many of the corners without a 3-point turn.

Corner berms on mountain biking trails ³³

- » It can be more challenging for aMTBs to be pedalled easily mid-turn – berm exits are suggested to be lower than the berm entry to aid propulsion around the corner.
- » Berm designs are important to prevent risk of tipping for aMTBs, and design should ensure that the bikes can achieve support on all wheels throughout a banked turn.
- » The steepness of the berm and its design should be determined by the intended user group. For lower grades, in-sloping corners would be more appropriate, whereas higher grades would expect concave and scooped berm designs.
- » When berms are in place, the corner radius is measured from the outer points of the berm. That is, the berm structure is included in the turning circle radius.



▲ Photo

Adaptive mountain biker Finn Richardson going around a corner berm. Credit - Makingtrax

33. Kootenay adaptive sports association (2020) Adaptive Trail Standards.

34. Lepoglavec, Papeš, Lovrić, Raspudić & Nevečerel (2023) Accessibility of Urban Forests and Parks for People with Disabilities in Wheelchairs, Considering the Surface and Longitudinal Slope of the Trails.
<https://www.mdpi.com/2071-1050/15/10/7741>

35. Zeller, Doyle & Snodgrass (2012) USDA Forest Service Accessibility Guidebook for Outdoor Recreation and Trails.
<https://www.fs.usda.gov/sites/default/files/Accessibility-Guide-Book.pdf>

Trail gradient

Trail gradient refers to the slope or incline of a trail, often expressed in degrees, percentage or ratio. It indicates the rate of change in elevation over a certain distance along the trail.

Challenge

Steep trail gradients can present significant challenges for trail users with reduced mobility, including people using mobility devices, adaptive equipment, and people with chronic fatigue or limited fitness capacity.

Research with wheelchair users in outdoor environments tells us that when gradients are steeper than 5.71° (1 in 10), many users will need assistance. ^{34,35}



▲ Poster

Promotional poster for the Te Poaka Adaptive Downhill event

Opportunity

Gentle, undulating gradients along well-designed trail routes can provide more inclusive trail experiences, while still providing a challenging experience for trail users.

Myth

“ Inclusive trails are ‘too boring’ for other trail users. ”

Te Poaka, a ‘flow style’ trail in the Whakarewarewa Forest debunks this myth. As an adaptive grade 3 trail, Te Poaka is not only one of the most popular trails in the forest – attracting **14,000 riders in just an 8-week period** – but was also **ranked 6th in the world** on [Trailforks’ top ten highest rated Mountain Bike Trails in 2023](#).

“ Best trail in the forest, suitable for beginners and still huge fun for experienced riders, makes it worth climbing back up and doing it a few times. ”

— Trailforks review (2023).

In 2023, Te Poaka also made history as the first-ever adaptive mountain biking downhill event in New Zealand.

Solutions

Maintain

Regularly maintaining trails to prevent erosion can help to keep the integrity of the trail gradient over time.

Reduce or replace

Where the natural environment allows, reduce gradients where possible, and provide alternative switchback routes to steep trail sections at an appropriate gradient for the trail grade, as indicated in the [inclusive trail guidance table](#).



▲ **Photo**
Steep path with concrete surface and handrail to enhance accessibility. Credit - Re Nature.

Assist

Where it is not possible to reduce trail gradients, the following considerations are recommended to help trail users to maintain their balance and can provide physical assistance where there are steeper gradients (for longer than 10m).

Handrails

- » Handrails positioned on both sides of a trail with two height options can provide physical assistance to trail users as a fixed rail to pull against, to help maintain balance, or to lean against for a rest at steeper sections.³⁶
- » Handrails also act as a cue for blind people and people with low vision to gauge the extent of the stairs.

Hot tip: providing handrails on both sides of a steeper trail section supports people who may have reduced mobility or strength on one side. For example, a handrail on the left-hand side of the trail may not provide any assistance to someone who cannot use their left hand/arm. Also for guide dog owners, the dog is usually positioned on one side, and remains on that side. Handrails on both sides enables the person to use the handrail when going up or down the stairs.

- » It's important to make sure that any handrails added to existing trails do not reduce the usable width of the trail.
- » Detailed guidance on handrail design is [on page 116](#).

36. Paths for All & Scottish Natural Heratige (2016), Outdoor Access Design Guide <https://www.pathsforall.org.uk/mediaLibrary/other/english/outdoor-access-design-guide.pdf>

“ No handrails on slopes. My family had to hold on to me and help me walk down. But they cannot hold me up when I fall. I fall sometimes on the gravel. I would not if there were rails to hold. ”

— lowlight of a participant’s trip from the Outdoor Recreation Accessibility Survey

Trail surfaces

- » Well-compacted, hard trail surfaces can make it easier for trail users to navigate steeper trail sections. Steep sections with loose material on top can be a slip hazard and can cause wheeled mobility devices to lose traction.

Informal handholds

- » Trees positioned adjacent to steep trail sections in back-country trails can provide physical assistance for trail users to help pull against on steeper sections.

Resting facilities & pull-off zones

- » Regular opportunities to stop and rest, or to allow other trail users to go ahead, are essential for many older people, and people with impairments, particularly at steeper trail sections. Where space allows, resting places 1800mm wide and 2000mm long allow enough space for two wheelchair users to pass each other. Resting stops to break up longer steep sections, or at the end of a steep section are recommended to support greater access.

Downhill versus uphill gradients

Downhill gradients can be more accessible for people with adaptive equipment and mobility devices. However, steep downhill gradients leading into tight turning radii can be an access issue for aMTBs. Uphill gradients can be more difficult for non-powered adaptive equipment and people with impairments to navigate, especially if there is loose material on the trail surface, as wheeled devices can lose traction. For more detailed guidance on uphill and downhill gradient differences, please see Recreation Aotearoa mountain bike guidelines [Recreation Aotearoa mountain bike guidance](#).

Real trail examples

On a section of trail designed by Re.Nature, an Environmental Management Design Consultancy, terrain constraints made it impossible to reduce the steepness of the path. One section, with a gradient of 14 degrees (1 in 4), was upgraded with concrete surfacing and a handrail to reduce the impact of the steep gradient on users. The handrail has been effective in assisting users along this steeper section. Since the path opened, user feedback has highlighted the need for handrails on both sides of the trail to support people with limited strength or mobility on one side.

(refer to the [photo](#) on page 84).

Cross slope/camber

Trail cross slope (or camber) refers to the slope of the trail surface across its width, perpendicular to the direction of travel, indicating the degree of tilt or banking of the trail.

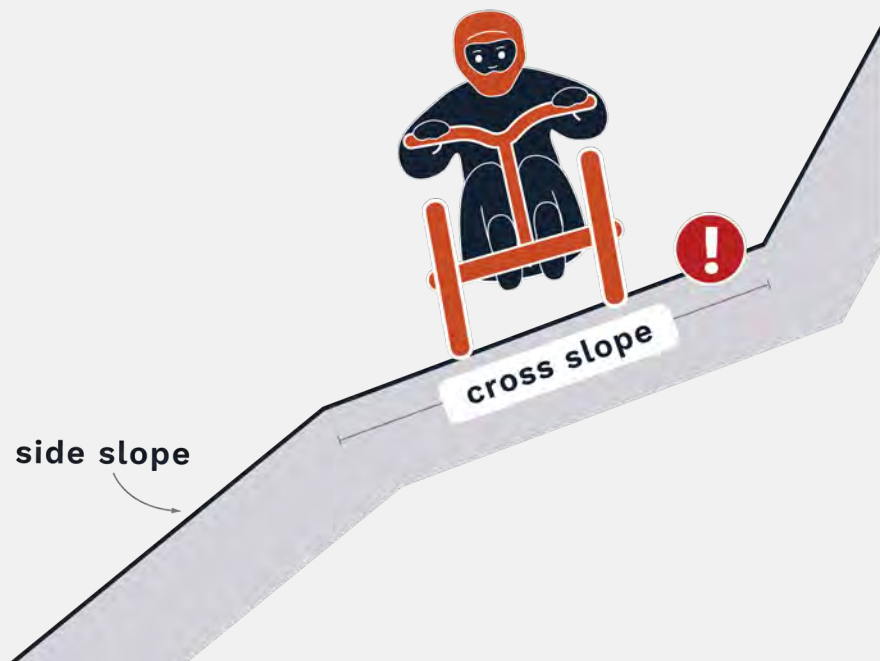
Challenge

Steep cross slope (>5 degrees) can be:

- » The most significant tipping hazard for mobility device users and riders of aMTBs, particularly if there is a steep side slope or fall hazard/high consequence roll off the trail.
- » Fatiguing, unstable, and disorientating for amputees, people who are blind, and for wheelchair users, and users of mobility equipment.

Opportunity

Maintaining a minimal cross slope for trail drainage 1.25-2.85 degrees (3-5%) enhances accessibility and usability for a wider range of trail users. A flat or gently sloping surface reduces the risk of injury through fatigue, tripping, slipping, or losing control, providing a safer, more inclusive trail experience.



◀ **Diagram 8:**
Steep cross slope on-trail.

Modified from: adaptMTB.

Solution

Excluding cambered corner features on mountain bike trails, where possible, reduce trail cross slope to be as shallow as possible, whilst maintaining adequate drainage and water run-off. ²²

Regularly inspect and maintain trails to prevent erosion and preserve the integrity of the cross slope. Address any changes caused by erosion or other factors to ensure the trail remains accessible for all users.

Where it is not possible to reduce cross slope or corner camber, design lines on mountain biking trails which allow adequate speed to travel over the off-camber section. ³⁷

Where there is a significant cross-slope gradient on a pedestrian trail with a steep side slope or drop-off, adding an edge barrier (such boulders, or wooden railing) can enhance safety and accessibility. It's important to make sure the edging does not restrict trail drainage.



▲ Photo

Corner with steep camber leading to a gully built up with boulders and flex MSE bags. Credit: Nigel Morrirt

Real trail examples

When preparing a trail in the Halswell Quarry for Parkrun, Christchurch City Council identified a corner where the track cambered off towards a gully, creating both an access barrier and safety hazard. Particularly for trail-users with vision impairments, as the camber could lead participants towards—and potentially down—the gully. To address this, they used 'flex MSE bags' to build up the outer edge and placed boulders on top, providing greater definition on the trail and reducing the impact of the corner camber.

Enhancing access further

We recommend boxed drain covers that extend the full width of the trail.

37. #AdaptMTB (2022). Basics of aMTB Accessible Trails: Accessibility is for everybody - our whānau and our hapori whānui, <https://www.adaptmtb.nz/inclusive>

Drainage

Adequate trail drainage reduces erosion and helps to maintain the integrity of the trail surface and gradients, improving accessibility. Drainage in this section refers to drainage structures (such as piped or boxed cross drains) and trail design.

Challenge

Poor trail drainage design, implementation and maintenance can significantly impact the accessibility of a trail:

Drainage deflections – grade reversals

- » Grade reversals with short spacing in-between rises in trail gradient don't allow users of adaptive equipment or assistive devices adequate time to prepare or 'line up' for the next rise in grade.
- » Aggressive grade reversals with steep cross slopes and gradients can be a significant tripping or tipping hazard.

Scalloped drain designs

- » Aggressive scalloped drain designs with harsh transitions at either end of the scallop curve can increase the cross-slope and running gradient of the design, making it more challenging for users of adaptive equipment to navigate, and can cause a tipping or tripping hazard for trail users.

Piped cross drains or boxed drain channels

- » Uncovered boxed drains with a clear opening can be a significant tripping hazard for all trail-users. Particularly for people with vision impairments or limited depth perception, and for people using assistive equipment such as canes, walking sticks and/or hiking poles and wheeled mobility devices.
- » Piped or boxed cross drains can also be a tripping hazard if they are not flush with the trail surface. Erosion around the drainage structure can cause a lip/threshold.



▲ **Photo**

Open box drain running through the whole length of the tread width

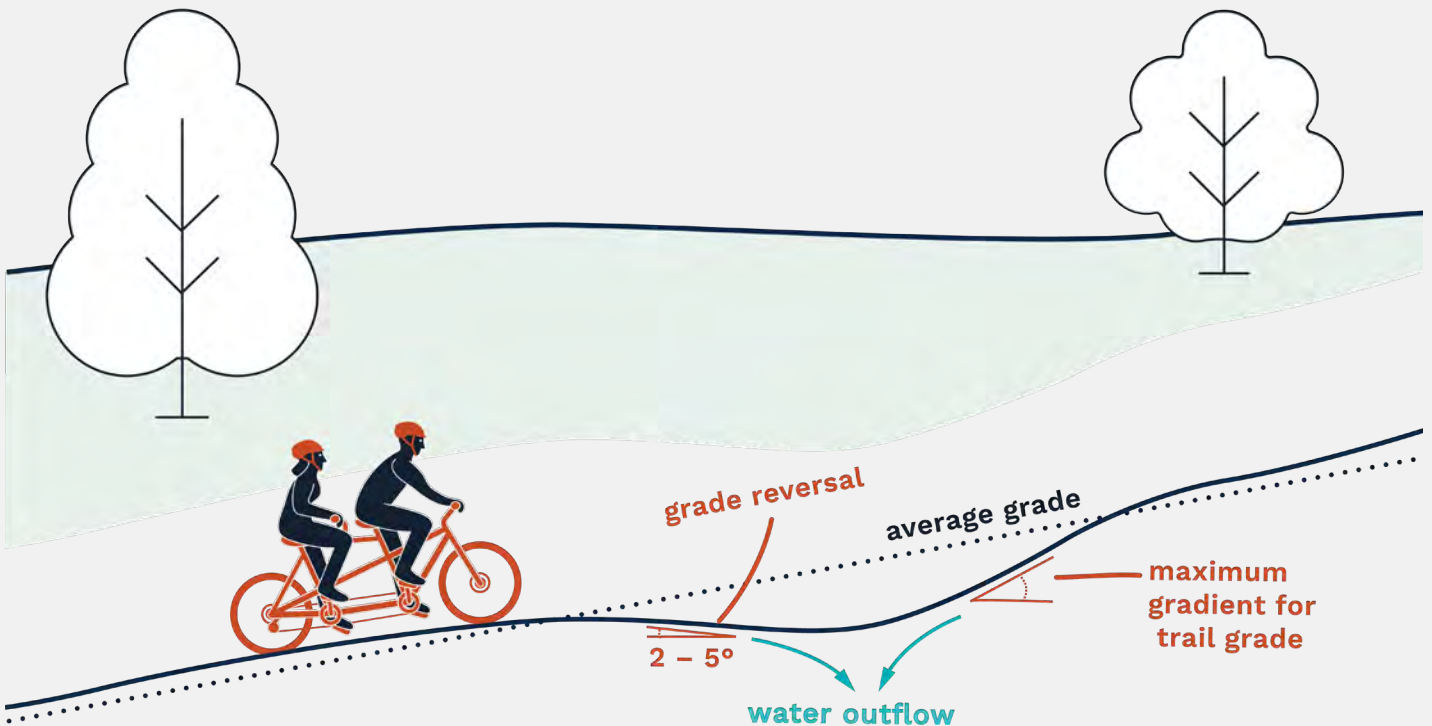
Opportunity

Well-designed trail drainage is a win-win for trail sustainability and accessibility. Good drainage reduces the erosion impacts on trails, and enhances the accessibility of the riding surface, ultimately providing a safer, more accessible trail experience for all trail-users over time.

Solutions

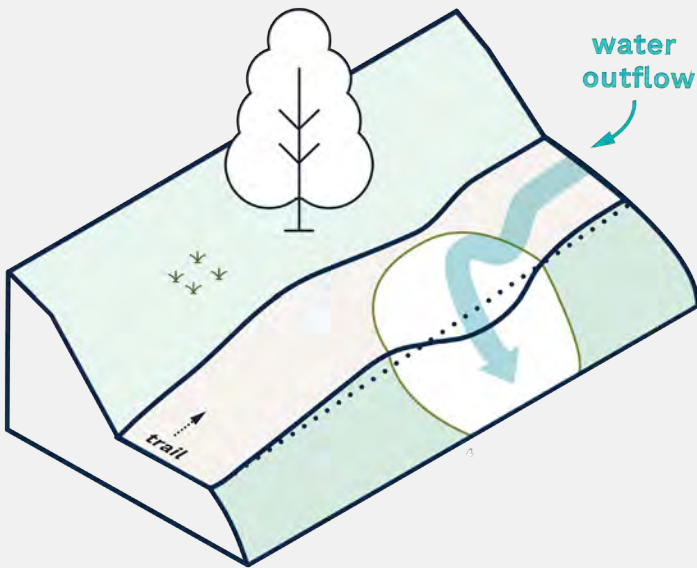
Grade reversals

- » Don't be too aggressive in your drainage design, particularly at the base of the reversed grade/water crossing.
- » In-between the rises in gradient - ensure there is at least a 2.5m spacing (approx. 2 bike lengths)- this ensures the rear wheels and front wheels of aMTBs, and tandem bikes are not being forced in opposing directions simultaneously, allowing for a smoother transition between gradient rises for all trail users and gives riders enough time to 'set up' for the next rise. ³²
- » Reverse grades also help to slow down riders at steep points along a trail, preventing fewer breaking bumps before corners along a trail, which helps to preserve the trail surface. When spaced appropriately and designed well, grade reversals can be a win-win for trail sustainability and accessibility.

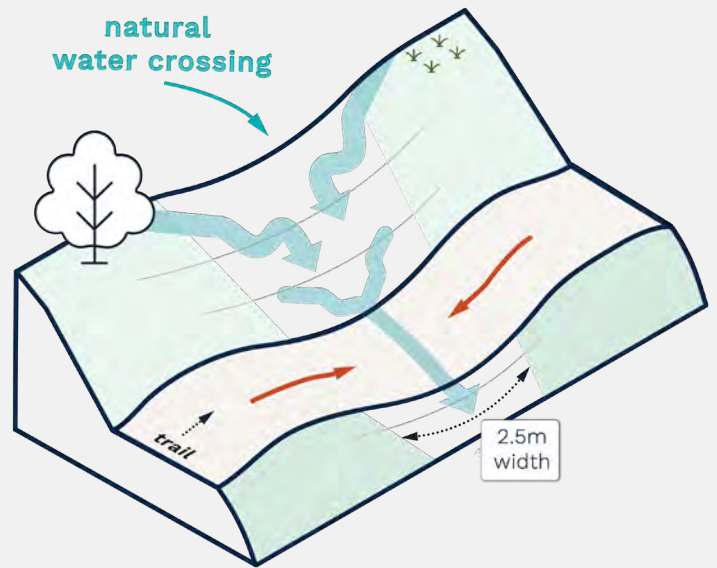


▲ **Diagram 9.1:** Inclusive reverse grade design.

9.1-9.3, 10 modified from: Ngā Haerenga, NZCT & Rotorua Trails Trust.



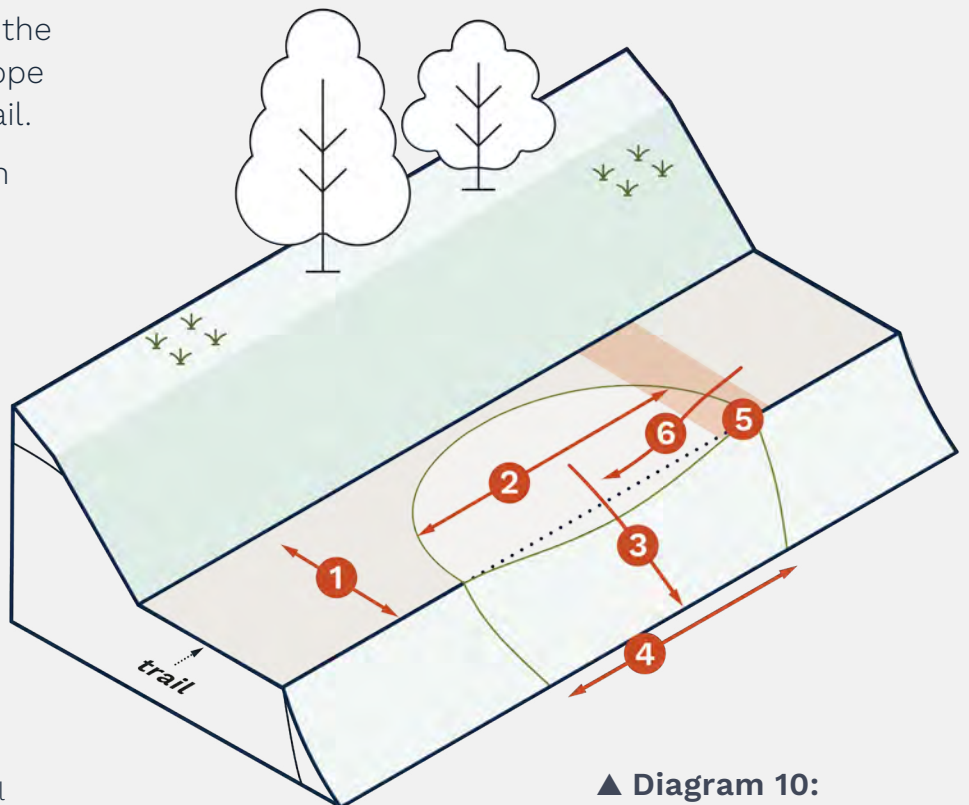
▲ Diagram 9.2: Grade reversal.



▲ Diagram 9.3: Water crossing grade reversal.

Scalloped drainage design

- » Like grade reversals, don't be too aggressive in your drainage design, construct a semi-circular depression at least 2.5m wide at the centre of the trail with a 3 degree out slope that reaches 90% of the trail.
- » Creating a wider depression helps to slow water fall across a trail surface. Water doesn't build up speed and get confined, preventing ruts and erosion from excess water.
- » Ensure there are smooth edges at either end of the scallop to provide a smooth transition.



▲ Diagram 10:
Inclusive scalloped drain design.

1. covers 90% of the trail
2. 2.5m wide at centre of trail
3. 3 degree out slope
4. wide outlet running well off trail
5. smooth transition
6. max gradient of the scollap not steeper than max trail grade

Modified from: Rotorua Trails Trust.

Boxed drains and piped cross drains

- » Avoid boxed drains where possible. If boxed drains are required for adequate trail drainage, ensure they are covered and have a slip-resistant surface that is laid flush with the trail surface.
- » Piped cross drains are preferred, with a minimum cover of 100mm from the top of the pipe to track surface.
- » Boxed drains and piped cross drains require regular maintenance and inspection to ensure erosion of the trail surface either side of the drainage does not cause the drain structure to become a trip hazard.
- » Piped cross drains should be appropriately sized to take the water crossing the trail with a minimum diameter of 225mm.
- » Boxed drains and piped cross drains should have catch pits outside the track width and extend min 300mm past the edge of track to prevent reduction in track width due to erosion.
- » Single boards built into a trail surface to aid drainage should also be avoided. Existing single boards should be replaced with piped cross drains where possible, and regularly maintained to reduce the erosion either side of the board.

Real trail examples

Before being upgraded, the uncovered boxed drains were an access barrier for any wheels used on the trail, and a trip hazard for people with vision impairments. Christchurch City Council have addressed this by installing 1.2m wide culvert covers made from textured, non-slip fibreglass micromesh which can be cut to any length. By cutting the edges of the timber drains, the mesh sits securely with no fixings needed—a cost-effective, durable solution for all trail users.



▲ **Photo**

Boxed drain covered with fibreglass micromesh,
Credit - Christchurch City Council Halswell Quarry.

Trail surfacing

Trail surfacing refers to the material or combination of materials that cover the trail surface. It plays a critical role in trail accessibility, durability, and user experience.

Challenge

Uneven and unstable trail surfaces can:

- » Be difficult for people who are blind or have low vision to navigate, as it can impact their ability to predict changes in the walking terrain. ²³
- » Increase the risk of trips and falls. ¹⁰
- » Be difficult for wheelchair users or users of adaptive equipment to navigate and maintain traction.

Trail surfaces that are loose, uneven, unstable, with significant obstacles, or surface gaps can also be a complete barrier to access for some trail users.

Loose materials on the trail surface can increase potential trip and slip hazards, can be uncomfortable underfoot and can present difficulties when wheeling or horse riding. ¹

Opportunity

Selecting appropriate trail surfacing enhances sustainability, accessibility, usability, and safety for all trail-users. The right surface material can provide a firm, stable, and slip-resistant trail experience, accommodating various mobility aids and ensuring a more enjoyable and inclusive trail environment.

Solution

When choosing a trail surface for inclusive trails, consider the environmental impact, maintenance requirements, and long-term durability of the trail surfacing material.

Natural trail surfaces should be the preferred option, when they can be used and compacted to be firm, stable, obstacle-free, and slip resistant.

Surfacing can add extra build and maintenance costs and the surface will need to be resurfaced or ‘topped up’ over time as part of the ongoing maintenance programme to ensure ongoing accessibility. Ensure this is factored into your trail design budget and maintenance budget.

When natural trail surfacing is not appropriate for your inclusive trail, the following table is an outline of suggested surface types to support your decision-making.

Regardless of material type, all natural track materials (gravel, limestone, pumice, scoria etc.) must be hard packed to create a smooth surface, with limited loose material.

Stabilisers such as [PolyCom Stabilising Aid](#) and [Organic-Lock](#) can help enhance the accessibility of natural trail surfaces, but it’s important to get in touch with the supplier first, to determine what is going to be appropriate for your site.

It is important to note

There will be a variety of surfacing materials available, depending on the region and location of your trail. What works best for the local environment should be guided by your local track builders.

▼ **Table 7:** Surface material types.

Modified from: Disability Hikers (2023). ³⁸

Surface type	Pros	Cons	May be considered for
Concrete	<p>Durability: Concrete is highly durable and can withstand heavy use and various weather conditions, making it a long-lasting option for trails.</p> <p>Firm and stable surface: Concrete meets international accessibility standards for a firm and stable trail surface. This smooth surface can enhance access for all wheel users, providing an even, predictable surface.</p> <p>Low maintenance: Requires minimal maintenance compared to other materials. It does not erode easily and can be easily cleaned.</p> <p>Support for wayfinding: Concrete surfaces can be marked with tactile paving, painted lines, and other wayfinding aids to assist users who benefit from multi-sensory wayfinding support.</p> <p>As a lighter colour, concrete can also be a higher contrast to the surrounding natural environment compared to chip seal and asphalt, supporting wayfinding for people with vision impairments.</p> <p>Reducing impact on surrounding areas: With a clearly defined, wide path of travel, trail users are less likely to go off trail, reducing impact on surrounding areas.</p>	<p>Environmental impact: The production and installation of concrete can have significant environmental impacts, including high energy consumption and carbon emissions.</p> <p>Cost: Initial installation costs for concrete are typically higher than other surfacing materials.</p> <p>Prone to cracking and root damage: Concrete is inflexible and can crack over time due to ground movement or root growth from nearby trees, leading to potential trip hazards and the need for repairs.</p> <p>Water runoff: Impermeable concrete surfaces can contribute to increased water runoff, which may lead to erosion in surrounding areas.</p> <p>Painful for people with chronic pain: For people with chronic pain concrete can be uncomfortable or painful to walk on, especially for long distances if there are no benches or seating supplied.</p> <p>Hot surface: Hot concrete can be a risk to service animals, and it can be dangerous for people who are heat sensitive.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Paths connecting amenities at outdoor recreation locations. » Trails in high-use areas. <p>Design considerations:</p> <ul style="list-style-type: none"> » Ensure regular inspection for cracking and root damage. » Concrete should have a broom or exposed aggregate finish for better grip. » Providing seating options and rest stops with shade, on longer concrete trails can support greater accessibility.

Surface type	Pros	Cons	May be considered for
<p>Chip seal</p>	<p>Cost-effective: Chip seal is generally less expensive to install compared to concrete and asphalt.</p> <p>Support for wayfinding: Chipseal surfaces can be marked with tactile paving, painted lines, and other wayfinding aids to trail users who benefit from multi-sensory wayfinding support.</p> <p>Firm, stable and slip-resistant surface: Although not as smooth as concrete, chip seal is a firm, stable trail surface. The textured surface of chip reduces the risk of slipping, even in wet conditions.</p> <p>Reducing impact on surrounding areas: With a clearly defined, wide path of travel, trail users are less likely to go off trail, reducing impact on surrounding areas.</p>	<p>Environmental Impact: The production and installation of chipseal can have significant environmental impacts, including high energy consumption and carbon emissions.</p> <p>Maintenance: Chip seal requires regular maintenance, including reapplication of the surface treatment and filling of any potholes or surface irregularities that develop over time. Chip seal is generally less long-lasting than concrete and asphalt and may need more frequent repairs and resurfacing.</p> <p>Rougher surface: Compared to asphalt and concrete, chip seal can be a rougher texture and less comfortable for users with wheeled mobility devices, and pushchairs. This can also be harmful to service animal paws.</p> <p>Painful for people with chronic pain: For people with chronic pain in lower limbs, hips, or back chipseal can be uncomfortable or painful to walk on, especially for long distances. If there are no benches or seating supplied, chipseal can be inaccessible for some people who are ambulatory.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Paths connecting amenities at outdoor recreation locations. » Trails in high-use areas. <p>Design considerations:</p> <ul style="list-style-type: none"> » Ensure regular inspection and maintenance for cracking, potholes, loose chip material and root damage. » Install seating options and rest stops, on longer chip-seal trails.

► Table continued overleaf.

38. Disabled Hikers (2022). Accessible trail surface types. <https://www.disabledhikers.com/2022/01/18/accessible-trail-surface-types/>

Surface type	Pros	Cons	May be considered for
<p>Asphalt</p>	<p>Firm and stable surface: Asphalt meets international accessibility standards for a firm and stable trail surface. It provides an even, predictable surface, accessible for wheel-users.</p> <p>Reducing impact on surrounding areas: With a clearly defined, wide path of travel, trail users are less likely to go off trail, reducing impact on surrounding areas.</p> <p>Support for wayfinding: Asphalt surfaces can be marked with tactile paving, painted lines, and other wayfinding aids to assist users with visual impairments, and for trail users benefiting from.</p>	<p>Environmental impact: The production and installation of asphalt has the most significant environmental impacts, including high energy consumption and carbon emissions.</p> <p>Hot surface: As a darker trail surface, Asphalt retains more heat than concrete. It can be one of the hottest trail surfaces in summer, presenting an increased risk to assistance animals and it can be dangerous for people who are heat sensitive.</p> <p>Prone to cracking and root damage: Asphalt can crack over time due to ground movement or root growth from nearby trees, leading to potential trip hazards and the need for costly repairs. Although easier to repair than concrete.</p> <p>Cost: The installation of asphalt trails can involve higher initial costs than chip-seal.</p> <p>Painful for people with chronic pain: For people with chronic pain in lower limbs, hips, or back asphalt can be uncomfortable or painful to walk on, especially for long distances. If there are no benches or seating supplied, asphalt can be inaccessible for some people who are ambulatory.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Paths connecting amenities at outdoor recreation locations. » Trails in high-use areas. <p>Design considerations:</p> <ul style="list-style-type: none"> » Ensure regular inspection for cracking and root damage. » Install seating options and rest stops, on longer asphalt trails.

Surface type	Pros	Cons	May be considered for
<p>Boardwalks</p>	<p>Provide access to environments that would otherwise be inaccessible: Wet soils, sandy areas, and tidal zones are not the most accessible places for anyone, especially people with physical impairments. Boardwalks can help to bridge water features and other inaccessible trail areas.</p> <p>Protects sensitive habitat: Boardwalks allow for good drainage and reduce off-trail use and impact to surrounding areas.</p> <p>Firm and stable surface: Boardwalks provide a firm, stable surfaces with generally good durability.</p>	<p>Can be very uncomfortable for wheelchair users: ‘Shake, rattle, and roll’ is a common experience for wheelchair users on boardwalks. Every transition between boards can be a jolt. The surface of each board is often uneven, creating an overall rattling experience in a chair. Some non-slip products applied to decking planks can increase the rattle effect for users.</p> <p>Individual boards can come loose, warp, or lift: This creates a tripping hazard and can be impossible for some wheelchairs to cross. Loose and warped boards can also disrupt a person’s balance.</p> <p>Surface can be very slippery: Boardwalks can be slippery, which is a major risk for people with mobility related disabilities, hypermobile and painful joints, or problems with balance. One way to address this is to tack anti-slip tread on at least one side.</p> <p>Trail surface at the ends of the boardwalk can erode: The most accessible boardwalk can be rendered inaccessible if the trail surface on either end erodes. If there is more than a 25mm rise from the trail to the boardwalk, it will be very difficult for many wheelchair users to pass and can cause a trip hazard for many trail users.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Paths connecting amenities at outdoor recreation locations. » Trails in high-use areas. » Bridges over water courses or muddy sections of trail. » For ramp structures to reduce trail gradients. <p>Design considerations:</p> <ul style="list-style-type: none"> » It’s important to include kick-rails on the edges of boardwalks, to: <ul style="list-style-type: none"> » Prevent wheels going over the edge » Reduce the risk of falls/injury for people with vision impairments. » Boardwalks must be regularly inspected and maintained for any loose, warped or lifted boards. » Hard woods are less likely to warp/lift or bow. » Inspect and maintain the trail surface at either end of the boardwalk structure, to ensure there is a level rise onto the structure. » Anti-slip surfaces.

Surface type	Pros	Cons	May be considered for
<p>AP20/AP20 all in</p> <p>AP40/AP40 all in</p>	<p>Cost-effective: AP20 and AP40 All-in is initially a more cost-effective option for trail surfacing.</p> <p>Natural appearance: Blends well with natural environments.</p> <p>Good drainage: The granular composition allows for good water drainage, reducing the risk of erosion and water pooling.</p> <p>Firm and stable surface: When well-compacted, AP20/AP20 and AP40/AP40 All-in can provide a firm and stable surface suitable for a range of trail users, including those with mobility devices.</p> <p>Durability: The larger aggregate size (AP40) provides a more durable surface compared to AP20, capable of handling more trail-traffic over time.</p> <p>Environmentally friendly: Often made from locally sourced, natural materials, AP20/AP20 and AP40/AP40 have a significantly reduced environmental impact compared to asphalt, concrete and chipseal.</p>	<p>Maintenance: Requires regular maintenance to keep the surface level and free of potholes, ruts, and loose gravel. May require re-compaction and surfacing ‘top-ups’, especially in high-use areas. Improper installation and heavy rainfall can cause erosion, leading to surface degradation and the need for more frequent maintenance.</p> <p>Loose material: May become loose over time, leading to potential slipping hazards and reduced traction. Large pieces of crushed rock can be painful to walk on and impassable for wheelchairs. Wheels can get stuck in loose or deep gravel, regardless of size.</p> <p>Seasonal sensitivity: AP20/AP20 and AP40/AP40 All-in can vary with weather conditions. It may become muddy and less stable during wet weather or dry and dusty in drought conditions.</p> <p>Limited support for wayfinding: Due to its more natural surface, AP20/AP20 and AP40/AP40 All-in may not support the same level of wayfinding as asphalt, concrete or chip seal which can be important for trail users benefiting from multi-sensory wayfinding support.</p> <p>Consistency: The surface quality can be inconsistent, especially in high-use areas where the material may shift or become uneven over time, impacting user experience and accessibility.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Inclusive walking trail. » Inclusive easy tramping trail. » High-user trail intersections. » Trails where natural surface has high risk of erosion and/or rutting. <p>Design considerations:</p> <ul style="list-style-type: none"> » AP20/AP20 can compact more than AP40/40. » AP20/AP20 suggested as a better final surface for inclusive trails, with AP40/AP40 as a base layer. » Material must be well-compacted in a single layer to ensure a firm, stable surface. » Aggregate should be mixed with fines including clay to form a well-bound surface, free of voids or stones. » Ensure regular inspection and maintenance for erosion, ruts and excess loose material.

Surface type	Pros	Cons	May be considered for
<p>Pumice</p>	<p>Good drainage: The porous nature of pumice allows for good water drainage, reducing the risk of erosion and water pooling.</p> <p>Natural appearance: Blends well with natural environments.</p> <p>Environmentally friendly: A natural material with low environmental impact.</p> <p>Firm and stable surface: Can be hard compacted to provide a firm and stable surface suitable for a range of trail users, including those with wheeled mobility devices.</p> <p>Cost effective: Can be a cost-effective surface material compared to other surface alternatives.</p>	<p>Maintenance: Requires regular maintenance to keep the surface level and free of potholes, ruts, and loose gravel. May require re-compaction and surfacing ‘top-ups’, especially in high-use areas. Improper installation and heavy rainfall can cause erosion, leading to surface degradation and the need for more frequent maintenance.</p> <p>Loose material: May become loose over time, leading to potential slipping hazards and reduced traction.</p> <p>Seasonal sensitivity: Pumice may become dry and dusty in drought conditions.</p> <p>Limited support for Wayfinding: Due to its more natural surface, it may not support the same level of wayfinding as asphalt, concrete or chip seal for trail users benefiting from multi-sensory wayfinding support.</p> <p>Consistency: The surface quality can be inconsistent, especially in high-use areas where the material may shift or become uneven over time, impacting user experience and accessibility.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Inclusive walking trail. » Inclusive easy tramping trail. » High-user trail intersections. » Trails where natural surface has high risk of erosion and/or rutting. <p>Design considerations:</p> <ul style="list-style-type: none"> » Material must be well-compacted in a single layer to ensure a firm, stable surface. » Ensure regular inspection and maintenance for erosion, ruts and excess loose material.

Surface type	Pros	Cons	May be considered for
<p>Scoria</p>	<p>Good drainage: The porous nature of scoria allows for good water drainage, reducing the risk of erosion and water pooling.</p> <p>Natural appearance: Blends well with natural environments.</p> <p>Environmentally Friendly: A natural material with low environmental impact.</p> <p>Firm and stable surface: When well-compacted, scoria can provide a firm and stable surface suitable for a range of trail users, including those with mobility devices.</p>	<p>Maintenance: Requires regular maintenance to keep the surface level and free of potholes, ruts, and loose gravel. May require re-compaction and surfacing ‘top-ups’, especially in high-use areas. Improper installation and heavy rainfall can cause erosion, leading to surface degradation and the need for more frequent maintenance.</p> <p>Loose material: May become loose over time, leading to potential slipping hazards and reduced traction.</p> <p>Limited support for wayfinding: Due to its more natural surface, scoria may not support the same level of wayfinding as asphalt, concrete or chip seal which can be important for trail users benefiting from multi-sensory wayfinding support.</p> <p>Consistency: The surface quality can be inconsistent, especially in high-use areas where the material may shift or become uneven over time, impacting user experience and accessibility.</p>	<p>» Sections of trails where good drainage is required in erosion-prone areas.</p> <p>Design considerations:</p> <p>» Material must be well-compacted to ensure a firm, stable surface.</p> <p>» Ensure regular inspection and maintenance for erosion, ruts and excess loose material.</p>

Surface type	Pros	Cons	May be considered for
<p>Limestone chip</p>	<p>Natural appearance: Blends well with natural environments.</p> <p>Environmentally friendly: A natural material with low environmental impact.</p> <p>Firm and stable surface: When well-compacted, limestone can provide a firm and stable surface suitable for a range of trail users, including those with mobility devices.</p> <p>High colour contrast: In some outdoor environments, the light colour of limestone chip can provide good colour contrast, creating a clearly defined trail which can support people with vision impairments with wayfinding support along a trail. Especially when the surrounding surface is grass.</p>	<p>Maintenance: Requires regular maintenance to keep the surface level and free of potholes, ruts, and loose gravel. May require re-compaction and surfacing ‘top-ups’, especially in high-use areas. Improper installation and heavy rainfall can cause erosion, leading to surface degradation and the need for more frequent maintenance.</p> <p>Loose material: May become loose over time, leading to potential slipping hazards and reduced traction.</p> <p>Seasonal sensitivity: Limestone can vary with weather conditions. It may become muddy and less stable during wet weather or dry and dusty in drought conditions.</p> <p>Consistency: The surface quality can be inconsistent, especially in high-use areas where the material may shift or become uneven over time, impacting user experience and accessibility. If adequate drainage is not considered, limestone can erode quickly with excess water, creating significant ruts in a trail.</p>	<ul style="list-style-type: none"> » #A0 All abilities - easiest. » #A1 All abilities - more challenging. » Paths connecting amenities at outdoor recreation locations. » Trails in high-use areas. <p>Design considerations:</p> <ul style="list-style-type: none"> » Trail design must consider adequate trail drainage. » Material must be well-compacted to ensure a firm, stable surface. » Ensure regular inspection and maintenance for erosion, ruts and excess loose material.

Structures: bridges and boardwalks

To provide a safe and accessible crossing over natural obstacles, it is recommended that water courses on inclusive trails are bridged. Exceptions to this include mountain bike trails (A1-5), where there is shallow water on top of a hard-packed surface.

The following considerations apply to bridged watercourses on inclusive trails, boardwalks and other structures (for example, structures protecting a sensitive environment or providing access to wetlands/wet areas).

Challenge

Bridges and trail structures can be significant access barriers if they are not designed with accessibility in mind from the outset.

Width

Narrow bridges (<1m) can be impassable for users with mobility devices or adaptive equipment.

Approach to structure

Sharp 90 degree turns onto bridge and boardwalk structures can be challenging for users of longer adaptive equipment to turn on to (even with assistance from others) and can be a complete access barrier for people using adaptive equipment.

Surface

Inadequate structure surfaces can pose slip hazards and access barriers for many trail users.

Railings

Railings that are too low or too high can be unsafe for many users, including those with visual impairments.

Erosion at structure edge

If the structure has a level, step-free approach, the trail surface at either end of the structure can erode.

The most accessible bridge or structure can be inaccessible if the trail surface on either end erodes to create a rise from the trail surface to the structure greater than 25mm. This makes it very difficult for many wheelchair users to pass and can cause a trip hazard for many trail users.

Steps

Structures that have steps at the entry or exit point can be a complete access barrier for anyone who is unable to walk up steps. Steps on, or up to, trail structures can present a significant safety hazard if the steps were not expected, particularly if the rest of the trail is step-free.

Real trail stories

“ I attached my power assist to my wheelchair, looked at the sign to see that there was a short 400 metre walk to the viewing platform and set off down the path.

The trail started on a rocky path which then changed to a wooden board walk style... so I continued heading to the viewpoint. After following the path around a couple of corners, I found myself facing a step – something that I couldn't get up and wasn't aware of before this point.

As I couldn't go any further, I needed to head back to the car park. The issue I now had was that the path wasn't wide enough for me to turn around on. At first, I tried to reverse down the path, but with a big drop off both sides and my brakes skidding on the surface of the path, I didn't want to risk it. My only option was to wait for another member of the public to walk by so I could ask for help. ”

— **Peter Donnelly,**
Visitor to New Zealand.

Opportunity

Well-designed structures that are wide, step-free with anti-slip surfacing and appropriate railings can enhance trail accessibility by providing a firm, safe and accessible route of travel across areas where ground is unstable, sensitive, or prone to flooding.

Design considerations

Width

On structures with 1-directional travel, the clear width should be at least 1.2m. For 2-directional travel, at least 2m is recommended. If the level of use is expected to be low, an alternative is to include passing places on a 1.2m wide structure at every 100m, or more frequently if visibility of oncoming trail users is restricted.

Surface

Boardwalk planks should be laid perpendicular to the line of travel, otherwise small wheels, walking sticks, and white canes can get caught between them.

The gap between boards should not be greater than 15mm. Gaps between timber often open further as new timber dries out.

Hot tip: consider the cost over the life cycle of the product alongside its accessibility benefits, not just initial outlay and installation costs.

Non-slip surfaces

- » Chicken wire, or plastic meshing is not recommended. They are cost-effective to install but, over time, the netting or mesh breaks. Broken wire/mesh can cause a trip hazard, and can puncture tyres, and dogs' paws, costing more to replace and repair over time.
- » If you must use plastic mesh — Make sure you have maintenance plan in place. It is useful to check the material has been protected for UV damage.
 - › **Important note:**
Plastic mesh can still be slippery in frost, and in hot temperatures it can be slippery for wheelchair users on steeper boardwalk gradients.
- » Anti-slip strips on boardwalks can be an uncomfortable experience for many people using wheeled devices, equipment or prams. Particularly ones which are screwed in. Stick-on anti-slip strips are preferred.

[Watch to see the impact of anti-slip strips](#) for a power chair user on a boardwalk.

Examples of more accessible non-slip solutions

- » Wooden boards with in-fills:
 - › Aggregate in-fill. For example, [Freedom works walkway](#).
 - › Recycled rubber in-fill. For example, [R-grip](#).
 - › [Keyland gripline](#).
- » Sand epoxy blend
 - › **Important note:** Epoxy can be toxic to the environment – a good environmental plan is essential before application of this product. It can wear fast and may need to be resurfaced more often.
- » Recycled plastic decking products as an alternative material to wooden planking (that don't require additional non-slip surface) such as:
 - › [Enduroplank](#).
 - › [Future post](#) – started out making fence posts, but also provide boards suitable for boardwalks.
 - › [Permadeck](#).
- » Fibreglass Composite, such as [Wagner boardwalks](#) from Australia has been used as a long-lasting, durable alternative to wooden decking products in geothermal areas in Rotorua.
- » Plastic grating such as:
 - › [Reinforced polymer \(FRP/GRP\) grating](#).
 - › [MARS elevated boardwalk](#).

Important note(s):

- » **Install:** make sure the recycled plastic products are installed correctly, joins in the material should be flush, with no lips.
- » Ensure that UV stable plastics are used.
- » It's recommended that recycled plastic products are drilled away from waterways, to prevent any plastic entering the water system.
- » **Maintenance:** Where the material meets the natural trail surface or abutment, the natural trail surface needs to be well-maintained, to ensure there's no lip formed over time from erosion in trail material.
- » Ensure that aluminium oxide non-slip is not used over water as this is toxic to aquatic life. Silica oxide non-slip is preferred.



► **Photo**

Pink colour-contrasting kickboard on boardwalk, Riddiford Gardens.
Credit - Upper Hutt City Council

Kickboards /wheel stops

Regardless of the surface type, boardwalks and bridge structures should have a colour contrasting wooden edging/upstand nominally 100mm high. This acts as an important wheel stop for wheelchairs and pushchairs and can be a useful indicator for people with vision impairments who use a cane. ³⁹

Handrails

provide valuable support for trail users. Specification should comply with the appropriate safety requirements for your structure. If you are adding handrails to existing structures, make sure the rail does not reduce the usable width. Where possible, it's important to allow for views over or through handrails for wheelchair users, children and people of various heights:

- » The height of the top handrail should be between 900-1000mm.
- » The height of the central safety rail should be between 600-750mm to provide support for wheelchair users, children and people of short stature.
- » **Barriers:** provide safety from fall hazards where effective fall height exceeds 1.5m (SNZ HB 8630: 2004). For the use of the safety barriers and guardrails on inclusive trails, refer to the SNZ HB 860:2004 for the trail that most closely aligns to the inclusive grade ([outlined in the inclusive trail guideline tables](#)).
- » Make sure handrails and top rails on barriers can be grasped by trail users – [take a look at the handrail accessibility considerations](#).

Approach

where possible, there should be a straight-line approach onto and off a bridge or boardwalk structure. Where this is not possible, ensure there is an adequate turning circle approach (2000mm for most mobility equipment, 3600mm for recumbent bikes and mobility scooters).

Step-free access

Think about how trail users will get on and off a trail structure:

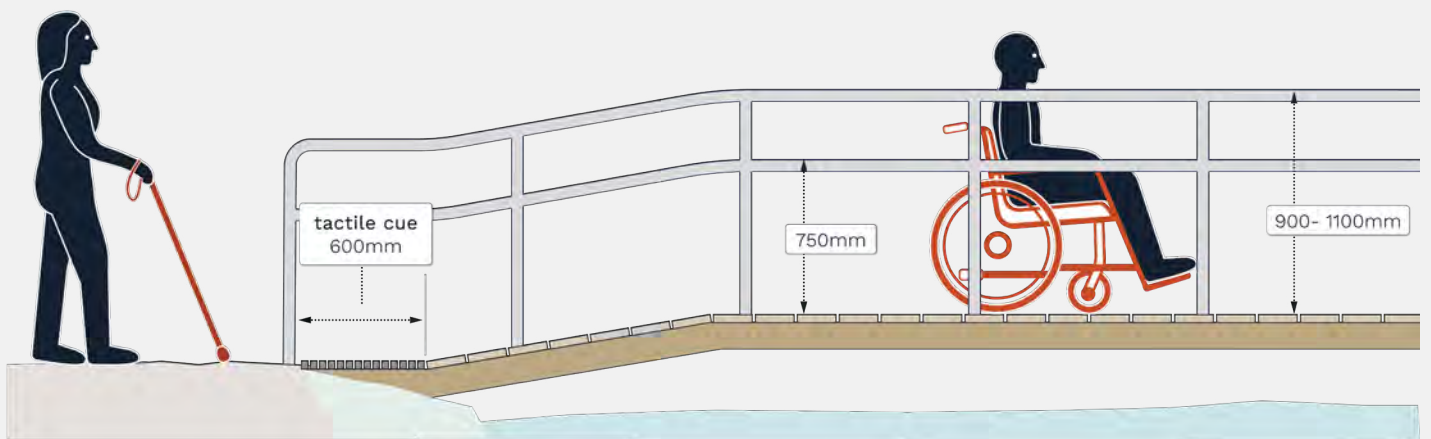
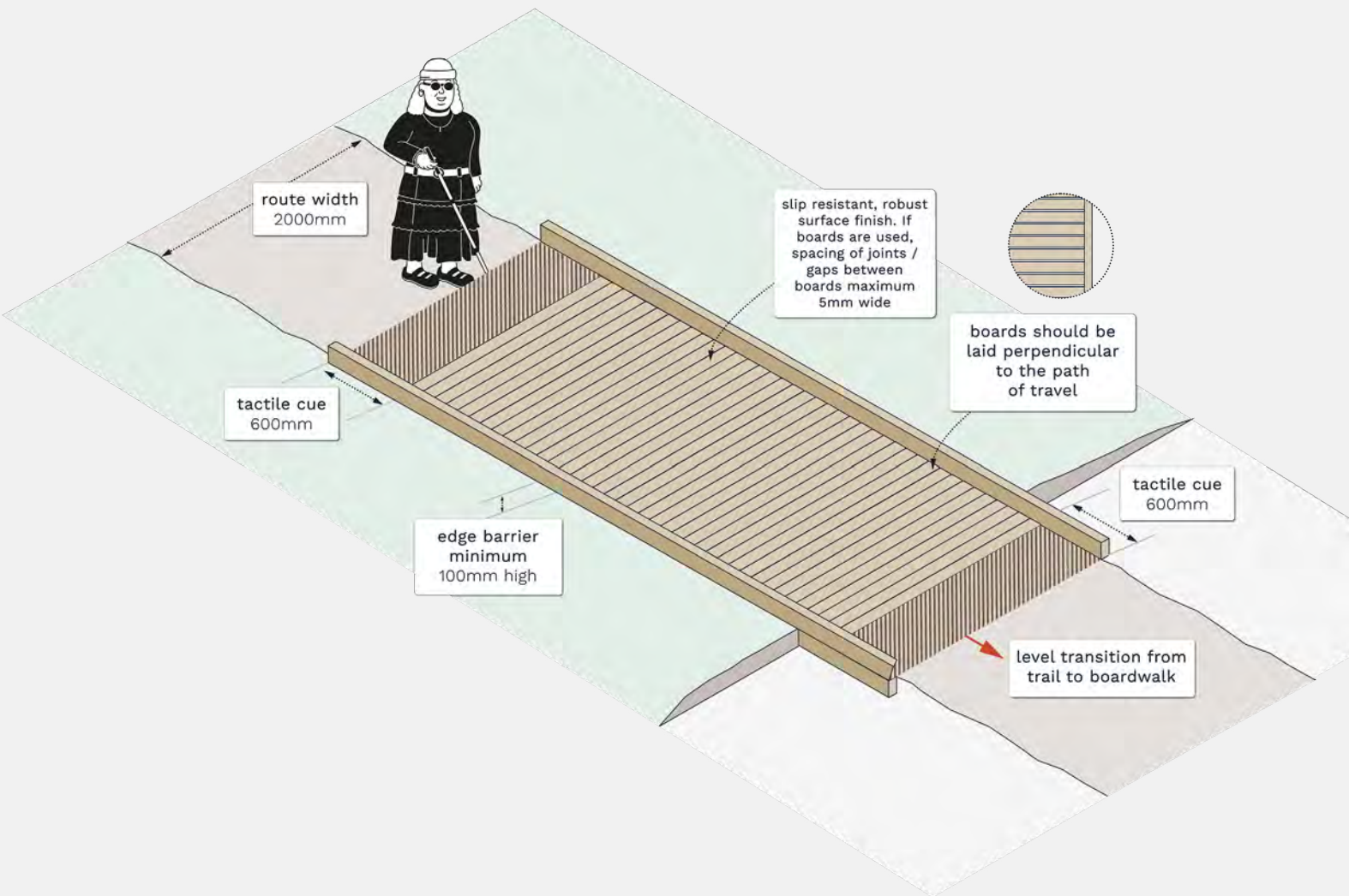
- » Access and egress should be ramped, and not stepped.
- » If it is not possible to have a step-free structure, ensure there is a wide, flat landing area before the stairs, for users to turn around safely. This is important information to communicate to trail users ahead of time, and on signage at site.

Level transition

from the adjoining trail to the boardwalk/structure is important. Where the structure joins a trail, level access is most accessible, but any lip greater than 25mm high at the transition of trail surface should be avoided.

Where a boardwalk is transitioning from a flat surface to a ramp/gradient, tactile, audio and visual cues are recommended for people who are blind or have low vision. Inset [fibreglass micromesh](#) or non-slip product types ([mentioned above](#)), could be used in the outdoors to achieve this. The tactile cue should be at least 600mm wide to ensure it isn't stepped over and missed.

39. Paths for All & Sensory Trust UK (2023) Outdoors Accessibility Guidance, supporting inclusive outdoor access in the UK.
<https://www.pathsforall.org.uk/mediaLibrary/other/english/outdoor-accessibility-guidance>



▲ **Diagram 11:**

Wide, step-free boardwalk and bridge with upstands, tactile cues, and anti-slip surfacing.

Modified from: Disability Sport Northern Ireland (2021) Accessible Outdoor Places Design Guidelines.

A cautionary trail tale

A capital upgrade was completed on a Hamurana Springs two-kilometre walking loop, adding new bridges, track sections, and viewing platforms. All new bridge approaches were level except for one, which had a step.

The disability community contacted the land manager, raising concerns about how this step prevented some people from enjoying the loop in full. In response, a ramp was installed on the bridge, ensuring the track was accessible to everyone. Ensuring accessibility is considered from the outset when upgrading track structures is essential. Small changes and upgrades like this can have a big impact for many trail users.



▲ Photo

New bridge with a stepped approach. ¹²
Credit - Department of Conservation. —



▲ Photo

After photo of bridge upgrade with ramped, step-free approach. Improve access further by adding edge protection and graspable handrails on both sides of the ramp. ¹²
Credit - Department of Conservation. —

Another example

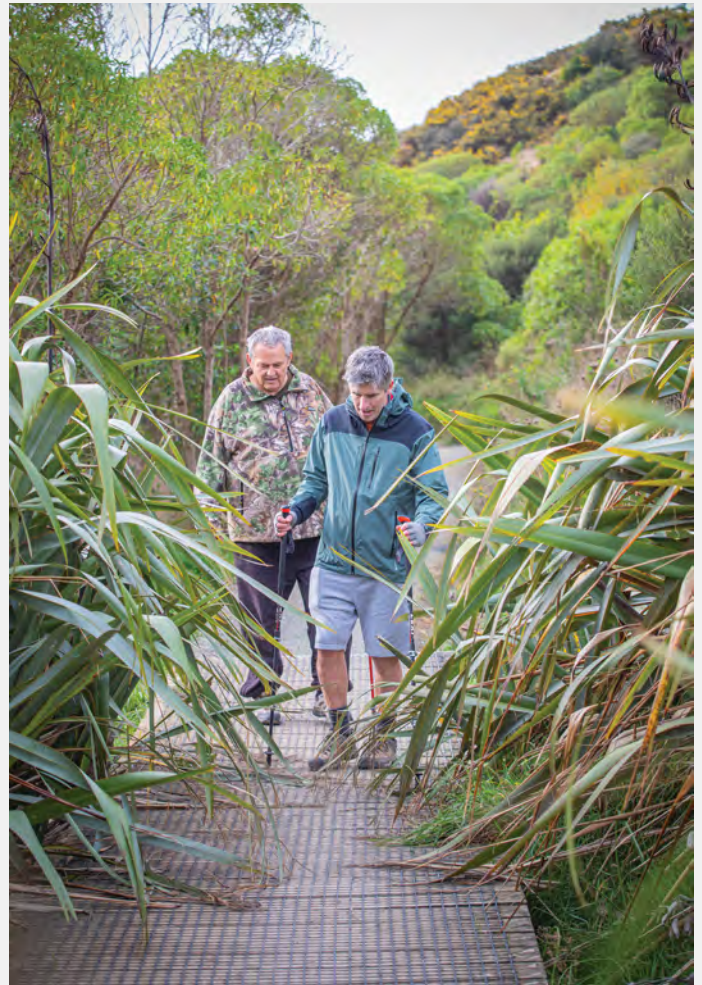
➤ Read about the [Kaitoke Swing Bridge upgrade](#) by Wellington Regional Council.

Trail maintenance

Maintenance is an essential part of the provision of inclusive trail experiences. You may have built the most inclusive, accessible trail according to the trail guidelines, but it needs to stay that way to ensure ongoing inclusive trail experiences for all trail users.

Challenge(s)

- » Over-hanging branches/weeds can be obstructions on the trail, limiting trail size/corridor width, and can be a hazard for people who are blind or have low vision.
- » Long, un-mown grass can be difficult for people who are blind or have low vision to navigate by cane. ²³
- » Grass or vegetation reducing the usable width can cause concerns about hidden hazards, like sharp objects that might puncture tyres, or potential drop-offs obscured by the vegetation.
- » Trail erosion can cause ruts, slips and un-even trail surfacing, which can cause significant hazards for some trail-users, creating trip-hazards, and forcing riders off-trail in some instances.



▲ Photo

Two people walking single file through boardwalk overgrown with harakeke flax (WNZ Regional Trails, Te Onepoto, 2024). Credit - Capture Studios, Wellington, NZ

Real people, real experiences

“ Some of the track is uneven from water damage which always causes anxiety when passing this section. ”

— low light of a participant’s trip from the Outdoor Recreation Accessibility survey.

Opportunity

Regular, scheduled trail and outdoor space maintenance can inadvertently and significantly improve trail accessibility.¹²

Solution

There is less tolerance for poor maintenance on inclusive trails. Ensure you have a plan in place before you dig:

Plan

Develop a trail maintenance plan for your inclusive trail(s) that includes a regular schedule of monitoring processes and maintenance works. A good maintenance plan should address the key challenge areas outlined above. We recommend considering the collaborative and reciprocal maintenance opportunities suggested in [Kaupapa Whai Oranga](#).

Budget

Ensure ongoing maintenance is accounted for within the budgeting process of new and existing trails.

Community engagement

Consider using an official channel (like Snap, Send, Solve or customer service phone lines) for trail users to help report any trail maintenance issues. Encourage users to report problems such as vegetation protruding onto the trail or a fallen tree. This can help with early detection and prompt resolution.

Myth

“It’s going to cost more to maintain an inclusive trail, they have to be maintained to a higher standard.”

Inclusive trails don’t need to be maintained to a higher standard; they just need to be maintained to the standard you’re developing them to. Inclusive trail maintenance = good trail maintenance.

Kaupapa Te Whai Oranga

There are many instances where maintenance practices to enhance trail accessibility can also contribute to Kaupapa Te Whai Oranga – within your maintenance planning and practices, consider how you could provide greater access to these resources and kaupapa for tāngata whaikaha and whānau hauā:

» **Whare pora – weaving:** when clearing a track or amenity site of vegetation that is impeding the walkway or asset, consider how these resources can be made available to local weaving groups, hapū, and marae. Kiekie and neinei, can be particularly hard to source, making it a valued taonga for ringa toi (artists) – if you’re clearing these valuable weaving plants from your site, consider how you can work with local artists to support their access to this taonga. The removal of large

quantities of harakeke, could also be an opportunity to engage whānau hauā into educational practices, connecting land managers, people and te taiao.

- » **Whare whakairo – carving:** if large native trees have fallen, consider what processes or solutions can be implemented for local carvers to access this timber. Kanuka stands can also provide valuable resource for crafting whare Tū taua (houses of weaponry).
- » **Whare Uku – ceramics:** Slips on tracks with rich clay and natural materials can provide resources for ceramic artists. Consider how you can coordinate with a local artist to gain access to this material. Kōkōwai (red ochre) is another highly valued resource which could engage artists within a space.

Steps and short step landings

Challenge

Steps can be a complete access barrier for some trail users. And can be a significant barrier, and/or tripping hazard for many trail users, particularly if steps have:

- » risers that are too high
- » inconsistent risers and goings
- » goings and landings that are too short
- » sharp edges at the nosing of the step
- » risers that overlap the going
- » and eroded surfaces of the going.



▲ Photo

Step up where the riser is too high (should be 180mm). The example indicates a height drop of 750mm to the ground where surface has eroded.

Real trail users

“ The things that I find difficult with steps are the erosion that occurs at the foot of the first step in a series which makes that first step really high, and where the surface of a tread has eroded away so it is below the level of the riser, causing the riser to be a trip hazard. ”

— **Andrew Leslie,**
CE Nuku Ora,
Incomplete Tetraplegic.

Where there is a short flight of steps (3-5), trail users tend to side-step or create new trails around the step structures anyway, causing greater issues with water drainage or pooling if not properly maintained.²⁴

Opportunities

Reducing steps can significantly improve access to outdoor spaces for trail-users, while still maintaining the natural wilderness and sense of adventure.

Steps can be costly to install and maintain. Step-free alternatives can offer more cost effective solutions. Not only are they budget-friendly, but they also enhance accessibility; a win-win solution.

Solutions

Step-free where possible

Where possible, avoid or replace steps (especially if there are only 1-2, these should be avoided). Short, steeper gradients formed from a stable track material could be a suitable replacement.

If removing steps along a trail, make sure you're keeping to the intended trail grade.

If you must have steps

If you have a short section of steps that can't be replaced, don't let this stop you from continuing to create an inclusive trail experience.

For some trail users, steps may not limit access (For example, for people who are blind, or have low vision, or have chronic illnesses etc.), but they do benefit from other inclusive trail design considerations.

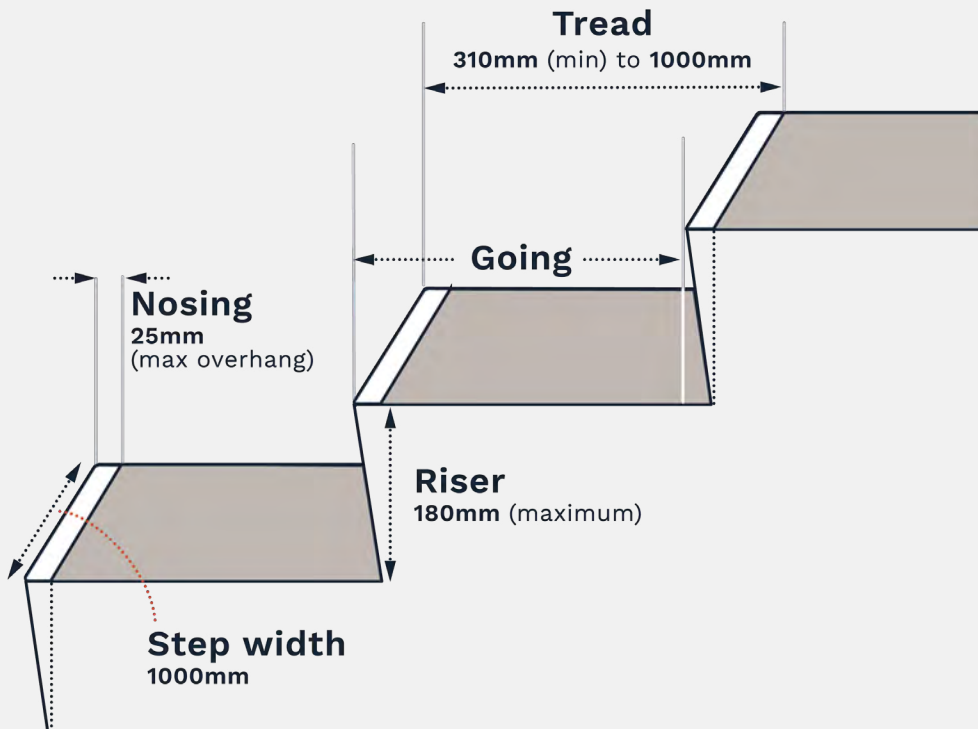
Some steps can also be accessed using adaptive trail equipment (For example, the trail rider) or with the support of others.

If you have no alternative but to use steps on your trail, consider the most accessible design:

Risers and treads

Ensure steps have consistent depths, risers and widths. Even a 5mm variation in riser height can increase trip hazards.

- » Recommended risers specifications: 150-180mm.
- » Deeper tread lengths (goings) of 1000mm enable anyone who is guiding someone up or down the steps, or pulling a buggy or wheelchair, is standing on the same step, rather than one or two higher.
- » Newer off-road style electric wheelchairs can climb steps of this style. ⁴⁰
- » The steps should not overlap the step below, as this can create a significant trip hazard.



◀ **Diagram 12:**
Step nosings, risers
and treads.

Modified from: NZS4121:2001.

Contrasted nosings

Help people with limited vision to identify the edge of individual steps. Nosings should be visible from both the top and bottom approach to any steps. This is particularly important when the stairs have inconsistent risers and treads (such as in the outdoors).

Hot tip: using a different colour on the first and last step can help people to determine how long the flight of steps is. [Safety walk slip-resistant tape](#) can be a cost-effective solution.

Landings

Allow others to pass, and trail users to stop for a rest. They should be provided at the top and bottom of each flight of steps, and to break up longer flights of steps (1500mm long by 1200mm wide). This also provides trail users adequate space to turn around, if they do not want to/cannot go any further.

40. Department of Conservation (2017). Understanding the needs and aspirations of the disabled and aging community.

Handrails

Adding handrails on both sides of the steps provides tactile stability and physical support, allowing trail users to maintain balance, pull for assistance, or lean for a rest.

Hot tip: providing handrails on both sides of steep sections helps people who have less strength or movement on one side. For example, a left-side handrail won't help someone who can't use their left hand or arm. Guide dog owners also benefit, as they can keep the harness in their preferred hand.

- » Providing handrails at two heights can assist wheelchair users, and people of short stature.
 - › The height of the top handrail should be between 900-1000mm.
 - › The height of the middle handrail should be between 600-750mm to provide support for wheelchair users, children and people of short stature.
- » The handrail should follow the pitch of the stairs and extend (300mm) horizontally beyond the start and finish of the steps. The handrail should indicate it's coming to an end with a downturn, return to wall and domed (tactile) button. This alerts blind or low vision trail-users the handrail is ending, and the ground is returning to a flat gradient.
- » The handrails should contrast well to the surrounding environment.
- » Standard 100x50mm rectangular timber can be difficult for people to grasp. Handrails a max 70mm wide or at min. 30 degree angle are easier to grasp.

Whare whakairo – carving

Whakairo provides an opportunity to add layers of haumarutanga (protection), kaitiakitanga (guardianship), by acknowledging the supernatural entities in outdoor spaces - such as taniwha (water creatures, guardians) and poutiriao (spiritual guardians).

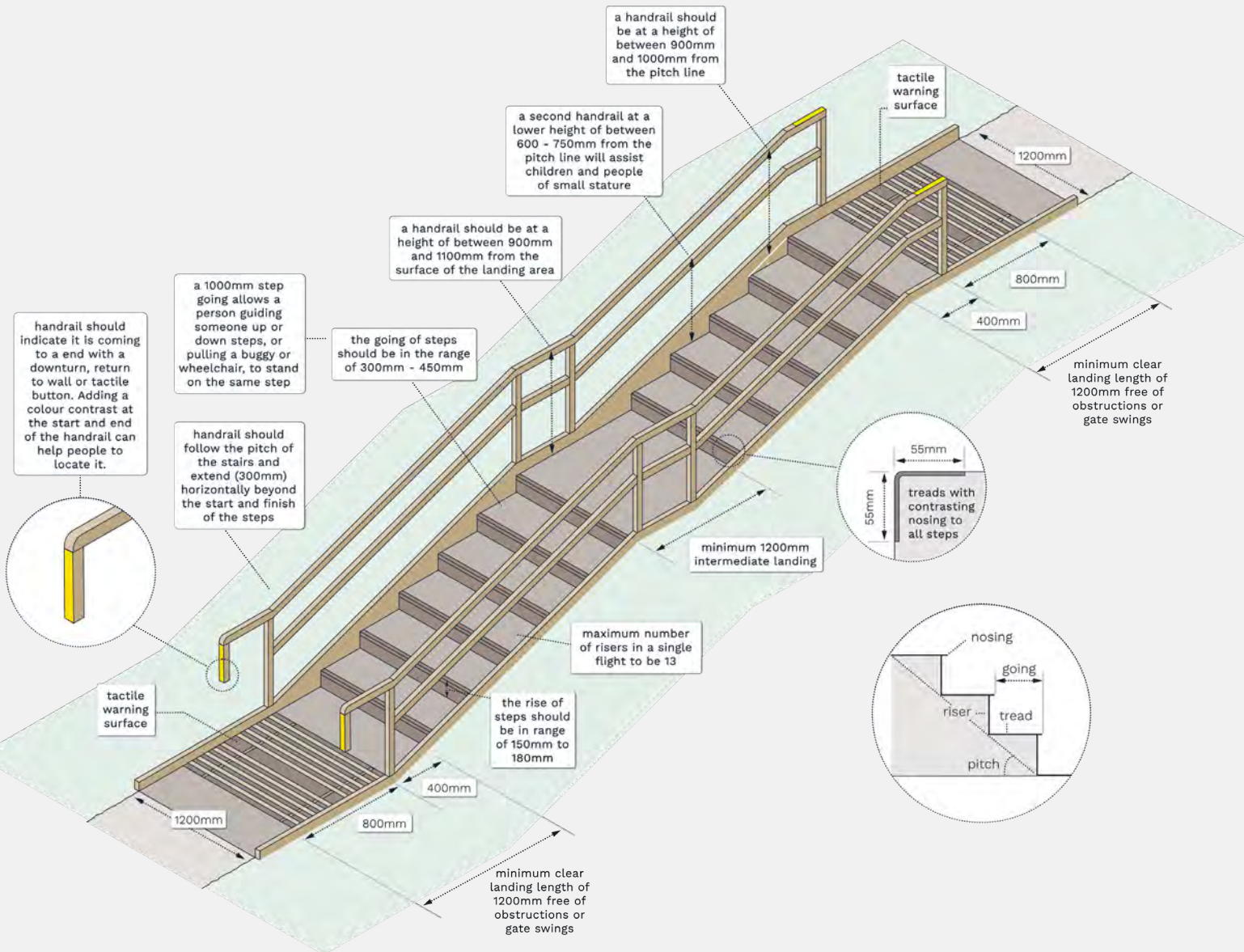
Carved wooden handrails can provide sensory features and textural interest to a trail, while also connecting people with toi Māori. Collaborating with local kaiwhakairo (carvers) to enhance wooden handrails, can also be an opportunity to share local pūrakau (stories) and connection to space and whakapapa.

It's important to work with the appropriate iwi authority and land manager in your area.

Hot tip: add colour contrast to the ends of each handrail and at landings or rest stops on steps to help people locate them.

» Railings can also provide an opportunity for interpretation at significant sites, such as by adding braille. This adds more interest and accessibility to functional infrastructure.

Ensure users are aware of these features by adding tactile markings on the path, detectable with a cane, along with high-visibility signage and prior information.



▲ **Diagram 13:**
Inclusive outdoor step and handrail design.

Modified from: Disability Sport Northern Ireland (2021) Accessible Outdoor Places Design Guidelines.

Tactile trail features

Tactile additions such as braille signs, guide ropes and path markers allow people with vision impairments to enjoy trails, parks and open spaces without assistance.⁴¹ Incorporating these features within your inclusive trail design helps to enhance the trail and outdoor experience for a range of trail users.

Hot tip: where these features are included, ensure they are advertised and detectable, so people know how to find them.

Sensory trail features

Often, formal sensory experiences are used to create a safe, enclosed space within the external environment, such as a sensory garden or sensory loop trail. Some people find these less overwhelming than large open spaces. It is also important to design for the kinesthetic sense, providing opportunities to move freely and safely through te taiao.^{25 22}

Inclusive design enables people to move safely through diverse outdoor spaces, beyond formal sensory gardens. Clearly defined trails, wayfinding tools, and 'sensory nooks' enrich user experiences. These nooks offer places to pause, rest, and engage with te taiao through multi-sensory elements. To create sensory nooks within your outdoor space, consider adding inclusive seating options and native plantings with different textures, smells, and tastes to enhance the sensory experience.

It's important to work with landowners, managers, and the appropriate iwi authority to check for ecosourcing requirements, and what species traditionally come from the area you are considering.

Braille trails

Usually include a guide rope for people to hold and follow along the path with markers for Braille information signs. Some trails have tactile walkways to provide wayfinding support, and audio components, such as guided audio tours or smartphone access.

Hot tip: Sensory nooks are important to include on your trail or space map and in prior information about your site.

Mahi Rongoā

Native plantings which enhance access to mahi rongoā should be considered within the plantings along your inclusive trail and open space networks. As well as enhancing the sensory experiences along your site, working alongside local rongoā practitioners on appropriate plantings for the area can also enhance access to this traditional recreational practice for Māori.

41. American Trails, Braille trail building and renovation. <https://www.americantrails.org/resources/faq-braille-trails>

Gates and barriers at access points

Gates and barrier structures at access points to outdoor spaces and trails include any man-made (locked gate) or maneuvered (boulders) structure, designed to limit a particular behaviour or user.

Important note:

Unless there is a well-documented and informed health and safety concern or issue to address on your trail, barrier removal should be a priority.

Barriers should not be the first solution on new trails if they restrict access for legitimate users.



▲ Photo

Two people walking through, single file, a squeeze gate style barrier on a bush path beside a chained gate (WNZ Regional Trails, Te Onepoto, 2024). Credit - Capture Studios, Wellington, NZ.



▲ **Photo**
example: farm gate locked with chains and padlocks.



▲ **Photo**
example: child's trailer stuck in a squeeze gate style barrier.

Challenge

It is well documented that barrier structures can completely prevent trail access for people with impairments and access needs on an otherwise accessible trail. ⁴²¹

Gates and barrier structures along trails should not be a barrier to access for trail users.

However, preventing motorcycles and other prohibited vehicles from accessing trails is difficult when trying to accommodate possible legitimate trail users. Meeting the needs of people with modified cycles or cycles with child trailers, adaptive equipment, and parents with prams, while not creating hazards for people who are blind or vision impaired, may be a challenge, but requires consideration.

“ Even though I could go for kilometres right to the town basin, there was a fence with a stile and a couple of sections where the bank needs a ramp. I had to wait alone while my family continued on the walk. It is devastating as a mum not to be able to join the family. ”

— lowlight of a participant's trip from the Outdoor Recreation Accessibility Survey



▲ **Photo**
example: segway unable to get through bollards.



▲ **Photo**
example: a bollard with narrow spacing either side positioned at the start of a narrow cattle stop with fencing either side.

Opportunity

Sustrans⁴³ in the UK who manage a significant percentage of the National Cycle Network, are getting rid of barriers altogether. In their [trial of barrier removal in London](#), Sustrans report a 20% increase in the total number of trail users. Survey respondents who used the trails also noticed an increase in accessibility for all users, and a reduction in anti-social behaviour.

Use the [decision-making matrix in the Appendix](#) which includes suggested redesigns, to help you determine which barriers may be suitable for removal or redesign on your trail.

-
42. Sustrans (2023). Disabled Citizens' Inquiry – Improving off-road routes. <https://www.sustrans.org.uk/media/11708/sustrans-disabled-citizens-inquiry-full-report.pdf>
43. Sustrans are the custodian of the UK National Cycle Network of over 12,000 miles of signed paths and routes for walking, wheeling, cycling and exploring outdoors.

Solutions

Consider in the first instance, do you need that barrier or gate? ...Really, though?

Several gate structures have historically been implemented to address motorbike concerns on trails. It's important to **re-consider if historic rationale for barrier use is still valid on your trail.**

Read about a cycle trail in the UK that re-assessed the need for such barriers and implemented a trial period to understand the effect of changing a barrier on [the Sustrans website](#).

(spoiler alert, no negative effects were reported).

Think about the least restrictive access ... ³⁸

Least Restrictive Access is achieved by identifying the least restrictive option for a specific feature, such as a gate or barrier. This is not just about selecting the type of structure, but also how to make and install the chosen structure in the least obstructive way for trail users, to maximise accessibility for as many people as possible. ⁴⁴

44. Sensory Trust & Natural England (2020). All Reasonable Means, least restrictive access to the outdoors. <https://www.sensorytrust.org.uk/resources/guidance/by-all-reasonable-means-least-restrictive-access-guidance>

Least restrictive access in practice

A gap, or no barrier, is less restrictive than the modified squeeze gate (specifications below), which is less restrictive than a traditional squeeze gate. So, when a traditional squeeze gate needs repair or removal, the first option is to remove it entirely. If this is not an option, it is replaced by the modified squeeze gate. The last resort is to replace the traditional squeeze gate.

Modified from: By All Reasonable Means, Least restrictive access to the outdoors, Sensory Trust on behalf of Natural England.

Real trail examples

Western Bay of Plenty District Council replaced narrow piped chicane structures with linking chains that were restricting access to a local reserve and adjoining local path. The structures were replaced with wooden bollards with clear space between them, to enhance access to the reserve, while still restricting car access. Two of the bollards are removeable, allowing maintenance vehicles to access the reserve when needed. Council have received positive feedback from residents, particularly mobility scooter users, who now find it much easier to access the reserve. This outcome is significant given the nearby retirement village - strengthening the connection between the community and the local space. (refer to [photo](#) on page overleaf).



◀ **Photo**

Before: Metal piped chicanes, with a linking chain block entrance to reserve for anyone who isn't walking un-aided.



◀ **Photo**

After: wooden bollards replace previous chicane and chain barrier, opening access to reserve. **Further improve access by** adding colour to the bollards to ensure they contrast to the surrounding environment and are not a trip hazard. Bollards recommended to be at least 1m high.

Other control mechanisms to consider

- » Signage discouraging the use of prohibited vehicles and motorcycles (including information on relevant consequences, such as confiscation of prohibited vehicles and equipment).
- » Partnering with local police and authorities to provide more frequent surveillance of areas identified as problematic with anti-social behaviour.
- » Bluetooth keypads with changeable pin-codes (with clear, readily available guidance on how users obtain a code for access).

Design considerations

Bollards and concrete blocks/ large rocks

- » These mechanisms do not prevent motorcycle access, but do prevent cars.
- » If you are using bollards or concrete blocks to prevent 4-wheeled, or car, access, make sure that there is:
 - › **at least a 1.2m clear width** between adjacent bollards or structures (1.5m spacing is even better)
 - › no linking chain or rope of any kind between bollards
 - › lighting or a reflector band around the top and bottom of the bollard (visible from any direction) and the bollard strongly colour contrasts to the surrounding environment.

Chicane gates, croquet hoops and squeeze gates

- » Can limit access for prams, child bike trailers, larger mobility equipment (such as mobility scooters), and many pieces of adaptive equipment (such as adaptive mountain bikes, recumbent cycles, tandem cycles, trikes), as well as e-bikes and heavier equipment that users must lift or manoeuvre to navigate the chicane or squeeze gate.
- » If there is a grass area or open space around the side of the chicane, squeeze gate or croquet hoop, this will not prevent motorcycle access.
- » If you have identified that you **must** have a croquet hoop, or squeeze gate, traditional specifications have been modified, in consultation with local trail users, to be made more accessible.
[Plans listed in Appendix Diagram 3.](#)

Please note

Although these specifications are more accessible than the traditional squeeze gate and croquet hoop design, **they are not 100% accessible** for all types of mobility devices or adaptive equipment.

Evaluating the absolute necessity of this barrier, including its appropriateness for your type and grade of trail, and its placement on the trail, remain important considerations.

More re-design considerations are available in [Appendix Diagram 3 - Decision-making matrix.](#)

Kauri dieback stations

» Can limit trail access for a number of trail users if there are steps up to the structure, restrictive dividing barriers between cleaning stations, or tight turning circles to get into the cleaning stations.

Accessible Kauri dieback stations should have:

- » step-free entrance, flush with the trail surface, or a ramped entry if required.
- » clear width of at least 1.2m, with no separating barrier.
- » clear, straight-line approach, or a wide turning circle approach, if necessary.



◀ **Photo**

Example of inaccessible kauri dieback station with steps to entry and dividing metal barrier reducing width of structure.



◀ **Photo**

Example: Power chair user goes through a more accessible kauri dieback station with ramped entry, wide clear width and no restrictive separation barrier. The yellow on the signage also ensures high visibility for all users.

Real trail tales

“Highlight was that Council had replaced the Kauri dieback cleaning station with an accessible one. They had listened to our feedback and taken action. We were able to gain access to trail again.”

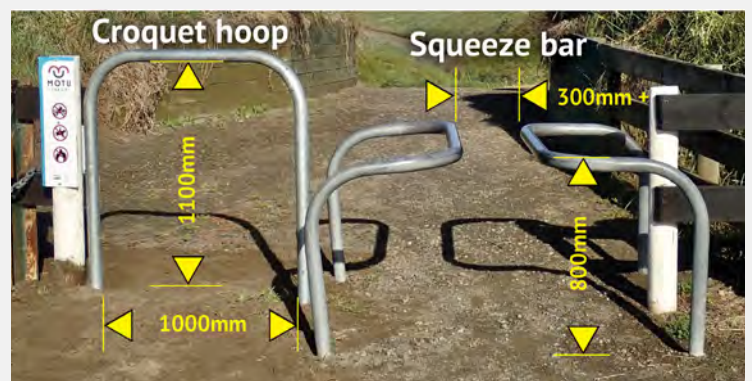
— Participant from Outdoor Recreation Accessibility survey.

If you do have an access control barrier (that you really need) make sure you let people know about it

Trail users will want to know ahead of time:

- » Where is the barrier on the trail?
- » What does it look like? Can you attach a photo or diagram to your map?
- » What are the dimensions of the barrier? What known equipment can fit through?
- » Are there any alternate entrances, such as nearby gates which can be unlocked for users ahead of time?
- » Who can users contact for more information?

Motu Trails have a great example of displaying this information. Read the Motu Trails Dunes Trail & Waiōtahe Trail Accessibility information brochure on the [Motu Trails website](#).



▲ Sample image

Croquet hoop and squeeze bar measurement guide from: Dunes Trail and Waiōtahe Trail Accessibility information brochure (Motu Trails, 2023)



▲ **Photo**

Two women pushing each a pram along a sealed path (WNZ Regional Trails, Te Onepoto, Queen Elizabeth Park, 2024). Credit - Capture Studios, Wellington, NZ.

▼ **Photo**

Powerchair user on outdoor trail.



4 Facilities and amenities



It's never just about the trail, the beach, or the outdoor site. The whole journey of a recreation experience needs to be designed with inclusivity and accessibility in mind, to ensure everyone can participate in all parts of a recreation experience.

It's important that the activities and amenities that make up accessible outdoor spaces are not mis-matched services, and there is alignment across the whole journey of recreating in an outdoor space.

The following section includes:

- » [Car parking](#)
- » [Toilets and changing facilities](#)
- » [Picnic tables](#)
- » [Shelters](#)
- » [Barbecues](#)
- » [Drinking fountains and water taps](#)
- » [Rubbish facilities.](#)

◀ **Photo**

Three people, two with guide dogs, walking side-by-side along a sealed path. (WNZ Regional Trails, Te Onepoto, Queen Elizabeth Park, 2024). Credit - Capture Studios, Wellington, NZ.

Challenge

The most common barriers to accessing the outdoors for people with impairments are a lack of accessible toilets, parking, seating, and rest stops. ^{7 10 2 14}

Inaccessible drinking amenities such as water fountains and taps, and viewing/platform facilities are further barriers to access in developed outdoor areas.

If the accessibility of the surrounding area, or route to an accessible amenity or facility hasn't been considered, people with access needs may not be able to get to the facility, let alone be able to use it as intended. For example, a steep, deep, loose gravel entry to an accessible toilet. ²³

Opportunity

There is a significant need, and desire for greater accessible amenities and facilities to enable greater access to outdoor spaces.

The most important five services for people with impairments choosing an outdoor recreation location in the Outdoor Recreation Accessibility Survey (ORAS):

- » **Signage.** For example, Info panels, maps, travel distances, trail markers ([more on signage information](#))
- » **Accessible toilets**
- » **Accessible car parks** that are extra wide, hard surface, flat/level
- » **Potable water supply/drinking water.**
- » **Shelters**

60% of respondents in the ORAS would like additional facilities and services to improve their experience.

Including:

- » Better information about the place and facilities
- » Better parking, toilet and changing facilities.

- Outdoor Recreation Accessibility Survey (ORAS, 2024)

Car parking

Car parks are essential gateways to the outdoors. Their accessibility is important for facilitating participation in outdoor recreation. Finding an appropriate place to get dropped off or to park your vehicle, is an important step in the journey of ‘arriving to’ an outdoor recreation activity.

Many people with mobility impairments, older people, and families with young children depend on the use of a private motor vehicle, a self-drive accessible van or a designated accessible taxi with a hoist for their transport needs. These forms of transport are essential to enable people to participate in recreation opportunities.⁴⁵

78% Replace with: of respondents traveled to their outdoor recreation location via private vehicle.

- (ORAS, 2024)

It is important to note the increasing use of larger vehicles and trailers for carrying mobility equipment such as scooters and adaptive bikes.³⁹

Car parks are sometimes destinations in their own right, especially when they have good views and surrounding accessible facilities. They can provide the opportunity to be in the outdoors or by the water, where people can enjoy a view or area, without having to go too far from the vehicle.

45. Building Performance - The need for accessible car parking: NZ Building Code Compliance. <https://www.building.govt.nz/building-code-compliance/d-access/d1-access-routes/accessible-car-parking-spaces/the-need-for-accessible-car-parking>

Challenge

Lack of parking facilities at site, or nearby an entrance to an outdoor recreation place or space can be a complete access barrier for some people.

Even in areas where there are informal parking options available, such as compacted gravel surfaces, no dedicated accessible parking can make it much more difficult for people to access.

Limited information about the parking available onsite can significantly impact people's planning prior to undertaking the activity.

Opportunity

Having accessible car parks (that are extra wide, hard surface, flat/ level) was the **3rd most important service** when choosing an outdoor recreation location for people with impairments.

- (ORAS, 2024)

Planning your trail network so it links to local active transport routes can help to connect local communities to accessible spaces and places, while also reducing the pressure on car parking spaces.

Real people, real experiences

“ [I had] some anxiety about whether I will be able to find a car park (it is a popular place), and whether I will be able to operate my abiloader⁴⁶ (sometimes a car will park close to the driver's side of my car and there is no space to load my wheelchair). ”

— low light of a participant's trip from the Outdoor Recreation Accessibility survey.

Solutions

The following section outlines design specifications and considerations for sealed, dedicated parking facilities, and unsealed, informal parking areas.

Accessible parking must be available at all outdoor recreation car parks, regardless of the setting. Decisions should not be based on assumptions about who will use the area, as this can exclude people from the outset and does not allow people to make their own choice of accessing an outdoor recreation space.

Parking provisions should also consider spaces for larger vehicles, minibuses and trailers. These are often used to transport mobility devices, or adaptive bikes. A group with access needs, or an adaptive outdoors programme may rely on a minibus. Horse riders may also arrive at a site with a horse truck or trailer, and may need shade and water.³⁹

46. An [Abiloader](#) is a car modification which delivers the drivers wheelchair from the car boot to the driver door.

Sealed car parks and dedicated mobility parking

If you design, manage or approve car parking spaces at recreation facilities, you need to make sure that some are accessible to mobility card holders.

NZS 4121: 2001 includes key features of an off-street accessible car park:

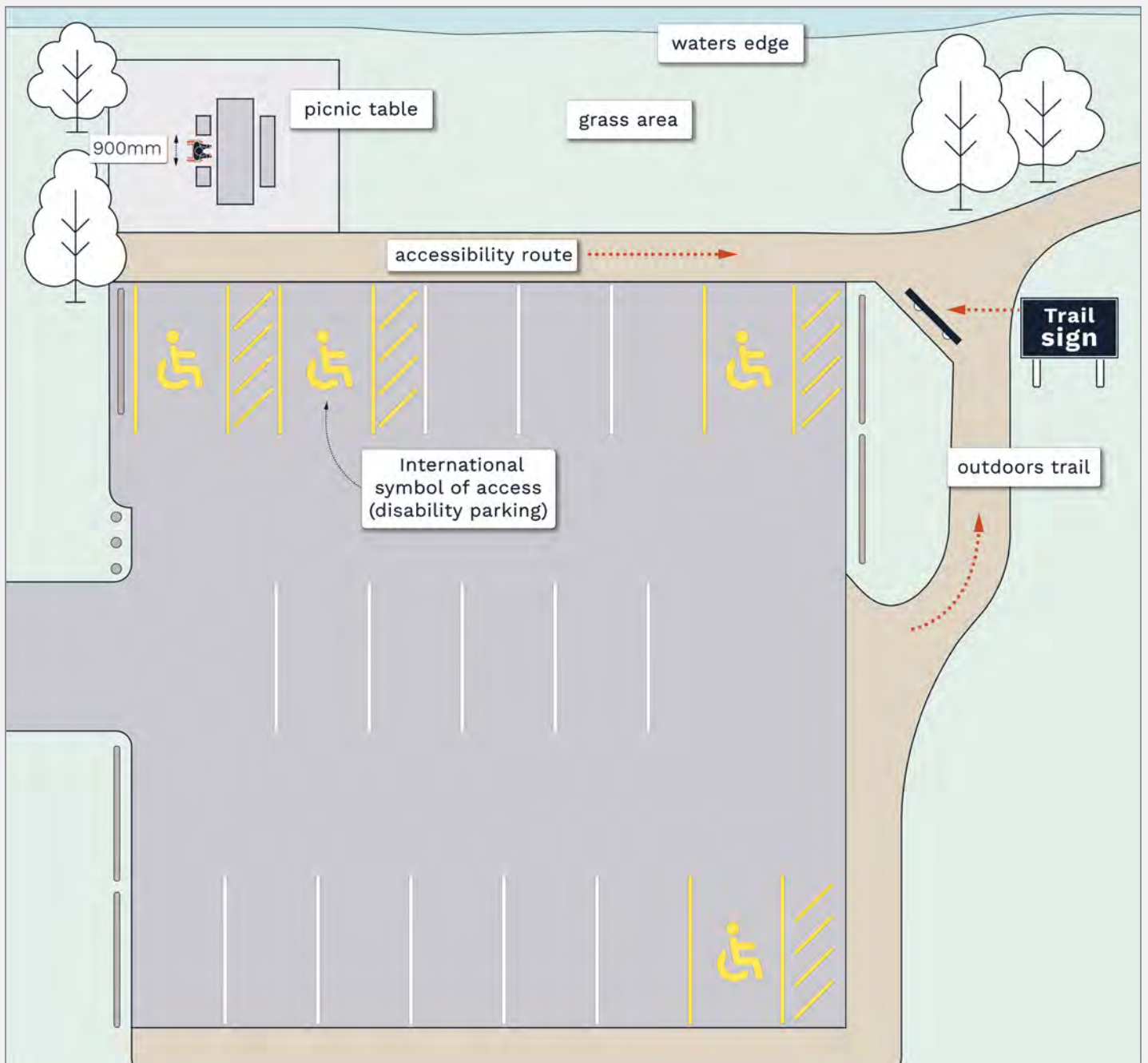
- » **size** – the standard size for an accessible park is 3.5m wide x 5m long
 - › for a rear-mounted hoist or van, 6.3m length is required.

Accessible vehicles differ in style and setup, some have their hoists at the side of the vehicle while other at the rear. This means the gap between vehicles must accommodate both the ramp and the wheelchair manoeuvring and exiting off the ramp. When cars are parked too close together, wheelchair users are often unable to exit their vehicle, especially if they are self-drive vehicles.

- » **slope** – the slope should not be steeper than 1:50 in any direction
- » **head room** – head clearance of 2500mm is required (to allow access for wheelchairs or equipment stored on the roof of vehicles).
- » **surface** – the best surfacing materials are tarmac or concrete. Other surfaces that have similar slip resistance could be acceptable, but only if they are stable and firm enough to support a wheelchair under all weather conditions.
 - › Accessible car parks must provide a stable, firm, slip resistant flat surface.
- » **location** – the car park should be as close to the entrance of the outdoor space, amenity area or trail head, as possible. Parking spaces should be positioned so that users do not have to pass behind other parked vehicles to reach the entrance. People of short stature and wheelchair users are less likely to be seen by reversing drivers.

Hot tip: it can be a good idea to provide at least one larger space (4.8m x 8m) for horse floats, vans and minibuses with side and rear hoists, and to make it easier for users to transport any assistive devices or adaptive equipment.

Hot tip: Accessible car parks do not have to all be in the same space. For example, if key amenities are spread out in your outdoor space, it is recommended to have accessible parks positioned in different locations, as close as possible to the different amenities and gathering points. For example, close to the trail head, look out point, close to the picnic facilities, and the start of a trail.



▲ **Diagram 14:**

Accessible car park locations relative to key outdoor amenities and activities.

» **access** – there must be an accessible route from the park to the entrance of the outdoor space. This means a route that can be easily and safely traversed by a wheelchair user without assistance, free of kerbs and other obstructions.

Kerb cut downs must be included where there is not a level transition between the car park and the path/external route. The maximum gradient of kerb cut down is 1:8, but a slighter gradient is recommended (1:12, or 1:15 is even better!).

Real people, real experiences

“ [there was] no accessible car park and an inaccessible route from car park to boardwalk, which meant I had to go the long way around to get safely to the Boardwalk. ”

— low light of a participant’s trip from the Outdoor Recreation Accessibility survey.

- » **Signs** – a sign incorporating the International Symbol of Access shall identify the car park spaces. The sign should be visible from a vehicle at the entrance to the car park, the usual convention is to also mark the park with yellow paint. The International Symbol of Access is applied to the surface of the park. Other signs indicate the direction to the car park along the route from the street as well as the car park itself:
 - › Clear mobility signage, less than 1m from kerb, raked 6° from vertical, at a max height 1750mm.
- » **Parking should reflect the likely patterns of use.** For example, if inclusive and accessible outdoor recreation spaces are available at your site, more accessible car parks are recommended. If group activities are likely, minivan parking provisions should be available.

» **Number of parking spaces (absolute minimum as specified in NZS 4121:2001)**

- › 1-20 car parks – must be at least 1 accessible car park
- › 21-50 car parks – must be at least 2 accessible car parks
- › At least 1 accessible car park for every additional 50 car parks.

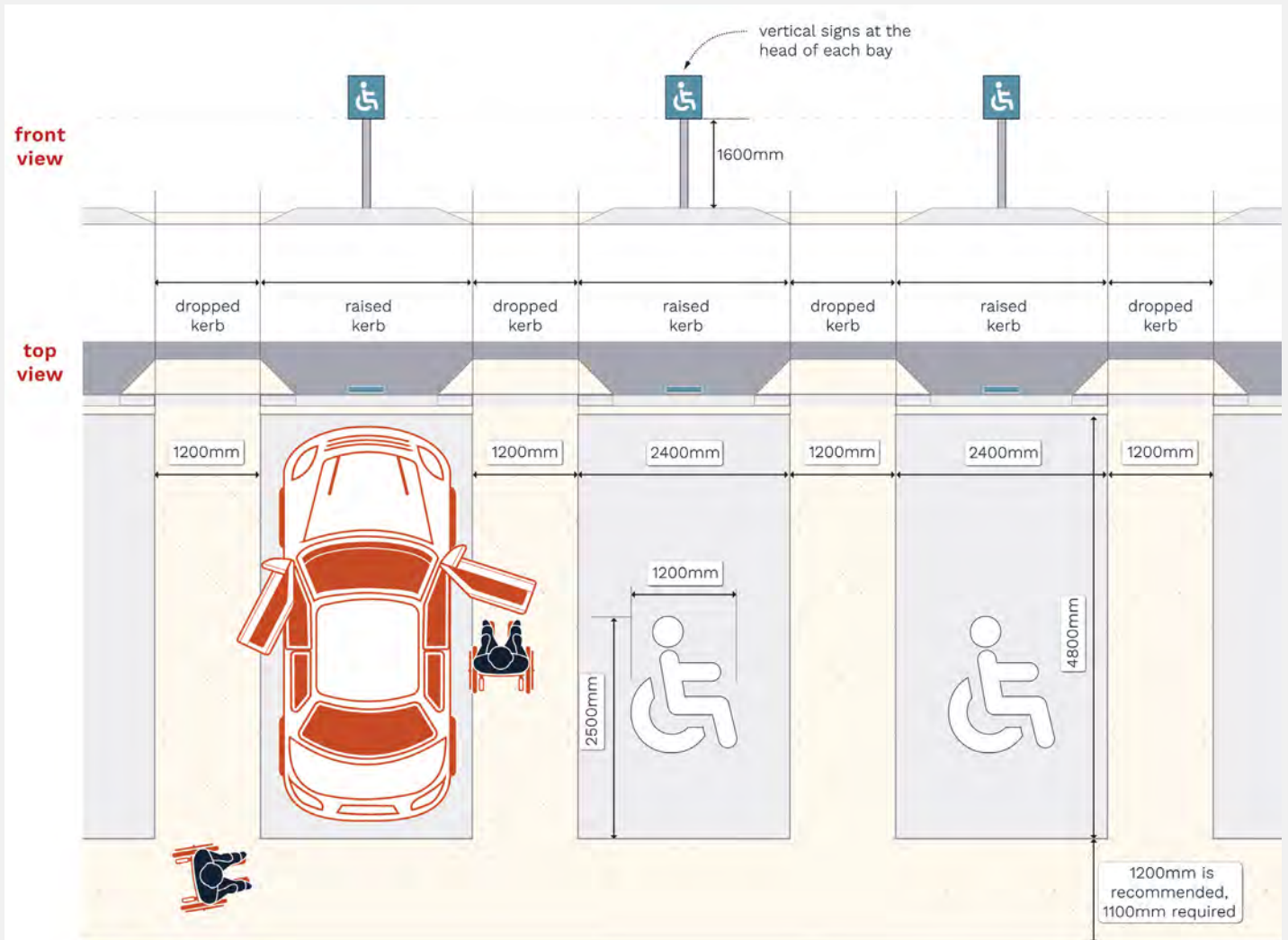
Note: these are the legal minimum requirements, and should always be exceeded where space allows, especially in outdoor locations that are being promoted as accessible.

- » **Parental parking** spaces are not a legal requirement but could be useful at busier outdoor spaces that would attract young children and whānau. They are designed with the same specifications as accessible parks, and allow for easy access for prams/strollers, and more space for getting infants and tamariki (children) out of the car with the door wide open.

Hot tip: to help future-proof the need for more additional accessible parking spaces (particularly if you are enhancing the accessibility of the surrounding outdoor spaces and activities) it can be useful to include some wider (3.5m x 5m) car parking spaces.

- » **Loading/no parking strip** – although only required on one side of the car park in the NZS:4121:2001 standard, it is recommended to have a line marked loading/no parking strip (1100mm wide minimum, 1200mm wide, where possible) on either side of the parking space.
 - › This allows users on both sides of the car to have enough space to use or transfer into mobility equipment or adaptive recreation devices.

Hot tip: When providing accessible parking spaces together in a cluster, these strips can be shared between parking bays.



▲ **Diagram 15:** Mobility parking with loading strip on either side.

Modified from: Disability Sport Northern Ireland (2021) Accessible Outdoor Places Design Guidelines.

Informal parking spaces

Both NZS4121:2001 and NZS2890.6 Off-street Accessible Parking Design 2009, state that:

“Where car parking is provided, spaces for people with a disability shall be provided”.

This should be interpreted as any designated parking space, in urban or outdoor rural environments, should provide accessible parking.

Not all car parks in the outdoors are, or should be, sealed concrete surfaces. For more backcountry trail car parks, and those in rural areas, the following principles are recommended:

- » **Surface:** should be as level as possible, even and hardpacked.
- » **Spacing:** 3.5m wide x 5m long or 6.3m long for vans or rear-entry vehicles.

» **Signage:** It's likely that the natural car parking surfaces cannot be painted with the appropriate lines and spacing, an alternative solution is to mark the accessible parking space with a signage viewable from the entrance to the car park

- › Clear mobility signage, less than 1m from kerb, raked 6° from vertical, at a max height 1750mm. Signage should not be obscured easily by other parked cars or nearby vegetation.
- › The international symbol of access (ISA) is widely used to indicate accessible parking facilities.
- › Products that have been used to add line marking to unsealed parking spaces overseas:
 - [NIDAGRAVEL NG040 grids](#)
 - [Gravel Rings – Parking Bay Markers](#)



▲ **Photo**

Adaptive mountain bike, van with side ramp and portable hoist using dedicated accessible parking spot.

Hot tip: we don't recommend calling the parking spaces 'disabled parking spaces' - the spaces themselves are not disabled. Consider 'accessible' or 'mobility parking spaces' as more appropriate terms. 'Mobility parking' is the recognised term by [Mobility Permit card holders](#).

Communication

Regardless of your outdoor setting or type of car park provisions, make sure you let people know what car parking facilities are available in your information about the site, (such as online, brochures, in articles, or access guides etc.) to support prior planning.

Toilets and changing facilities

Lack of accessible toilets is a hindrance to adventure.^{18 10} This can contribute to feelings of fear and unease, and can be the reason some disabled people, and people with chronic illnesses, avoid going places entirely.^{18 10}

Of all the outdoor amenities rated in the Outdoor Recreation Accessibility Survey, changing facilities received the third lowest satisfaction rating from respondents.

Real users, real experiences

“ I can't use a male toilet/shower on my own and usually only have my mum for assistance, because I'm 17 years old it is not appropriate for me to use female facilities but in a lot of places we have no choice, so we don't go. If we have to pay extra at campsites for our own facilities this extra cost is often a barrier for us going places, so we stay at home. ”

Toilet design considerations

- » **Wherever toilets are provided, at least one accessible toilet must be provided**⁴⁷ – more accessible toilet facilities are required at popular outdoor recreation areas.
- » **For larger toilet blocks**, accessible and **ambulant toilets** should be the first toilets in the block (that is, closest to the entrance to minimise travel for users with mobility impairments).⁴⁸
- » **Baby changing tables** no baby changing facilities in accessible toilets can be a significant barrier for some people. Baby change tables should not affect the manoeuvring space within the toilet facility, or block access to the transfer space beside the toilet. If provided, they should be in toilet facilities that are bigger than the minimum footprint, and not in the way of the entrance door. Baby changing tables should be part of any good maintenance plan to ensure they can still be folded up to allow access space.
- » **If two or more accessible toilets are provided**, split the design of toilets evenly between those that provide wheelchair transfer space to the right of the toilet and to the left of the toilet (NZS 4121:2001). Toilet signage should include a LH or RH to indicate whether a wheelchair user transfers to their left (L) or right (R) on to the toilet. Similarly, there should be a split between grab-rails for left-handed and right-handed users, with the L-hand and R-hand facilities being mirrored. This is also for the benefit of people with a one-sided weakness or paralysis.
- » **Gender neutral facilities are strongly recommended in the outdoors** – they provide greater access for gender diverse communities and are more accessible for people whose support person is a different gender.
- » **Visual contrast** - is one of the most common barriers in accessible facilities. Visual contrast should be clear between the door and surrounding walls, as well as the internal fixtures and fitting, to ensure they accessible for people with low vision.

47. NZS 4121:2001 Design for access and mobility: Buildings and associated facilities. <https://www.standards.govt.nz/shop/nzs-41212001>

48. Auckland Design Manual, Accessible Toilet Design Checklist <https://www.aucklanddesignmanual.co.nz/media/3cdo5hsc/ud-toilet-design-checklist.pdf>

Accessible toilets

There are minimum design standards as required by the NZ Standard Design for Access and Mobility – Buildings and Associated Facilities (NZS4121: 2001) for all accessible toilet facilities.

The below table outlines these minimum (NZS4121: 2001) standards, along with the recommended [universal design considerations](#) to ‘build above’ the code (to ultimately be more accessible, to more people). More detailed [toilet accessibility information](#) is available via the [building.govt](#) website.

▼ **Table 8:** Minimum (NZS4121: 2001) standards for toilets.

Design element	NZS 4121:2001 Minimum standard	Recommended ⁴⁹
Toilet unit dimensions	<ul style="list-style-type: none"> » 1900mm long by 1600mm width. » Space allows a 1500mm min wheelchair turning circle. 	<ul style="list-style-type: none"> » 2500mm long by 2300mm wide to allow space for mobility equipment and space for the person with an impairment and their carers. » Optimal space allows an 1800mm turning circle. » Floor surface is non-slip and contrasting colour to the walls and doors.
Toilet doors	<ul style="list-style-type: none"> » 760mm min clear opening (hinge and sliding door). » Can be opened from the outside in case of an emergency. » There is a pull/grab-rail and kick plate on the inside of the door (if outward opening - preferred). 	<ul style="list-style-type: none"> » Min 860mm. 910mm clear opening even better. » Is a contrasting colour to the exterior and interior walls (to assist people with low vision to find the entrance/exit). » The door is automatic or an appropriate weight and can be easily opened and closed (for example, with two fingers). Heavy doors can be difficult for people and young people to access independently. » If not automatic, sliding doors are preferred as they are easier to operate. » Should be fitted with accessible handles and lock mechanisms (avoiding twist operated handles).
Handbasin	<ul style="list-style-type: none"> » Basin with nearest edge 300mm min away from front of toilet pan. » The top of accessible basins is a maximum of 850mm above finished floor level, with 675mm of clearance below the basins. 	<ul style="list-style-type: none"> » Basin located max 400mm from the front of the toilet is still accessible from a seated position and allows space for a support person. » Position soap dispensers over basins to prevent soap dripping on the floor as a lip hazard.

49. Recommended guidance from the Auckland Design Manual, Accessible Toilet Design Checklist <https://www.aucklanddesignmanual.co.nz/media/3cdo5hsc/ud-toilet-design-checklist.pdf>

Design element	NZS 4121:2001 Minimum standard	Recommended
Fixtures and fittings	<ul style="list-style-type: none"> » The toilet paper dispensers and waste sanitary napkin receptacles shall be located within easy reach of a person using the toilet pan. » They shall be installed at a height between 900mm and 1200 above the finished floor level, but shall not encroach into the wheelchair manoeuvring space. » If a mirror is provided, the lower edge shall not be more than 1000mm above the finished floor. 	<ul style="list-style-type: none"> » All fittings/fixtures should provide sufficient colour contrast to the walls they are fixed to. Typically achieved through having a feature colour on the two walls featuring these items. » If automatic hand dryers are provided, ensure they are in addition to paper towels (MBIE, 2019, as referenced by Auckland Council). » Automatic hand dryers/paper towel dispensers are an adequate distance from the entry/exit door, so that they do not turn on when entering or exiting the door. » Specify quiet hand driers, with a maximum decibel rating of 85DB (Paediatrics & Child Health, 2019 – as referenced by Auckland Council). » Waste sanitary receptacles are reachable for users seated on the toilet pan and are large enough to accommodate adult-sized pads (MBIE, 2019). » Waste bins and sanitary disposal bins take up space and are best recessed into the wall. Avoid foot-operated bins as they can't be operated by a number of users. » A shelf is provided for putting toilet supplies on (CEUD). ²⁰ » Ensure shelves are a contrasting colour to the background. » Ensure shelves are not located where they can be a hazard to building users, recessed shelves may assist with this. » Two coat hooks are provided. One at a regular height (1400-1600mm) and one within the accessible reach height (1000mm) from finished floor level (CEUD). The conventional hook height may be better for those who have trouble bending down, and work better for hanging longer garments (such as towels and raincoats). » Ensure coat hooks are a contrasting colour to the background and not projecting into the room in a way that creates a hazard (MBIE, 2019). » Ensure the position and size of toilet paper dispensers does not extrude into space and obstruct access to the grab rail or the movement of a seated user (MBIE,2019). » Emergency alarm systems are useful for anyone who might need to call for help – the alarm system should be able to be operated from a seated or fallen position.

► Table continued overleaf.

Design element	NZS 4121:2001 Minimum standard	Recommended
Toilet pan	<ul style="list-style-type: none"> » The toilet flushing mechanism should be large and easily operable with a palm of hand/ closed fist (NZS 4121). » The centre of the toilet pan is 450mm from the nearest side wall (that is, the wall with grab rails). » The front edge of the toilet seat is 700mm-750mm forward from the cistern or wall behind it. » The toilet lid is supported between 10 degrees and 15 degrees beyond the vertical to provide backrest for the user. » The height of the top surface of the pan seat shall be 460mm. » Flushing shall be easily operable. 	<ul style="list-style-type: none"> » Seat is 460mm-480mm above finished floor level. Higher toilets are preferable for older users. » There is at least 850mm of clear space (without fixtures or bins in the way) to one side of the toilet to fit wheelchairs for side transfers onto the toilet seat (Building Code G1). » The back support should be comfortable and not have a rim or edge which may dig into the user's back (MBIE). It should support the user to sit upright between 90-110 degrees when seated on the pan. » Toilet seat has under seat buffers and are strong enough to withstand the impact of people sitting down heavily on the toilet. » Toilet seat hinges have adequate lateral strength to withstand the force of people sliding horizontally onto the toilet seat (MBIE, 2019). (Many proprietary hinges on toilet seats are not strong enough to support transfer from a wheelchair). » Hands free flushing is preferred (MBIE, 2019). » If not hands free, the toilet flushing mechanism should be located at a height of 800-1000mm above finished floor level.
Pull/grab-rail	<ul style="list-style-type: none"> » One L shaped grab-rail is mounted on the wall next to the toilet pan, 700mm from ground the vertical rail begins at 2500mm forward from the front of the toilet pan. 	<ul style="list-style-type: none"> » Drop down rail provided on the other side of the toilet (not next to the wall) can be useful for people who need rails on both sides of the toilet.

Ambulant toilets

It is recommended that where standard toilets are provided, larger blocks of standard toilets should also include an ambulant toilet.

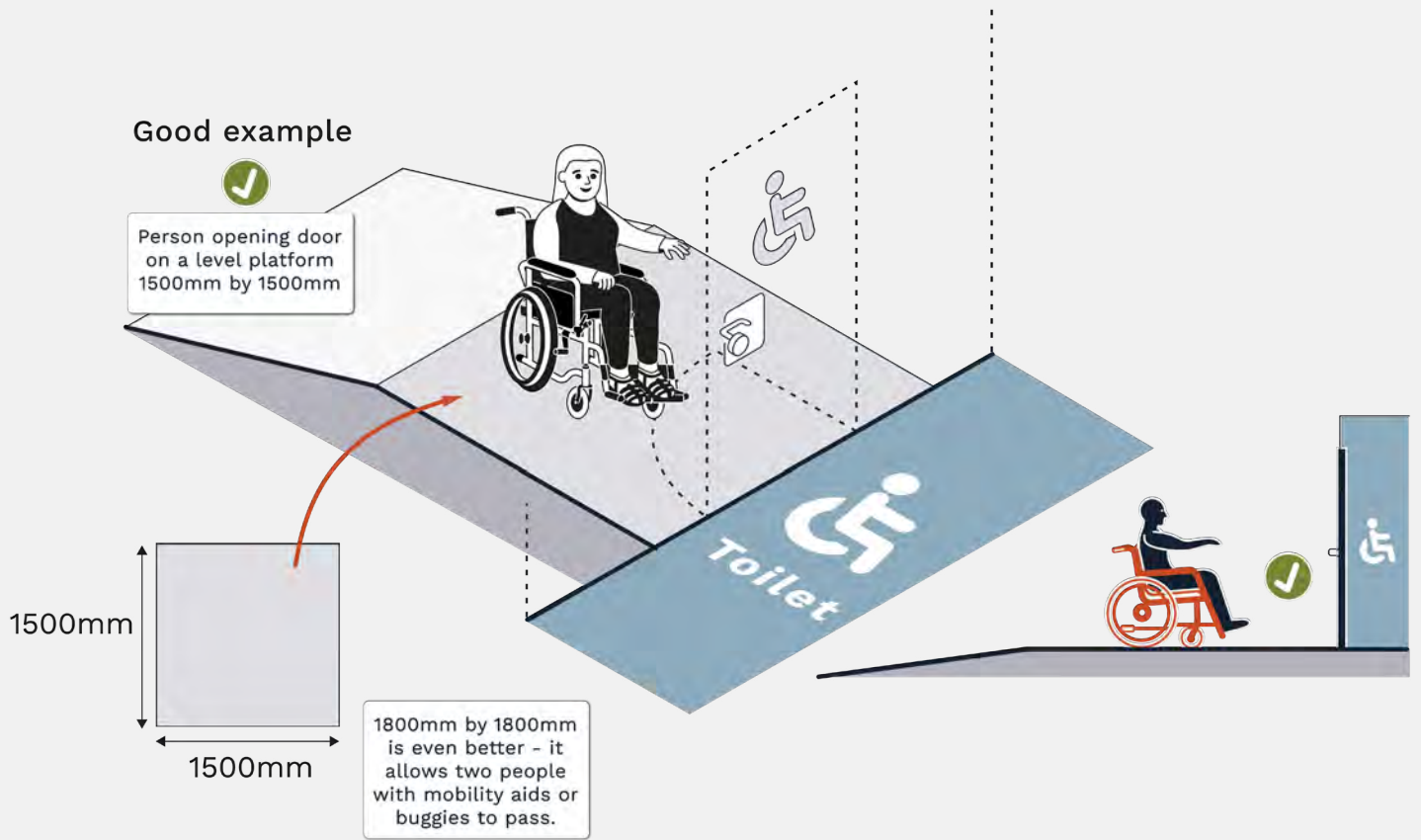
Ambulant toilets are like standard toilet cubicles but are wider and have L-shaped grab-rails (like those used in an accessible toilet). They are for users who do not require a fully accessible toilet but do require some assistance to stand and sit (for example older adults or people with temporary injuries). The provision and location of ambulant cubicles should be clearly communicated using appropriate symbols and text (AS 1428.1, as cited by Auckland Council).

Approach to toilet facilities

It's important to consider the accessibility of the surrounding area and how users can access the toilet facility itself. Without this, even the most accessible toilet facility will be unable to be accessed by a number of intended users.

- » **The approach to the facility must be** a flat, even and hard-packed surface, with a step-free entry that is free of any lip from the surrounding surface.
- » **If the toilet facility is built on a concrete pad**, the access route or path to the facility must adjoin flush from the path to the concrete pad with no lip.
- » **If there is a ramped or sloped entry up to the toilet facility**, make sure the gradient is as minimal and smooth as possible. Less than 1:20 is ideal, 1:15 if required, 1:12 if there's no other way to reduce the gradient to entry. Any steeper than 1:20 will need to comply with handrail requirements.
 - › **If the door of the toilet opens outwards**, make sure there is a flat landing area (1500mm by 1500mm) at the top of the ramp or gradient that the door opens out on to, so there is a level space for users to open the door and enter the toilet, without having to stabilise themselves on a steep gradient as well as opening the door. This is particularly important for wheelchair users, so they don't roll backwards while trying to open the door.

► Diagram 16: Toilet door opening outwards with level landing space ([overleaf](#))



Opportunity for improvement

Person trying to hold up the ramp as well as open the door outwards

▲ **Diagram 16:**

Toilet door opening outwards with level landing space.

Backcountry toilet facilities

Where practically possible, accessible toilet facilities should be provided in outdoor recreation areas, particularly in areas that meet the [inclusive trail guidelines](#). The toilet facilities should match the trail or outdoor experience you are wanting to achieve – without assuming who may or may not be able to access the site.

Sites that are easily accessible to the public by 4WD road or boat access, should be prioritised areas for accessible toilet facilities.

It's important to note that **not every trail user with an impairment needs a fully accessible toilet facility**. The following considerations can help to provide access to more remote toilet facilities in outdoor areas:

- » **Location:** consider placing toilet facilities along longer trail routes – shorter distances between toilets are useful for a number of trail users who require more frequent access to the toilet such as young people, older people and users with chronic health conditions. Greater provision of toilet facilities along a trail can also help to protect sensitive areas from the effects of human waste.
- » **Size:** larger toilet dimensions which allow for a turning circle of 1500mm by 1500mm can provide more space for wheelchair users, and users of mobility aids.

[NFP Fibreglass products](#) have developed an outdoor toilet facility with a larger area inside to allow additional space.

- » **Clear door width:** minimum clear door width of 860mm (910mm clear opening even better).
- » **Approach:** a level, step-free approach and entry to a toilet facility provides greater access for anyone who is unable to walk

up steps, or who is at risk of tripping up. Make sure there is a flush entry into the toilet facility (with no lip to step over).

- » If there is a lip to the existing structure, building up the surrounding surface with hard-packed material is one way to create a flush entry.
- » **Route to facility:** consider the existing route from the hut or trail to your backcountry toilet facility – a hard-packed, step-free path that's 1m wide is an easy way to enhance access to an existing structure. Toilets should be located as close to the hut structure as possible (ideally not further than 50m away).
- » **Grab rails:** Adding grab-rails within existing toilet structures is another simple way to improve access to existing toilet facilities (even long drops).
- » **Toilet seat and clear space:** even if it's a long drop, a toilet seat height of 460mm-480mm above finished floor level is more accessible for a variety of users. Providing clear space of at least 850mm to the side of the toilet pan can fit wheelchairs for side transfers onto the toilet seat and allows space for a carer or mobility aid.
- » **Basin height:** even if the basin is located outside of the toilet facility, we recommend following the specifications of height and knee clearance referenced in [table 8](#).

Real insights from real trail users

“ Large toilet spaces [would most improve their outdoor recreation experience], even if it's a long drop – provide enough room for mobility aids in there, plus a handrail. ”

Showers and changing facilities

In areas where showers are also provided, it is recommended that combined shower/toilet units be used if a shower is required.

» Accessible showers need to be suitable for wheelchair users.

The following considerations are from [building.govt.nz](https://www.building.govt.nz):

- › Where more than one facility is provided, they should be handed (mirrored) to provide for the greatest flexibility of use.
- › Floor surfaces should be well drained, slip resistant and level. There should be no vertical edging or lip around the shower component to ensure a smooth transition from the wet to dry area.
- › Floor drains should be positioned where they will not interfere with the manoeuvring of a wheelchair. Wheelchairs need a level surface to manoeuvre and drains require a sloping floor to be efficient.
- › There should be sufficient floor space available for people to be able to use and position chairs to meet their needs.
- › Secure and convenient storage is needed for mobility aids, artificial limbs or adaptive equipment which are generally not collapsible. Separate storage should also be provided for children's buggies.

50. Building Performance - Sanitary facilities: Building Code Compliance.
<https://www.building.govt.nz/building-code-compliance/d-access/accessible-buildings/interior-space/sanitary-facilities>

Toilet signage

Signage is important for all toilet and changing facilities in the outdoors – that includes wayfinding signage and signage both outside and inside the room.

Signage on the outside and inside of the facility should use words, tactile pictograms and tactile information to indicate the purpose and gender of the facility and directions to alternatives. Signage should contrast with surrounds or with the door/wall where it is placed. Signage content should also contrast with background.⁵⁰

Communication

It's important that information about all toilet, changing and shower facilities are detailed, and kept up to date. Not knowing what toilet facilities are available, whether they will meet users' needs, and how far away they are spaced along a trail or within an outdoor area can be a significant source of anxiety for some people.

Real insight from real users

“ The toilets were closed, and it wasn't on the website. ”

- low light of a participant's trip from the Outdoor Recreation Accessibility survey.

Changing Places ⁵¹

Not everyone can use the standard accessible toilet facilities. They do not provide changing benches or hoists, and most are too small to accommodate more than one carer. It's estimated that **20,000 people in Aotearoa New Zealand – plus all their whānau and care teams** – need these facilities.

Without Changing Places, people with high support needs are put at risk, and whānau are often forced to compromise their own health and safety, by changing their loved one on a toilet floor – or stay at home all together.

A Changing Places bathroom provide the right equipment, enough space to move around, and a safe and clean environment for its users. They are different to standard accessible toilets and should be provided in addition to a standard accessible toilet, not instead of them.

Key design considerations include:

- › height adjustable adult-sized changing bench/shower plinth
- › height adjustable hand basin with built in hand grips
- › ceiling or wall mounted tracking hoist system
- › screen or curtain to allow privacy
- › adequate space in the changing area for the disabled person and at least two carers
- › a centrally placed toilet with room either side.

More detailed design specifications are available in the [Changing Places NZ General Information Guide](#).

Providing Changing Places in public outdoor spaces makes a significant difference to improving access to the outdoors, for people who need these facilities.

Changing Places in outdoor locations in Aotearoa New Zealand

- › [Hamilton Gardens](#)
- › [Gould Reserve, Takapuna](#)
- › [Mount Drury Reserve, Mount Maunganui](#)
- › [Cornwall Park, Hastings](#)

51. Changing Places New Zealand (2023). General Information Guide. <https://www.changingplaces.org.nz/file/changing-places-nz-general-information-oct-2023/open>

Additional amenities

Picnic tables

The value of picnicking should not be underestimated.

Picnicking was the **second most common** outdoor recreation experience for people with impairments and their whānau (second to a short trail journey).

- (ORAS, 2024)

Sharing kai (food) together is an important part of enjoying physical activity in the outdoors. These opportunities are often supported by picnic tables, [seating](#), [bins](#) and [barbecues](#).³⁹

Challenges

Picnic tables are often in the middle of a wide-open space, in amongst long grass, with no adjoining path. Navigating across long grass to access a picnic table can be completely inaccessible for some people, and can be difficult for people who are blind, or have low vision to navigate with no defined path to follow.

Standard picnic tables with crossbars and fixed bench seats that must be climbed over to sit on can be difficult (or impossible) for people with reduced mobility and are awkward for many people to sit at.

If the table is set in concrete, there is often not enough space around a picnic table for users to navigate around, for people to sit at the end of the table with a mobility aid or in a wheelchair, and there is limited space to pull a buggy or stroller up to the picnic table.

Solutions and design considerations

Position and location

Ensuring the picnic table has an accessible path up to the site, or is positioned on an accessible route, but is not an obstacle protruding into the minimum path width. Consider how close the picnic table is to other accessible facilities at your outdoor space (for example, parking and toilet facilities) and make sure to locate picnic tables in the shade, where possible.

Everyone wants the view

If you're using picnic tables that have cut-outs for people using wheelchairs, prams, or other assisted devices, make sure these structures are positioned to ensure the person using the cut-out space can see the view like everyone else, particularly if this is the only space they can sit at, and the picnic table is at a point of interest in an outdoor space.

Circulation around the table

Ensure that the hard surfacing or concreting under the picnic table surface is wide enough for people using mobility devices, or with pushchairs and buggies to move around all usable sides of the table.

Level access to the table

Ensure there is no lip from the platform surface under the picnic structure, to the trail or path of travel, this transition must be flush, and step free.

Spaces for larger number of groups

It's important for large groups and whānau to have opportunities to sit together to share kai in an outdoors space. Consider how the arrangement of your picnic tables, and their sizing, can cater to a group of more than 4 people. For larger tables, make sure there are also more wheelchair seating spaces available on either side of the table, not just at either end.

Hot tip: When choosing picnic furniture, check the dimensions on the manufacturer's product details with the specifications above, to make sure the furniture is in fact accessible.

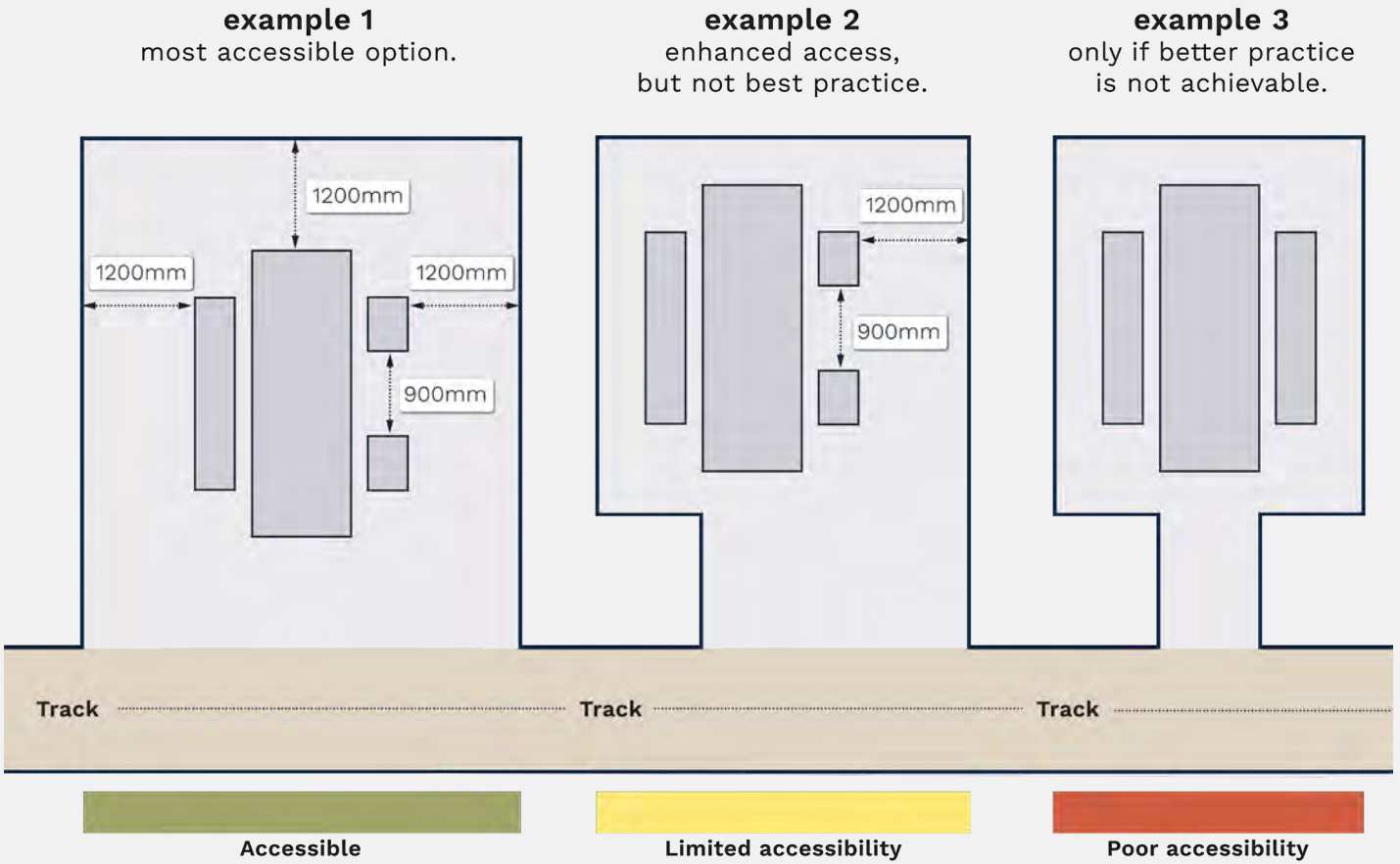
Recommended specifications

- » **Picnic table height:** between 750mm-800mm, knee space at least 680mm height.
- » **Clear knee space:** there is a clear recess beneath the table at least 600mm deep.
- » **Seat height:** seat within 460-480mm from the ground, with a minimum depth of 450mm.
- » **Open section:** an open section of the table (min 900mm wide) with no permanent seating allows space for a wheelchair user to position at the table, or for users to pull a pushchair/buggy or mobility equipment next to them.
- » **Space around the picnic table:** provide a firm, level surface around the picnic table, allowing users to navigate around, or pull up to the end of the table. A clear width of least 1200mm around all sides is recommended (1500mm is even better!), measured from the back of the seat. If a full clear width right around the table is unachievable, aim to provide at least a clear space at one end of the picnic table, or where there is an open section in the bench. There should be room for more than one wheelchair user to share the picnic table together.

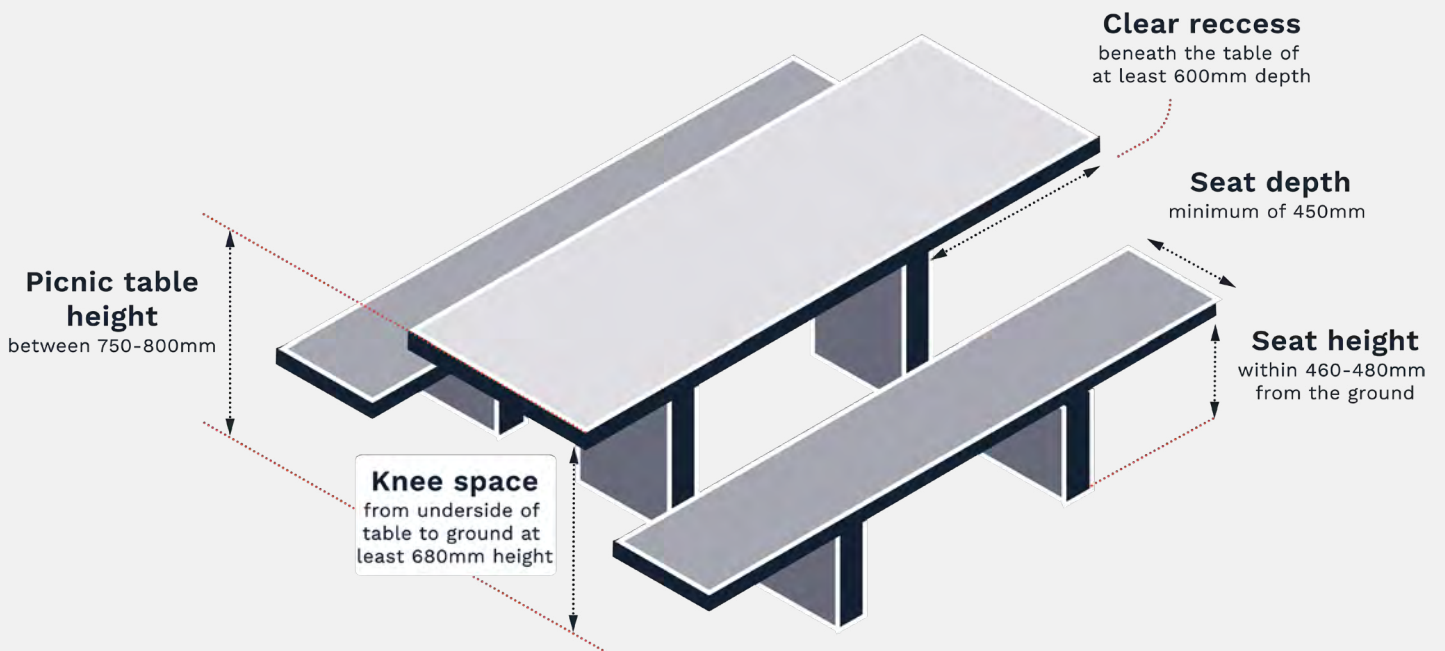
Examples

- » [Street scape rendezvous accessible picnic set](#)
- » [Permafab picnic tables](#) can also be made to meet the recommended specifications with a seat cut out.

▼ **Diagram 17:** Picnic table clear space examples.



▼ **Diagram 18:** Picnic table specifications.





◀ **Photo**
Rotorua Lakes
Council picnic tables,
Waitōharuru / Tarawera
Landing Reserve.

Access enhanced and lessons learnt

The redevelopment of Waitōharuru / Tarawera Landing Reserve by Rotorua Lakes Council and Tūhourangi Tribal Authority highlights the benefits of ensuring accessibility is a propriety within all redevelopment projects to enhance community involvement. As a culturally significant site for mana whenua Tūhourangi and a popular recreational reserve, the upgrades included accessible picnic tables. The tables are intentionally set back from the main pathway to avoid creating obstacles, and the contrast in surfacing from the wooden boardwalk to the concrete landing provides a tactile indicator for users with a vision impairment.

One key lesson was the orientation of the benches with cut-out sections. To enhance user experience and connection to the significant place, the bench cut-outs should face the view to Lake Tarawera. The Council also learnt the importance of ensuring all contractors are informed and supported with appropriate guidance to meet the accessibility and inclusion goals of the project.

The upgrades have received positive feedback from locals who can now access this important site, and Rotorua Lakes Council continue to carry these learnings through to other reserve upgrades in their district to get more of their community involved.

Shelters

Shelters in the outdoors are generally built structures along outdoor trails or in regional parks to provide a resting space or shelter from harsh weather conditions. As climate change brings more intense weather, shade and adequate shelter is becoming more important in the outdoors. This can be particularly important for people who experience heat sensitivity or have challenges with thermoregulation.²³

Challenges

Current access challenges with shelters in the outdoors include:

- » No distinct path or accessible route to the shelter from the trail
- » A lipped or step entry to the shelter
- » Limited space within the shelter for a group to take cover, or to manoeuvre using mobility devices
- » Limited seating options.

Solutions and design considerations:²³

Location and approach

This should be accessible directly from a trail or have a clear pathway from the trail to the shelter.

Turning Circle within shelter

space within the shelter should at least provide a clear turning circle space (at least 2800mm) for wheelchair users and off-road mobility scooters and equipment.

Surface within the shelter

This should be firm, level and hard-packed, with adequate drainage to prevent any pooling of water or muddy conditions within the shelter or at the entrance.

Variety of seating options

Utilising the [seating guidance](#).

Seating

More seating options would significantly enhance the outdoor recreation experiences of people with impairments.

- (ORAS, 2024)

Resting places and seating along outdoor pedestrian trails are essential to provide respite to older adults, people with mobility impairments, young people and people with chronic health or fatigue conditions who require more frequent rest stops.

Seats can also reduce the impact of steeper slopes and distances along an outdoor trail, enhancing the overall accessibility.

It doesn't always have to be formal bench seating, but strategically placed natural features such as large rocks, logs, or built-up sections along the side of a trail can be useful as informal 'perch' spots, allowing users to rest without having to sit on the floor of the track (which can be difficult or impossible for some users). A mix of both informal and formal accessible seating is recommended to optimise accessibility.

Challenges

One of the most significant challenges is the:

- » **General lack of seating provisions available in the outdoors**, which can ultimately restrict the amount of time people with impairments can spend in the outdoors.

Real insight from real users

“ My knee was very sore that day so I couldn't go for a walk. There were no seats in the shade amongst the trees on the flat, so I had to stand, which meant I could not stay as long as I wanted. ”

— low light of a participant's trip from the Outdoor Recreation Accessibility Survey.

- » Other challenges with seating provisions are like picnic table provisions. Such as: not having enough space either side of the seating, the height of the seat being too low or too high or having steps or a lip up to the seat which are inaccessible for people who cannot walk up steps.

Solutions and design considerations ²³

- » **Location:** Ensuring that any seat/rest stop is adjacent to the trail (set back at least 600mm from the trail, so that it does not obstruct the path of travel – or become an obstacle!).
 - › Where possible, seating should be:
 - in the shade
 - prioritised in areas with steeper trail gradients or more challenging surfaces
 - at sites of significance.

Hot tip: Feedback from your local community can help to inform where the best spots are for seats.

- » **Approach and surrounding surface:** the seat should be on a resting space that is firm, level, and hard-packed, on a surface that is flush with the main trail or path route (with no lip or step up).
 - Seats are often positioned at vantage points to get a good view of the surrounding area – make sure there is a step-free route to access the seat/rest stop, with as minimal gradient as possible.
 - A tactile cue on the path surface before the seat or perch can help to alert people with vision impairments that the seating is available. Seating should also contrast to the surrounding environment. ³⁹
- » **Seat depth:** at least 450mm deep.

- » **Clear space:** when provided, seats should have a clear space on both sides (at least 1.2m, 1.5m even better!) both in width and depth. This enables people with wheelchairs, prams, mobility devices and service dogs to sit alongside their friends and whānau, clear from the main trail.
- » **Height:** varying heights of seat furniture are recommended to suit a range of users.

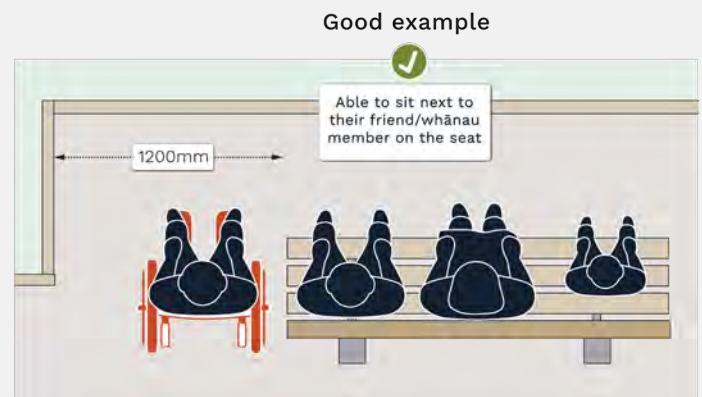
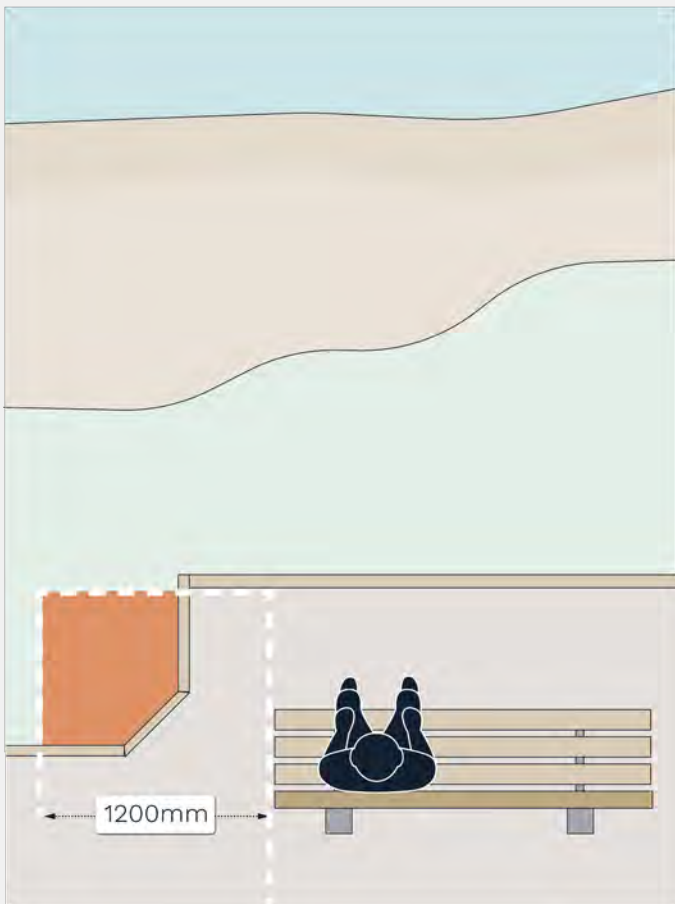
Height	Recommended use
450-480mm	Standard seat height range.
520-580mm	Can assist older people, and people with reduced lower body strength who can find it difficult to stand up from a low seat.
350mm	Can assist people of short stature and young people.

- » **Back rests:** can provide extra support for all users and should aim to have an angle similar to accessible toilets (that is, not to exceed 15 degrees from vertical).
- » **Arm rests:** inset by 500-750mm from the edge of the seat (so they are not right at the edge of the seat) enable direct transfer from a wheelchair and provide support for people who need to push themselves up, or to lower themselves down with the support of an arm rest.
 - › They should be 200mm from seat level, and extend from the back rest to cover at least 80% of the depth of the seat.
 - › Space between arm rests should be at least 500mm apart.

» **Seating layout:** can also impact how easy it is for people to sit and have a conversation in sign language. Seating facing each other or positioned at 90-degree angles can support greater communication.³⁹

» **Perch spots:** Should be between 500-750mm high, with as smooth a finish as possible.

Example of how extending the clear width beside the seating can enhance inclusion:



▲ **Diagram 19:** Extending the width to a minimum of 1200mm besides seating facilities allows for more inclusive communication between friends and whānau.



▲ **Photo**

Standard park bench with clear space beside, for a wheelchair user. Rotorua Lakes Council.

Communication

It is important to let users know what types of seats and perch spots are available along your trail or in your outdoor space – this is useful information to include in your prior information, and on maps of the space.

Barbeque and cooking facilities

Cooking facilities can be an important part of sharing kai together in outdoor spaces.

Challenges

- » Cooking facilities placed on a route of travel in an outdoor space can be an obstacle and hazard for people to navigate around.
- » Hot grills placed too high or too deep can be a safety hazard for users in a seated position who cannot see or reach the hot plate with ease.
- » Like benches and picnic tables, if there is not an adjoining path to the barbeque/cooking facility or a lip/step entry this can also restrict access.

Solutions and design considerations

If you're providing barbecue facilities:

- » **Clear space:** of 1.2m by 1.2m (1.5 even better) on all usable sides of the barbeque.
- » **Height:** cooking surface should be between 500mm and 850mm high from the finished ground surface.
- » **Approach:** there should be a level, hard-packed approach to the cooking facility, that is lip and step-free. The facility should be positioned back from the main route of travel.

Hot tip: Wheelchair users can find it difficult to use outdoor barbecues if the space below the grill does not have leg space underneath. If it is not possible to have a barbecue with the appropriate knee-clearance, providing at least one accessible bench top can still allow users to participate in the preparation of kai (food).

Drinking fountains and water stations

The fourth most important facility or service when choosing an outdoor recreation location is access to a potable water supply (drinking water). Drinking water, and water to help clean off wheelchair wheels, or adaptive/mobility equipment were frequently mentioned as additional services that would most improve the outdoor recreation experiences of survey respondents.

- (ORAS, 2024)

This highlights the critical need for reliable drinking water facilities to enhance the appeal and usability of outdoor recreation areas.

Challenges

- » Lack of water provisions can catch out users who may have expected more access to drinking water and did not bring their own adequate supply - particularly in more urban and peri-urban outdoor areas.
- » Controls that are too difficult to operate can restrict access to the water supply for users with reduced hand-strength or dexterity.
- » Spouts that have a water stream too high can be inaccessible for users in a seated position, or for younger people, or people of short stature.

Solutions and design considerations

Drinking fountains ^{55 58}

Surrounding area: should have a firm, level, clear area of 1200mm by 1200mm at the front, and at both sides of the water fountain facility. The fountain should be connected to an accessible path but set back at least 600mm from the path of travel, to ensure it's not an obstacle.

- » Users should be able to approach the drinking fountain from either side.
- » Tactile strips on the path adjacent to the fountain facility can alert users who are blind or have low vision to the presence of the fountain.

Spout height: should be between 750mm and 900mm from the ground and should be pointing away from the access route.

Knee clearance: there should be at least 680mm height clearance for knee space under any protruding part of the water fountain, with a clear depth of at least 600mm.

Controls: tactile (not recessed): should be near the front of the fountain, be operable with one hand and require no tight grasping, pinching or twisting. Controls should not be recessed or flush with the fountain. They should be raised (with tactile details), and contrast in colour to the water fountain to enable people who are blind or have low vision to find and use the controls.

Dog water bowls: Many people with service dogs bring their own water bowls. If bowls are provided on-site, they should be regularly cleaned to prevent bacteria buildup, which can pose health risks to dogs.

Water taps ^{55 58}

- » **Height:** between 750-900mm from the finished ground level,
- » **Surrounding area:** should have a firm, level area in front of them, and to the sides, at least 1200mm by 1200mm. This allows users to access the tap from side-on, to reduce the chance of being splashed.
- » Any drain or grate provided should not have clear openings wider than 15mm wide and should be flush with the surrounding surface.
- » **Controls:** should contrast with the tap, and be easily operable with one hand, without requiring tight pinching, or twisting of the wrist.
 - › Metal lever-style hose taps can make it easier to turn traditional outdoor taps on and off, as they can be used with a closed fist or forearm.

Rubbish facilities

Everyone should be able to play their part in looking after our outdoor spaces, this includes being able to use the rubbish facilities available at outdoor sites.

Challenges

Rubbish facilities with:

- » Openings that are too high,
- » Controls that are only operated by foot*,
- » No adjoining path or level approach, or
- » Bin protruding onto the path of travel, can prevent access, or create an obstacle.

* If the opening mechanism is by foot only – this excludes use by anyone who does not have the mobility or strength required in their lower limbs to use it.

Solutions and design considerations

- » **Height:** at a comfortable, reachable height between 900mm and 1200mm.
- » **Opening mechanism:** operable using one hand, without tightly grasping, pinching or twisting the wrist.

The same circulation and approach specifications for water fountains apply to rubbish bins. These should also contrast with surrounds so they can be easily located.

Multi-purpose spaces

Consider how you can provide a number of the accessible amenities or facilities mentioned in this chapter together in an outdoor space. It's important that the

facilities and services are not a mixed bag of accessibility, but rather, contribute to a consistent, accessible, and inclusive experience for all.

Circulation zones and adjoining paths

When rubbish bins, picnic tables, barbecues » and drinking fountains are all provided together, it's important to make sure there is adequate spacing between the facilities, to allow easy and safe travel between them.

- » Clear spaces
 - › 1500mm by 1500mm allow for adequate wheelchair circulation in an open space
 - › 2800mm by 2800mm allow for mobility scooters and larger outdoor equipment circulation.
 - › 3500mm by 3500mm allow for adaptive mountain bikes and tandem bike circulation.
 - › Turning circles should accommodate the intended users – [refer to the equipment and supports table, for more detailed information.](#)

Level, well-defined paths of travel between amenities improve access and connectivity, avoiding isolated "amenity islands." Ensure these paths and amenities contrast with their surroundings and include cane-detectable features to support users with low vision.

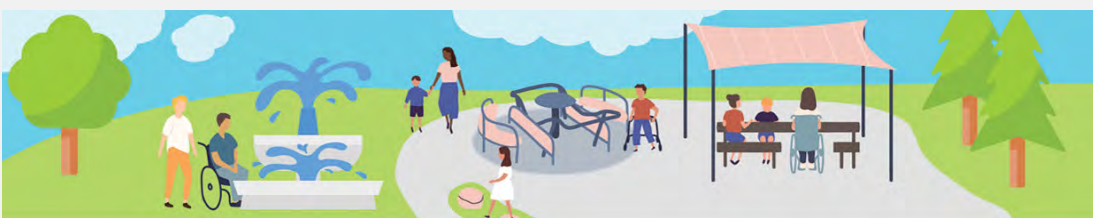
- › Try to avoid tight 90 degree turns between adjoining paths in open spaces. Smoother curves and wider turning circles in the desired path of travel can provide a more natural route for several users – and are more accessible for users of mobility equipment who require wider turning circles.

Hot tip: It doesn't always need to be a concrete path adjoining different facilities, any hard-packed level surface can enable greater access between amenities.

Accessible Hot Spots

Tauranga City Council have developed 'Accessible Hot Spots'- designated areas where accessible initiatives and services

are concentrated, allowing people to visit with confidence, knowing their access needs will be met.



◀ **Illustration**
Graphic of Tauranga City Council's accessible hot spots

5

Water-based outdoor recreation spaces



▲ **Photo**

Four people, preparing and maintaining MobiMat beach access matting on Waihi Beach.

Water is a taonga (treasure) of huge significance to Iwi Māori.⁵² Māori identity is inextricably linked to the awa (water), through whakapapa to their tīpuna (ancestors) and te taiao (environment) and is used for transport, recreation, cleansing ceremonies (purepure),⁵³ tohi (rites of passage), and gathering kai (mahi kai) and other resources (mahi toi).

It's important to provide access to the rivers, ocean, lakes and streams within Aotearoa to contribute to kaupapa whai oranga for tāngata hauā and whānau, and for all people in Aotearoa.

The following chapter outlines the current challenges and opportunities to enhance access to water-based recreation activities. It includes:

- » [Jetties and pontoons](#)
- » [Fishing locations and fishing platforms](#)
- » [Paddle craft](#)
(launch systems and transfer benches)
- » [Sailing](#)
- » [River access](#)
- » [Maimai](#) (duck shooting hides)
- » [Beach access.](#)

Important considerations for all water-based recreation places

Information, communication, and signage

- » Just like inclusive trails and green outdoor spaces, detailed, up to date information about the facilities, services, and the whole journey of accessing a water-based outdoor recreation space; including the accessibility of the site and available equipment is important to support the planning and decision-making of potential visitors.
- » Recommended design for [inclusive signage](#).
- » Useful information to share about water-based outdoor recreation sites: ⁸
 - › Information that would help visitors to find and get to the location, including details of the main entrances.
 - › Details about how visitors access the sand, water, or water-based activities (for example, what is the route like from the car park or drop-off point to the water/jetty/activity/site).
 - › Key landmarks that support wayfinding around the site, including what signage can be found at the site.
 - › The accessibility of the facilities and amenities at the site (toilets, parking, changing facilities, picnic benches etc.).
 - › What equipment is available to hire to enable greater access to the site or activity? Including who to contact for more information or to book the equipment (if necessary).

In a recent study on [Stakeholders' Perceptions of the Future of Accessible Beach Tourism in New Zealand: A Case Study of Mount Maunganui and Pāpāmoa](#) – participants commonly suggested that Public Authorities (such as Councils and Regional Tourism Organisations) were most responsible for provision of accessibility information.

52. Tātai Aho Rau Leanz, The importance of awa to Māori. <https://www.learnz.org.nz/rivers211/discover/importance-of-awa-to-m%C4%81or%C4%81>

53. [An Indigenous Approach to Māori Healing with Papatūānuku](#), Charlottee Mildon

Whole journey of water-based recreation activities

It's not just the water-based recreation site that needs to be considered to enhance accessibility. For example, it's not just the entrance to the beach, or route across the sand that needs to be considered, but the whole journey of going to the beach.

This includes:

- » Planning the visit (here's where the information above is useful!)
- » Arriving at the site (parking, active/public transport routes, drop-off zones)
- » Participating in the activity (getting into the water or beachcombing)
- » Staying at the site, and using the provided amenities (provision of shade, picnic tables, showers, toilet facilities, engage with the interpretation/signage)
- » Getting home safely (route between amenities, safe activity provisions including accessible warning information and prior information outlining any specific hazards at a site).

Hot tip: [Everyone Can Play have three easy principles](#) to remember the accessibility of the whole journey through a space – consider:

- › Can I get there?
- › Can I play?
- › Can I stay?

* Although this is in reference to a playground or play space, the principles are still relevant for outdoor recreation spaces.

Connectivity to surrounding areas

It's important to consider the connectivity and accessibility between the different parts of an outdoor recreation space – including how people navigate their way through and between the different amenities. It's recommended that there is a clear path of travel, ideally a [dedicated access route](#) that links key amenities and 'touchpoints' that people would access when recreating at the outdoor space.

Hot tip: consider the current journey of using your outdoor space – how you can make sure all parts of this journey are connected with an accessible path or route between them?

Jetties and pontoons

Jetties are fixed structures used where there are minimal changes in water level are evident, but equally can be submerged during floods or high tide. ²³

A pontoon is a floating dock, which, unlike jetties, can rise and fall with changes in water levels.

- » **Ramps and connection bridges:** should be a maximum gradient of 1:15 (1:20 – even better).

Hot tip: consider how a floating pontoon will rise and fall with the changing tide at your site and how this might impact the gradient on the ramp – the pontoon should not exceed the maximum gradient, even in high or low tide.

- » **Width:** 2000mm ideal to allow clear passage in both directions, 1200mm minimum.
- » **Handrails:** should be provided, particularly on ramped sections. Top handrail should be between 900-1000mm, with a middle handrail between 600- 750mm to provide support for wheelchair users, children and people of short stature.

Hot tip: collapsible or hinged handrail sections can provide protection while allowing clear transfer zones onto boats or watercraft when required.

- » **Upstands/kick rails:** at least 100mm high for protection and navigation that should visually colour contrast from the remainder of the jetty or pontoon surface. This is particularly important if there are no safety rails.
- » **Junctions and approaches:** the junctions between sections of the walkway on jetties and pontoons should be flush, with maximum 10mm rise between sections.

Jetties and pontoons should be connected to a continuous accessible route. ⁵⁴

The approach to the start of the jetty or pontoon from the accessible route should also be flush, and step-free.

- » **Non-slip surface:** all jetties and pontoons should have a non-slip surface (link to non-slip surfaces in trail guide).
- » **Height to enhance accessibility for different activities:** ³
 - › Max 450mm above the water for canoeing
 - › 180mm for rowing and sailing
 - › 200mm for swimmers.

A note on open water swimming

Step ladders attached to the jetty, as well as a floating pontoon ramps, with ends that float approx. 200mm below the water's edge can aid more accessible entry/exit for open water swimmers.

54. Parks Canada (1994) Design guidelines for accessible outdoor recreation facilities. https://publications.gc.ca/collections/collection_2020/pc/R64-182-7-1994-eng.pdf

Fishing

“ Something significant happens when people are empowered to go fishing. ”

— Wish4Fish

Fishing platforms

A fishing platform is a purpose designed deck built for people to fish from. They vary in design from site to site, [some examples](#) can be seen below. The key characteristics of a fishing platform as opposed to other similar structures such as jetties, wharves and pontoons include: ⁵⁵ —

- » inclusion of handrails (or kerb rails) to provide safety and stability while fishing and to prevent boats tying up to the structure.
- » platforms sited in locations that are identified as pre-existing productive fishing areas.



▲ **Diagram 20:** Lake Mangamahoe casting platform.

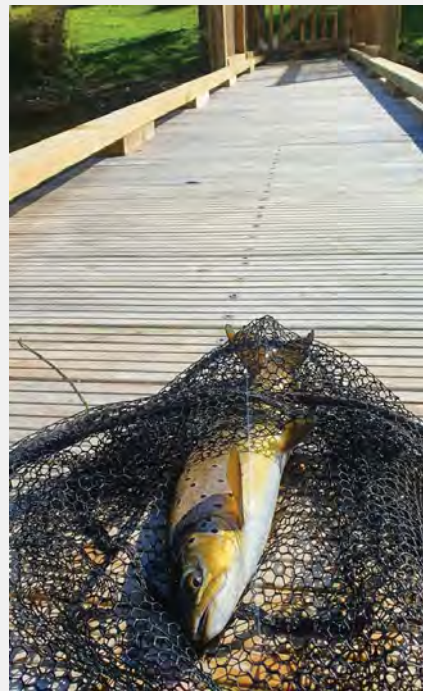


Improve access by adding handrail/ safety rail.

Key design principles ^{56 55 39}

- » **Height above water:** Fishing platforms should be just above water level, ideally not more than 600mm higher, to avoid anglers having to lean forward too far. Levels should take account of tidal and seasonal fluctuations, the lower the tidal fluctuation the better.
- » **Safety edge/wheel stops/kick rails:** a safety edge at least 150mm high should be alongside the exposed edges of the platform and have a good visual contrast for easy identification.
- » **Clear over-head space:** At least 25 - 30m of overhead space should be kept clear to the sides and rear to allow for casting.
- » **Non-slip surface:** the platform surface should be, firm, stable and non-slip in all weather conditions ([more information on non-slip decking surfaces](#)).
- » **Safety rails:** it is recommended for platforms which extend over the water to have guardrails at the front and sides. Providing a choice in the height of guardrails provides better facilities for seated and non-seated (ambulant) anglers. 850mm height suggested for seated users, 1100mm for ambulant anglers.
 - › A toe clearance of 230mm between the base of the platform and the railing, allows users to get right up to the railing. If you're providing toe clearance, make sure the platform extends at least 350mm beyond the railing, so that the front wheels don't go off the platform.

- » **Space per angler:** suggested to allow a minimum space of 1200mm by 1200mm per angler (1.5m by 1.5m even better – 1.8m by 1.8m better again).
- » **Approach to platform:** should be step and lip free, with a level, flush transition from the approach pathway to the platform. Any ramped access should be as shallow as possible, and not in a direct line to the water for greater safety.



▲ Photo

Successful catch off of the Lake Mangamahoe casting platform.,
Credit: Fish & Game New Zealand.

-
- 55. New South Wales Government (2017). Design guidelines: Accessible Fishing Platforms. A summary of design principles and guidelines for accessible recreational fishing platforms. <https://www.dpi.nsw.gov.au/fishing/recreational/resources/accessible-recreational-fishing-for-everyone>
 - 56. British Disabled Angling Association (2014): Access to Angling: best practice guidance. <https://bdaa.co.uk/platform-designs>

Design examples

[New South Wales Accessible Fishing Platforms Guidelines](#) and the [British Disabled Angling Access to Angling: best practice guidance](#) both include several examples of different accessible fishing platform designs. Fish & Game New Zealand have also designed an accessible fishing jetty diagram ([see appendix 5](#)).

Watch to learn more about how Rotorua Lakes Council alongside Tūhourangi Tribal Authority enhanced [Access for all at Waitōharuru / Tarawera Landing - Rotorua Lakes Council](#).

Let people know about any accessible fishing site: Fish & Game are beginning to populate a [directory of accessible fishing](#) locations across the motu – make sure you share your accessible fishing sites with their team.



▲ **Graphic:** International access symbol modified to include person fishing

Maimai

A maimai is a structure used by duck hunters in the outdoors as a hide or shelter. Maimais provide camouflage or cover, allowing hunters to remain hidden while observing or waiting for ducks often near wetlands or bodies of water.

Traditionally, maimai structures have not been designed with the access needs of people with impairments in mind. Many are too small to accommodate mobility aids, have look-outs positioned at heights that are too high, lack adjoining accessible routes, and are located in sites that are difficult to reach due to uneven terrain or other barriers.

In consultation with people with lived experience of disability, Fish & Game, and Rotorua Lakes Council, an accessible maimai has been built in the Kaituna Wetland. It is now balloted out to hunters with impairments to enjoy with their whānau.

Hot tips: the larger surface area of the maimai allows users with mobility aids to navigate around the hut, alongside their whānau and friends. The split-level roof ensures anyone in a seated position, young people and people of short stature are sheltered from the elements, while allowing others to stand comfortably in the section with a higher roof, without banging their head.

(see [photo](#) over leaf)



▲ **Photo**

Three people reviewing the maimai designs at the location.



◀ **Photo**
Accessible Maimai design.
Credit Fish & Game.



◀ **Photo**
Front view of accessible maimai
with split level design.
Credit Fish & Game.

The maimai design is available in [appendix](#).

“ I wish I could add a photo here. My son went hunting with his dad to celebrate his birthday, they were successful and he returned with a smile beaming from ear to ear. The place they hunted is an ancestral hunting area and links him to his taha Māori. ”

— highlight of a participant’s recent experience from the Outdoor Recreation Accessibility Survey.

Waka Ama and paddle craft

When planning or developing water access points for paddle sports and other recreational activities, accessibility must be prioritised for all user groups. Regardless of the type of activity or affiliation with a club, ensuring that the most accessible access points are available and functional for everyone is key to promoting inclusivity and equitable participation.



◀ Photo

Group at Halberg recreation camp.
Credit: Halberg and PhotoSport NZ.

The following solutions and equipment can help to enhance access for paddle sports:

Launch systems

- » [EZ Dock – EZ launch Accessible Transfer system](#) for kayaks and canoes includes an easy-to-use transfer bench and transfer slide boards which allow users to simply sit, slide over and drop down into a kayak or canoe then use the side rails to pull off or back on. These launches can be attached to existing docks.
- » While there aren't any accessible launch systems in Aotearoa (yet), Parks Victoria have installed a [canoe launcher at Psyche Bend in Kings Billabong in Mildura](#). The facility provides a stable platform on the static jetty, and then a secure ramp to launch into the water.
- » Although the launch systems primarily aid access for people with mobility impairments, accessible launch pontoons also provide an easier option for launching - for all users - regardless of impairment.



▲ Photo: Waka Ama group at Paddle day, Wainui. Credit: Halberg and PhotoSport NZ.

Transfer benches

- » Provide a more suitable transfer option for people with good upper body strength who do not require a hoist.
- » The [EZ Launch](#) transfer bench is built with two heights for easy transfer from wheelchairs of varying sizes, and the transfer slide boards accommodate differing watercraft heights.
- » Portable transfer equipment options are also available:
 - › [Sidestep](#)
 - › [Transfer bench](#)

Where the docking or jetties, or surrounding environment cannot be modified to enable greater access, adaptive equipment can help to provide access to these sites:

- » [Kayak Carts](#) – can allow users to move their kayak with more ease across more difficult surfaces (such as soft sand).
- » [Kayak Chariot](#) – allows transfers on a flat level surface by positioning the cockpit rim at wheelchair height. With the paddler in the kayak, it can be rolled into the water and floated off the chariot – making most water entry points (like boat ramps) accessible.



▲ Photo: Paddle boarder with two supporters at Paddle day, Wainui. Credit: Halberg and PhotoSport NZ

Sailing

The ability to transfer safely into and out of boats is an essential element of providing access to sailing. Launching facilities should maximise opportunities for people with impairments – this may include the use of hoists fixed directly to the jetty, to aid people’s access into watercraft.

Hoists should be provided for transfers from the jetties and pontoons onto the boats where the change in level is greater than 400mm.²³

Generally, hoist mounts will be permanently located on the dock of the jetty, and the arm of the hoist can be removed for storage elsewhere or can be mounted permanently on the dock.

Boat launches should be located on an accessible, step-free route ([see ramp requirements](#)).

If there are multiple hoists fixed to a jetty, they should have at least a 3m distance between them, to provide enough space for different crafts to have access to the hoists at any one time.

River and lake access

Rivers and lakes can be great places for people with access needs and their whānau to enjoy important recreational activities such as, swimming, cleansing ceremonies (purepure), tohi (rites of passage), and gathering kai (mahi kai), without the need for a boat and all the additional access challenges it can bring. As well as dedicated fishing platforms (such as above), the renewal of stop banks, boardwalks and other related infrastructure, can make these areas more accessible and enjoyable for everyone.

Prioritise locations close to urban areas with road access or public transport options nearby. It is important these sites are easy to get to, without needing to get through private landed with locked access.

Key design principles

- » **Access to the river/lake area** – ensuring connected pathways/street access to the riverbank can enhance independent access for a range of users with mobility devices without the fear of getting stuck.
- » **Paths along the river** – the path along to the bank side of the river should be as accessible as possible and extend to the river's edge, so anglers can get as close to the river to fish as possible. Use the [inclusive trail guidelines](#) for guidance on the path that best suits the natural terrain in this area. The longer the accessible path the better, unlocking more places the fish might be dwelling.
- » **Casting room** – 2m clear space between the edge of the river and the stop-bank behind is recommended, with a clear space of 25 - 30m of overhead required for casting.
- » **Height above water** – the pathways/trails should be no more than 1.5m higher than standard river level height, to allow a combination of both fly-fishing and spin fishing, while enabling fish to be landed safely.

“ Freshwater fishing is my way of interacting with and appreciating nature, observing its seasons, and getting to know my local area better. ”

— **Nick Svensen**,
Electric wheelchair user.

Beaches

The beach was rated the **third most important** setting for outdoor recreation in Aotearoa - followed by the ocean (fourth) - by people with impairments.

- (ORAS, 2024)

Challenge

The accessibility of any beach can vary, especially for visitors with physical impairments. Without clear wayfinding markers, people with sensory or cognitive impairments can experience challenges with getting disorientated in an expansive coastal area. People using mobility equipment can find movement on sandy surfaces challenging. In some cases, deep, soft sand can be a complete access barrier.

For people with sensory sensitivities such as Autism, the experience of accessing and touching sand can also pose a significant barrier to enjoying the beach and moana (sea).

Opportunity

Accessing the beach is an important part of our culture in Aotearoa. Having access to the beach can provide a sense of belonging and can be a 'life changing' experience for those who have not been previously able to access the beach with their whānau.⁵⁷

57. Hayden (2021). Stakeholders' Perceptions of the Future of Accessible Beach Tourism in New Zealand: A Case Study of Mount Maunganui and Pāpāmoa. Auckland University of Technology. <https://openrepository.aut.ac.nz/server/api/core/bitstreams/2a814781-887c-4827-82f2-4daadb5367d3/content>



◀ **Photo**

Boy surfing in the Hawkes Bay.
Credit: Halberg and PhotoSport NZ.

Solutions and design considerations

Accessible beach routes

Routes should allow users to participate in the recreation activities of their choosing at the beach. The access route should:

- » Be a continuous, unobstructed, path
- » Cross the surface of the beach
- » Provides pedestrians with access to the water
- » Be at least 1.2m wide
- » Have a cross slope no steeper than 1:50 (2%)
- » Have a maximum gradient of 1:12 (1:15 even better, 1:20 best practice)
- » Have a firm, stable and slip-resistant surface
- » Be permanent or removable
- » Connect from the parking or arrival point at the beach, to the entry point, down to the high tide level.

The following section provides guidance on ramped beach access routes, including guidance on boardwalks for the beach, and removable mat structures – followed by beach equipment. ⁵⁸

Did you know?

Access routes are required at any beach in the United States where an entity (such as a Council) constructs or alters any circulation path, parking facility, toilet facility, or shower facility that serves the beach. ¹¹ This provides a useful guide to when and where you can enhance beach accessibility in your area.

It's recommended that accessible beach routes be provided at any developed beach sites that offer parking, shower/toilet facilities and pedestrian access. Sites patrolled by Surf Life Saving Clubs accessible by public transport should also be prioritised for improved access.

58. United States Access Board (2014). Outdoor Developed Areas: trails, camping & picnic facilities, viewing areas, beach access. A summary of accessibility standards for Federal outdoor developed areas. <https://www.americantrails.org/resources/united-states-access-board-outdoor-developed-areas>

Ramp access

Where there is an elevated access point or raised dune crossing, it is recommended that the beach access route follows the 4212:2001 ramp design standard. This defines a ramp as ‘an inclined accessible route with a gradient steeper than 1 in 20, but not steeper than 1 in 12.’ A gradient of 1 in 14 is preferred, as many people have difficulty negotiating a steeper ramp. Specifications include:

- » **Ramp design can be:** straight, zigzag or L-shaped.
- » **Approach:** the approach to a ramp should be level to allow for adequate visibility and wheelchair turning space.
- » **Gradient:** every effort should be made to construct a ramp as flat as possible; the maximum gradient of a ramp should be 1 in 12 (1 in 14 preferred, 1 in 20 even better where possible).
- » **Gradient transition:** transitions from one gradient to another (at the foot and head of ramps) should be indicated by visual, textural and ideally acoustic contrast.
- » **Width:** should be at least 1.2m, 1.5m suggested at corners of zig-zag ramps.
- » **Upstand/kick rail:** should be at least 75mm, not more than 75mm above the ramp.
- » **Handrails:** Top handrail should be between 840-900mm, with a middle handrail between 600-750mm that acts as an additional safety rail and provides support for wheelchair users, children and people of short stature. They should have a level extension, 300mm past the ramp at either end.
- » **Landings:** ramps require level platforms at the top, bottom, wherever there is a change in direction, and at intervals no longer than 9000mm. Landings should be a minimum of 1200mm by 1200mm (1500mm by 1500mm even better!).

Important note:

Ramps that slope straight on to the sand, without a level landing at the bottom can be a significant hazard for wheelchair users, who have no time to stop before hitting the change in surface.

Concrete

Concrete ramp structures may be appropriate in areas where it would be considered too high risk for a wooden (or alternative planking) beach ramp structure.

Important considerations

- » Concrete ramps require more precise definition of the edges prior to construction.
- » Require frequent sweeping of any loose materials such as sand, pebbles and driftwood debris, which could cause a slip hazard, or make it hard for mobility devices to gain traction (particularly on steeper ramp sections).

Boardwalks

A timber (or other modified material) boardwalk can provide a suitable beach route that protects sensitive dune environments, while also giving people easy access from their vehicles along pathways and onto the beach surface.

Please see boardwalk design considerations within the [Inclusive Trail Guidance chapter](#). [Enduroplank™](#) is another decking surface product that has been used in beach environments.

Boardwalks can support wayfinding at the beach by providing definition to the route to assist people who are blind or have low vision. For example, a verge comprising colour and texture difference, or a 150mm high tapping rail.

Maintenance

Beach boardwalks are particularly susceptible to wear and tear, and must have frequent inspections and maintenance, to ensure they maintain their accessibility for all users. ³⁹

Beach viewing platforms

In locations where providing access to the water is not possible, consider additional ways of enhancing access to the beach for people who cannot access soft sand or the water.

In consultation with their local Accessibility Group, Waimakariri District Council have installed [beach viewing platforms](#) at two local beaches, complementing improved access to the compacted connecting pathways. The developments have significantly increased access to these beaches for people who previously have had not had the opportunity to visit these coastal spaces. Next up, they're looking to add more beach matting to improve access across the soft sand.

The steering group behind these projects has been the Northern Pegasus Bay Advisory Group (NPBAG) who oversee the implementation of the Northern Pegasus Bay Bylaw. This bylaw provides guidelines for the recreational use of the District's beaches and estuary to ensure public enjoyment and safety as well as the protection and enhancement of environmental values.

Read more about the project in the [Waimakariri Chatter Newsletter](#) (page 8).



▲ Photo

Beach Viewing Platform, Waikuku Beach
 image credit: Visit Waimakariri

Access mats

A permanent walkway such as a beach boardwalk above can provide access up to a point; however, movement across the sand to reach the water's edge can be impossible for some people without assistance or aids. Portable mats can be used for this purpose.

A portable/removable mat can be used to link with the boardwalk and bring the person further onto the sand, and as close as possible to the water's edge.

Key things to consider

Maintenance

- » As beach matting lays directly on top of the natural beach surface they require ongoing inspection and clearing/ sweeping of any loose debris (sand, pebbles, driftwood etc.) to ensure the mat remains un-obstructed, with edges clearly visible.
- » Processes for moving the mat in king tides, storms and in areas where the high-tide zone is highly variable are recommended to help prevent any damage to the product during adverse weather conditions.
- » Monitor any erosion around, or underneath the mat surface, as significant erosion at the side of the mat surface can create a safety hazard.

Site selection

The beach mat should be:

- » As close to the main access point to the beach surface as possible
- » As level as possible, with a minimal change in gradient (in any direction) over the length of the matting structure.

Length(s) and configuration of matting

- » Ideally, there would also be a mat surfaced area of the beach adjacent to the portable/removable mats that allows a person/s using a wheelchair or other mobility aids to come off the mat walkway to rest, or position within a group of friends without obstructing others who are using the mat to reach the water. Shade provisions at the adjacent strips of beach matting can also enhance access for people who are sensitive to the sun.
- » Ideally, there would also be an area beside the end of the portable mat to allow a dry, stable place for people to leave their belongings or equipment – or to position with friends or whānau as above.



▲ Photo
Mobi-mat maintenance, Waihi Beach.

Hot tip: Waihi Beach enlist the support of their local fire brigade to help clear debris off the mat with their high-pressure fire hoses. Which local groups could you partner with to support your maintenance schedule?

Examples

[Access-Mats](#) (U.S based, with distributors in Australia) and [Mobi-Mats](#) (NZ distributor, C1 South) are beach accessibility mats that have been specifically developed for use in permanent or temporary recreation access points. An Access-Mat or Mobi-Mat is a portable and removable rollout access route that can be used in different settings.



▲ **Photo**
Fire brigade cleaning debris off mobi-mats at the end of the summer season.

Beach accessibility equipment

Before jumping to purchase beach accessibility equipment, it's important to consider the storage, management and maintenance of the asset.

Storage, management and maintenance of equipment

A system for on-site management of beach accessibility equipment requires the facility to store the equipment when it is not in use, to pre-book the equipment and to safely store any wheelchair or other mobility aid while the beach equipment is being used.

Council pool facilities, Top 10 Holiday Parks, and Surf Lifesaving Clubs are some of the known organisations who have led the storage and loan process of beach equipment on behalf of Councils and community groups in Aotearoa, New Zealand.



▲ **Photo**

Girl in beach wheelchair with two supporters at Paddle day, Wainui. Credit: Halberg and PhotoSport NZ.

Equipment types

- » **Beach All Terrain Wheelchairs** are a low-wheeled piece of equipment for recreational use on sand, and sometimes in water. Unlike standard manual wheelchairs, they have large, rubber wheels which move easily over the sand. There are different types on the market, and each has its own properties.

[Beach wheels New Zealand](#) has a range of different All Terrain Equipment available.

Important consideration

While all-terrain chairs can provide access to the water for some users, they require assistance. This can limit people's independent access to the beach/water and shouldn't be a replacement for an accessible beach route (particularly where beach accessibility can be enhanced). Ideally, both an accessible route and beach accessible equipment should be provided where possible.

Equipment for independent access should be considered as additional items to hire at your site:

- » [Freedom Trax](#) – motorised off-road attachment for manual wheelchairs that enables wheelchair users to traverse sand and other rough outdoor terrain (fits in the boot of a car).
- » [Terrain Hoppers](#) – powered off road wheelchairs, engineered to navigate sand and other rough outdoor terrain.

Communication

We don't want equipment to gather dust! Make sure potential users know what's available, and how to access it. Information on the availability and use of equipment should be made available through a variety of formats including online, social media, and local media etc.

Useful information about equipment hire should include

- » Where to pickup/drop off equipment, and what hours this location is open/available for.
- » Any booking form requirements – is this an online form?
- » What deposit, if any, is required – how is this paid?
- » What's included with the hire (spare batteries if appropriate, different attachments/wheels).
- » If the equipment fits in the boot of a regular car/what types of vehicles are required for transporting the equipment.
- » How long can the equipment be hired for?
- » Who to contact for enquiries and further information.
- » Any assembly or 'how to use' instructions or videos.

Hot tip: Adding your beach upgrades and accessibility information to the [accessible beach directory](#), or via [Access Maps](#) are useful ways to spread the word.. It is also useful to share this information with your local Regional Tourism Organisation, like [Bay of Plenty NZ](#).

References

- #AdaptMTB** (2022). Basics of aMTB Accessible Trails: Accessibility is for everybody - our whānau and our hapori whānui. <https://www.adaptmtb.nz/inclusive>
- American Trails**, Braille trail building and renovation. <https://www.americantrails.org/resources/faq-braille-trails>
- Auckland Design Manual**, Accessible Toilet Design Checklist. <https://www.aucklanddesignmanual.co.nz/media/3cdo5hsc/ud-toilet-design-checklist.pdf>
- Bandukda et al.**, (2020). UCL Interaction Centre, Global Disability Innovation Hub. Places: A Framework for Supporting Blind and Partially Sighted People in Outdoor Leisure Activities. https://discovery.ucl.ac.uk/id/eprint/10109857/1/ASSETS20_PLACES.pdf
- Bell** (2018). Sensing Nature, Designing with Sight Impairment in Mind. <https://static1.squarespace.com/static/5826d239e58c628c3c92e0b7/t/5bd30c8d1905f4b17d0bde9b/1540557970315/Inclusive+Design+Sensing+Nature.pdf>
- Blind Low Vision NZ** (2018). Accessible Signage Guidelines. <https://blindlowvision.org.nz/resources/accessibility-guidelines/accessible-signage-and-spaces/>
- British Disabled Angling Association** (2014). Access to Angling: best practice guidance. https://bdaa.co.uk/pdfguide/bdaa_guide.pdf
- Building Performance**. Sanitary facilities: Building Code Compliance. <https://www.building.govt.nz/building-code-compliance/d-access/accessible-buildings/interior-space/sanitary-facilities>
- Building Performance**. The need for accessible car parking: NZ Building Code Compliance. <https://www.building.govt.nz/building-code-compliance/d-access/d1-access-routes/accessible-car-parking-spaces/the-need-for-accessible-car-parking>
- Changing Places New Zealand** (2023). General Information Guide. <https://www.changingplaces.org.nz/file/changing-places-nz-general-information-oct-2023/open>
- Corazon et al.**, (2017). I Would Really like to Visit the Forest, but it is Just Too Difficult: A Qualitative Study on Mobility Disability and Green Spaces. <https://sjdr.se/articles/10.16993/sjdr.50>

- Department of Conservation & Recreation Aotearoa** (2024). Outdoor Recreation Accessibility Survey. <https://dxcprod.doc.govt.nz/about-us/our-role/managing-conservation/recreation-management/visitor-research/survey-of-new-zealanders/outdoor-recreation-accessibility-survey-2024/>
- Department of Conservation** (2017). Understanding the needs and aspirations of the disabled and ageing community.
- Disability Sport Northern Ireland** (2021). Accessible Outdoor Places Design Guidelines. <https://www.dsni.co.uk/document/other-resources-test/?category=384>
- Disabled Hikers** (2022). Accessible Trail Surface types. <https://www.disabledhikers.com/2022/01/18/accessible-trail-surface-types/>
- Euan's Guide** (2021). Access Survey. <https://www.euansguide.com/campaigns/the-access-survey-previous-survey-results/>
- Godtman Kling & Ioannides** (2019). Enhancing accessibility in tourism and outdoor recreation: A review of major research themes and a glance at best practice. <https://www.diva-portal.org/smash/get/diva2:1381010/FULLTEXT01.pdf>
- Hayden** (2021). Stakeholders' Perceptions of the Future of Accessible Beach Tourism in New Zealand: A Case Study of Mount Maunganui and Pāpāmoa. Auckland University of Technology. <https://openrepositorydev.aut.ac.nz/items/54056cd7-efe6-443c-88a5-506398631c78>
- Kootenay Adaptive Sports Association** (2020). Adaptive Trail Standards.
- Learning Differences Aotearoa Trust.** Dyslexia Friendly Communication Guide. https://www.dyslexiasupportsouth.org.nz/site/assets/files/1511/dyslexia_friendly_communication_guidelines.pdf
- Lepoglavec, Papeš, Lovrić, Raspudić & Nevečerel** (2023). Accessibility of Urban Forests and Parks for People with Disabilities in Wheelchairs, Considering the Surface and Longitudinal Slope of the Trails. <https://www.mdpi.com/2071-1050/15/10/7741>
- New South Wales Government** (2017). Design guidelines: Accessible Fishing Platforms. A summary of design principles and guidelines for accessible recreational fishing platforms. <https://www.dpi.nsw.gov.au/fishing/recreational/resources/accessible-recreational-fishing-for-everyone>
- Ngā Haerenga**, New Zealand Cycle Trail – Annual Visitor Data (2023), Get Smart. All New Zealand Cycle Trails Data.

- NZS 4121:2001.** Design for access and mobility: Buildings and associated facilities.
<https://www.standards.govt.nz/shop/nzs-41212001>
- Paths and Recreation Ontario** (2014). Pathways to Recreation: learning about Ontario's Accessibility Standard for the Design of Public Spaces. <https://accessibilitycanada.ca/wp-content/uploads/2016/01/Pathways-to-Recreation.pdf>
- Paths for All & Scottish Natural Heritage** (2016). Outdoor Access Design Guide. <https://www.pathsforall.org.uk/mediaLibrary/other/english/outdoor-access-design-guide.pdf>
- Paths for All & Sensory Trust UK** (2023). Outdoors Accessibility Guidance, supporting inclusive outdoor access in the UK. <https://www.pathsforall.org.uk/mediaLibrary/other/english/outdoor-accessibility-guidance>
- Paths for All** (2019). Dementia and the Outdoors Guidance Note, Dementia Friendly Walking. <https://www.pathsforall.org.uk/resource/dementia-and-the-outdoors-guidance-note>
- Perry et al.,** (2021). "Enticing" but Not Necessarily a "Space Designed for Me": Experiences of Urban Park Use by Older Adults with Disability. <https://www.mdpi.com/1660-4601/18/2/552>
- Phillips** (2020). Wai Puna: An Indigenous Model of Māori Water Safety and Health in Aotearoa, New Zealand. <https://scholarworks.bgsu.edu/cgi/viewcontent.cgi?article=1564&context=ijare>
- Recreation Aotearoa** (2022). Mountain Bike Trail Design & Construction Guidelines. Figure 7, clearances. <https://www.nzrecreation.org.nz/sites/default/files/content-files/New%20Zealand%20Mountain%20Bike%20Trail%20Design%20and%20Construction%20Guidelines.pdf>
- Sensory Trust & Natural England** (2020). All Reasonable Means, least restrictive access to the outdoors. <https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug2020.pdf>
- Sport New Zealand** (2024). Places and Spaces Framework. <https://sportnz.org.nz/resources/new-zealand-spaces-and-places-framework-2024/#:~:text=What%20is%20the%20New%20Zealand,decisions%20about%20spaces%20and%20places.>
- Sustrans** (2023). Disabled Citizens Inquiry – Improving off-road routes. <https://www.sustrans.org.uk/media/11708/sustrans-disabled-citizens-inquiry-full-report.pdf>
- U.S. National Recreation and Park Association.** Equity in Parks, and Recreation - a Historical Perspective. <https://storymaps.arcgis.com/stories/5727e40084614c559bf0440dc5a21f7f>

- UK Department for Transport** (2020). Cycle Infrastructure Design. <https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-120>
- United States Access Board** (2014). Outdoor Developed Areas: trails, camping & picnic facilities, viewing areas, beach access. A summary of accessibility standards for Federal outdoor developed areas. <https://www.americantrails.org/resources/united-states-access-board-outdoor-developed-areas>
- Universal Design Principles**, Waka Kotahi. <https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/design/pedestrian-design-principles/universal-design-principles/>
- UNWTO** (2021). Accessibility and inclusive tourism development in nature areas: Compendium of best practices. <https://www.e-unwto.org/doi/pdf/10.18111/9789284422777>
- Visitor Solutions Ltd**, Sport New Zealand, Equestrian Sports New Zealand, New Zealand Pony Club (2023). National Equestrian Facilities Strategy. <https://sportnz.org.nz/media/zkshczth/national-equestrian-facilities-strategy.pdf>
- Wall-Reinius et al.**, (2023). Access to Nature for Persons with Disabilities: Perspectives and Practices of Swedish Tourism Providers, Tourism Planning & Development. <https://www.tandfonline.com/doi/full/10.1080/21568316.2022.2160489>
- Wheels for Wellbeing** (2020). A guide to Inclusive Cycling: 4th Edition. https://wheelsforwellbeing.org.uk/wp-content/uploads/2020/12/FC_WfW-Inclusive-Guide_FINAL_V03.pdf
- Wheels for Wellbeing**. Inclusive Cycle Infrastructure Guide: Vehicle access restriction bollards. <https://wheelsforwellbeing.org.uk/inclusive-cycle-infrastructure-guide-vehicle-access-restriction-bollards/>
- Wisconsin Office of Outdoor Recreation** (2023). Small Changes, Big Impact for a More Accessible Outdoors Webinar. <https://www.youtube.com/watch?v=Jb9SlQPh3Ks>
- Zeller, Doyle & Snodgrass** (2012) USDA Forest Service Accessibility Guidebook for Outdoor Recreation and Trails. https://www.fs.usda.gov/recreation/programs/accessibility/pubs/pdfpubs/pdf10072014/AGORT-100dpi_Part%202_pages-1-12.pdf
- Zhang et al.**, Department of Geo Sciences and Natural Resource Management, University of Copenhagen (2017). Health-Promoting Nature Access for People with Mobility Impairments: A Systematic Review. <https://www.mdpi.com/1660-4601/14/7/703>

Appendix

Inclusive trail case studies

New-build Trail: Trash Panda, Woodhill Mountain Bike Park

How the project came about

Understanding that many bike parks don't offer accessible trails, the Woodhill Park's team recognised the importance of making trails accessible for all, particularly the adaptive mountain biking (MTB) community.

“ We put so much time and effort into building and maintaining our trails - and the west coast is such a beautiful part of Auckland - we want as many people as possible to come out and enjoy our park. We want the park to be enjoyed by everyone, no matter their age, skill level, or ability. ”

— **Liam Bamford,**
Operations Manager at Woodhill.

A new perspective learning from adaptive mountain bike riders

Liam admits,

“ I had heard about adaptive riders and their machines, but I'd never actually seen how they worked. I guess I was just uneducated about what they can and cannot do. ”

But once Liam started seeing adaptive riders at the park:

“ talking to the riders it was clear how much they loved it out at the park and how they could ride so much more with a few changes. Some straightforward, others not so much but it was great to have that conversation to open my eyes about keeping these changes in mind whilst working developing the trails. ”

Nuts and bolts of building an accessible trail

Trash panda was always in the works, but the Woodhill team decided to make it an adaptive mountain biking trail, with two key considerations:

1. Widening the overall trail (typically 1.2m wide)

“ which works for the adaptive MTB community whilst also creating a faster flow trail for everyone to push their limits on or learn to pick up speed within the trees. ”

2. Not creating any tight corners.

“ Which also benefits every rider to build confidence with speed and control. ”

“ By doing these two things, not only did we create an epic flow trail for the adaptive MTB community, but we also created a trail that every skill level can enjoy at their own pace. ”



▲ **Photo**
Signage of Trash Panda trail with adaptive grading and information added.

Trail details

- » aMTB Grade 4
- » RA MTB Grade 3
- » 600m trail
- » Machine-built trail
- » Hard-compact clay surface
- » Roll-over jump features
- » No bridges or structures

► [Full video ride-through and details are available on the AdaptMTB site.](#)

But it's not just the trail, itself

The Woodhill team have also made upgrades to their network of trails, added designated accessible parking spaces, and an alternative gate for people using adaptive equipment to access the network.

Greater access = greater impact

The Woodhill team have noticed more adaptive MTB riders out in the forest enjoying the Park and are getting plenty of great feedback from the community.

“That's the second time I have been able to ride with my boys since the injury nine years ago. For years, it seemed like an unrealistic dream to get out on a bike and do what I love with my kids. Such an awesome experience!”

— Adaptive MTB Enthusiast.

What Woodhill want others to know

“The adaptive MTB community are entitled to ride, just as much as anyone else. I've seen what they can ride and how they can ride it and it's beyond impressive. The main thing I guess from a trail builders' perspective is to keep the adaptive riders in the back of your mind whilst building.”

It's not a question of “This is an adaptive trail” and more of a “What can I do to make it so everyone can ride it”. If it means spending an extra day clearing or changing a corner or bridge so more people can enjoy it, that's a win!

Future plans

While Trash Panda was a new addition to the park, the existing trail network spans 70km. The team have identified several changes they'd like to make to these trails, to enhance their accessibility.



◀ Photo

Adaptive rider group at the Woodhill mountain bike park. Credit: [#Adapt MTB website](#)

An existing inclusive gem: Mokopuna Trail, Tītokorangi Forest, The Redwoods

Mokopuna Trail is a multi-use pedestrian and biking trail located in the iconic Whakawerawera Forest (The Redwoods) in Rotorua.

Developed over 10 years ago, the Mokopuna Trail was designed for easy family walking and biking. A place for the whole whānau to go that promotes intergenerational physical activity. The trail filled a need identified by the local community for a family-friendly trail. Since its creation, the trail has become a popular entry point for biking in the forest before progressing to the main mountain bike trails - it is also popular with walkers and runners.

Learning that the trail was more inclusive than intended

Recognising that the trail catered for whānau and mokopuna (as suggested in its name), Simon Alefosio-Tuck, Kaitohu Whakahono Rēhia (Recreation Partnerships Advisor) for Rotorua District Council collaborated with a local Halberg Advisor to test the trail's accessibility. This testing aimed to determine if the trail could be promoted to a wider audience as an accessible trail.

“Because the trail was built for families, it's naturally well suited for adaptive mountain biking use.”

— **Simon Alefosio-Tuck,**
Rotorua Lakes Council.



▲ **Photo**
3-wheeled adaptive bikes (Motoms) using the Mokopuna Trail.
Credit:#Adapt MTB

Since discovering this, Simon has recommended the trail to organisations like #AdaptMTB to host their 'Have a Go' days. It was later reviewed by #AdaptMTB as an aMTB grade one trail.

For full trail details and a video-ride through of the trail, visit the [#AdaptMTB website](#).

Why the Mokopuna Trail is a favourite

- » **More than a short loop:** with 3km of trail, and well-spaced trees (1-1.5m apart), wide corners and gentle gradients to navigate, it offers an enjoyable experience for trail users – whether walking, wheeling or riding - within an important local setting.
- » **Connected to the local community:** with a connected network of pathways leading to Mokopuna, it's become the daily spot for many wheelchair users who can access the trail independently from their homes, complete a loop of the trail and head back - all without the need for private transport. The adjacent neighbourhood also has a large population of retirees and during the holiday periods, intergenerational groups frequently use the track.
- » **Amenities close by:** The trail starts next to the local isite and toilets (including an accessible facility), with shaded seating, a picnic table with an accessible cut-out, and drinking water available. There is ample car parking, including mobility parking spaces at several points.
- » **Regularly maintained:** The trail, managed by the Rotorua Trails Trust, has a maintenance schedule. As result, the surface is regularly topped up with small compacted gravel, to maintain the integrity of the surface.



▲ **Photo**

Person in trail rider with support people on Mokopuna trail.

Greater access = greater impact

Since being promoted as a more accessible trail, the Mokopuna Trail has opened up new opportunities for people with impairments. It has also hosted several inclusive events, such as:

- » Annual #AdaptMTB ‘Have a Go’ Days
- » [Born to Adapt](#) Event with Peke Waihangā Artificial Limb Service ⁵⁹
- » Amazing Race by Parafed Bay of Plenty and Halberg

“ The Mokopuna Track is an ideal venue for our Amazing Race event. It offers a scenic, accessible environment that caters to a wide range of abilities. Its mix of natural terrain and well-maintained paths allows participants to enjoy the outdoors at their own pace, making it suitable for everyone, from families to individuals with varying mobility needs. This ensures that our event is an inviting space where everyone can participate and have fun! ”

— **Siobhan Terry,**
Halberg Advisor,
Bay of Plenty.

HIT THE TRAILS WITH BORN TO ADAPT THIS SUMMER.

Roll, walk, jog or run your way through the beautiful Redwood Trails in Rotorua. This is a free disability friendly event for athletes of all ages and abilities. Disabled runners encouraged to join.

Running Clinic
📅 10am – 2pm on Friday, 9 February 2024
📍 Village Green, Rotorua 3010

Trail Challenge
📅 10am – 3pm on Saturday, 10 February 2024
📍 Redwoods i-Site Visitor Information Centre, Titokorangi Drive, Whakarewarewa, Rotorua

RSVP by 6 February 2024. To register scan the QR code with your smart device or go to www.bit.ly/BTA-NZ24

For questions or more information, contact:
Zach Friedley
✉ zfriedley@gmail.com
📱 @borntheadapt @zachary_movement

Peke Waihangā Artificial Limb Service

Logos: Peke Waihangā, Bay of Plenty, and a stylized 'no' logo.

▲ Photo

Promotional poster for Born to Adapt trail running event 2024 at Mokopuna Trail.

59. Born to Adapt Event Article (2024)
<https://www.nzherald.co.nz/rotorua-daily-post/news/bay-of-plenty-man-who-lost-leg-in-farming-accident-now-helping-amputee-community/S6EVC16QTJE5LIPFPGWONOBUM4/>

Future improvements

The team have identified a couple of areas for improvement, based on their growing knowledge of inclusive trails:

- » Some small, steeper sections can be challenging for some trail users. A potential solution being explored includes a bypass with a gentler gradient.
- » The signage at the trail entrance has poor colour contrast – With a project planned to upgrade signage, the team will also improve the contrast for better visibility.

What Rotorua District Council want others to know

Assess your existing trails

“ I’m not of the opinion that we need to go out and build a whole bunch of new accessible trails, especially when the ones we’ve already got may in fact be more accessible than we understand right now. ”

Their advice is to assess existing trails, against the inclusive trail guidelines to see which align or could be improved with minor adjustments.

Community and input from people with lived experience is essential

The trails need to be tested by people with lived experience of disability, and the feedback gathered must reflect real-world use. This needs to be people with varying impairments and access needs, not just wheelchair users. Connecting with your local community, and people with a lived experience of disability can validate a trail’s accessibility and highlight areas for improvement.

Improving connection to community and mobility scooter hire: New Plymouth District Council (NPDC) coastal walkway accessibility

[The Coastal Walkway](#) is a key part of the cycle network in New Plymouth. Accessibility was a priority from the outset of the development, and remains central to its renewal and upgrade processes.



▲ **Photo:** Coastal Walkway, New Plymouth District Council

Trail details

- » 13.2km from Port Taranaki to the eastern side of Bell Block Beach, along Taranaki's Coastline. With multiple access points along the trail.
- » Shared – use walkway. Grade: Easy.
- » A paved, concrete surface, with some wooden boardwalk sections and gentle slopes.
- » 2.4m width generally, 4m width at its widest point.

Mobility scooters for hire: how this works for NPDC

For trail-users who need additional support to access the walkway, there are dedicated Mobility Scooters available for hire (for no charge) at the Taranaki Disabilities Centre Trust that can be used between the Port Taranaki and Te Rewa Rewa Bridge section of the walkway.

- » Council owns the mobility scooters, and they come under Council's general fleet management services (utilising Council expertise in fleet maintenance).
- » The Disabilities Centre Trust is paid to manage the booking of the scooters through a 10-year contract with Council, funded through the LTP.



◀ **Photo**

Two mobility scooter users on the Coastal walkway.

Greater access = greater impact

“ The coastal walkway is one of my favourite places to bike with my friends. It is fully accessible and caters for all abilities. Every ride is a mini adventure with something new to see every time. ”

— **Jake Ryan,**
Parafed Taranaki Member

► **Photo**
Jake Ryan on the Coastal Walkway.



Lessons learned

Value of lived experience input and advocacy

The Age and Accessibility Working Party (coordinated by Council) have helped to raise the profile of accessibility and its importance within the Council Long Term Planning processes. This has helped to secure support for accessibility initiatives throughout the region, such as the Coastal Walkway.

The smoother the surface, the better

Feedback from the community has been to reduce the use of chip seal where possible along the walkway, as it's more uneven than the concrete surface and harder for small wheels to operate on.

Wider paths = less anxiety and greater accessibility

As popular shared-use trail, the wider (4m sections) work particularly well and allow users more space to navigate the pathway with others. For some trail users, there can be some anxiety around navigating the narrower sections of trail.

Connecting the walkway to the path network

Linkages to existing walkways and paths within the network are an important part of the journey to accessing the walkway. Some of the access points and linkages to get to the walkway are not as accessible as the walkway itself. For example, some of the side street pathways and trails users might need to access to get to the walkway have some narrower access points or steps to them. When the linking pathways and trails are inaccessible, this prevents users with access needs from accessing the accessible coastal walkway all together.



▲ **Photo**

Before photo of linking track with rough surface and loose gravel



▲ **Photo**

After photo, linking track is now a sealed, smoother surface with no loose gravel

Future plans

The team at NPDC are continuing to develop the linkages to the existing pathway to improve access on to the walkway itself, to further improve access to the popular asset. By improving the linking access ways to the pathway, they are creating more connection opportunities within their community.

Beach accessibility case study

Waihi Beach: beach access mats, equipment and improved amenities

How the project came about

The beach and moana (sea) are central to the Waihi Beach community. However, for anyone who cannot walk/wheel through soft sand or across dunes, accessing the beach was nearly impossible. A local community member posted on social media about their partner in a wheelchair being unable to enjoy their local beach. This sparked a movement of community collaboration and action within Waihi beach, led by Cindy Clair at Live Well and Dave MacCalman at Halberg.

All about community and collaboration

Knowing that not everyone could access such a precious taonga (treasure) within their community was particularly troubling.

“ To realise that it was not easy nor accessible for others [to access the beach] didn't feel right, and the community felt a responsibility to change that! ”

— **Cindy Clair**, Live Well

There was a strong shared sense of responsibility by the community to make the beach accessible to everyone. Local community groups and businesses worked together to improve the accessibility of the beach and its surrounds by rallying together, coordinated by Cindy, to fundraise and source the products needed to gain access to the beach.

Nuts and bolts of installing and maintaining beach access mats and equipment

After engaging with their local community with a lived experience of disability, providing beach access mats and equipment to access the beach itself, were determined as priority projects.

Beach access mats

- » Mobi-Mat Beach Access Matting - [sourced from C1 South](#) - made from 100% recyclable high density polyester, were purchased to allow safe and sturdy access onto Waihi Beach from the main entrance.
- » 8 x 10 metre sections which can be connected, were purchased.
- » The first 20-30 metres of matting which cover the access way (not affected by the tide) remain in place all-year round. They are connected to a concrete ramp up to the access point to the beach which link the car park to the beach access route.
- » The remaining 40 metres of mat are put out from Labour Weekend to Easter (coinciding with when the Surf Club start their patrols). This section of mat extends to down to the high tide line, to allow safe and sturdy access to hard sand.



▲ Photo

Mobi mat extends from the entrance to the hard sand with a powerchair user going down the mat.

Maintenance

- » Friends of the Mat' (including a dedicated Mat Manager) are a group of dedicated volunteers who looked after the mat. The job of the volunteer group includes helping maintain the mats over the summer period. This can include bringing the mat in to prevent any damage during significant weather events or king tides. The Mat Manager helps to manage this process, tracks the tides and swells, and makes the call when to rally the 'Friends of the Mat'.
- » At the end of the summer season, the Friends of the Mat enlist the help of the local fire brigade, who wash down/clear the debris off the mats before retiring them for the winter.
- » The Waihi Beach Surf Lifesaving Club provide storage and maintenance support.

“ Part of their ethos is to ensure everyone has a safe and happy experience on our beach, so they view access as part of their responsibility too – partnering with the Surf Life Saving Club was a good merge of our vision and theirs. ”

— **Cindy and Dave**

Beach wheelchairs

- » Two types of beach wheelchairs were purchased via donation. A Sandcruiser with four wheels that suits adults, and a Hippocampe (large). A three-wheeler with head support that suits children and medium size adults.
- » These chairs complement the beach mats and allow wheelchair users easier beach access. The chairs are also made to enter the water.
- » The beach wheelchairs are available for free all year round and are stored at a local campground which is located 30 metres from the beach and beach mats.
- » The local campground stores the chairs and manages the bookings.



▲ **Photo**
Sand Cruiser beach wheelchair on the left,
Hippocampe on the right.

Accessible water station and picnic table

- » Once the ramp and beach mats, were established – a collaboration with Sustainable Waihi Beach and Council enabled the installation of an accessible water station and picnic table to provide more accessible offerings near the beach mats.
- » They are currently working to upgrade the picnic table design to a more accessible option from Street Scape.
<https://streetscape.co.nz/product/rendezvous-accessible-picnic-set/>

Greater access = greater impact

A snapshot of community impact

- » Regional disability sport organisations (Parafed BOP and Waikato) have both held adaptive surfing days at Waihi Beach – supported by local volunteers - due to the introduction of mats and wheelchairs. This has also resulted in more disability sport events being held in Waihi beach.
- » People who haven't been on the beach in years have now been able to access it with the support of the mats and chairs.
- » One family described the mats and chairs as making a "monumental difference" in their lives, enabling easier family outings to the beach, which were previously challenging.



▲ Photo: Parafed Waikato Adaptive surfing event.

- » A local elderly care community, utilised the mats to take members with walkers to the beach, allowing multiple people to visit together—an experience that was impossible before the mats were installed.
- » On the first Christmas Day the mats were available, three groups of people with wheelchair users were at the beach gathered near the mats, all enjoying the beach and celebrating the day together.
- » There is now greater awareness of the need for accessible design in all new community projects in Waihi Beach. For example, a community garden currently in development has been designed with accessible features, including wider paths for wheelchair users and lowered planting boxes to enable participation in gardening activities.



▲ Photo

Group of people from elderly care community enjoying access to the beach.



▲ Photo

Friends of the mat volunteer group.

What they wish they'd learnt sooner

- » **A Flexible, well-coordinated volunteer team is crucial** to manage the mat and changing weather conditions. Over the past three summers, the level of volunteer involvement for managing the mat has varied greatly depending on weather conditions. For instance, in the summer of 2022/23, with severe weather and Cyclone Gabrielle, volunteers had to pull in the mats around 10 times, compared to just once or twice the previous summer.



▲ **Photo**

Fire brigade cleaning debris off mobi-mats at the end of the summer season.

» **The Fire Brigade can clear debris from the mats much faster than manual efforts.**

In hindsight, partnering with them from the start would have saved time and effort.

» **A key challenge remains in collecting data on mat usage.**

Robust data would help evaluate the project's success and encourage other communities to adopt beach mats. We're exploring ways to improve data collection for the upcoming summer.

Future plans

Next up, the community are working to provide a full beach experience for people with complex access needs by developing an accessible changing facility at the local surf club.

For more information about this project, please contact:

Dave MacCalman – 027 457 9980

Cindy Clare – 021 083 07553

Diagram appendices

page	203	Diagram 1	<u>Inclusive trail guidance: pedestrian walking trails</u>
	204	Diagram 2	<u>Inclusive trail guidelines: mountain biking</u>
	205	Diagram 3	<u>Decision-making matrix for existing barriers on-trail</u>
	209	Diagram 4	<u>Maimai indicative plans</u>
	211	Diagram 5	<u>Lake Mangamahoe casting platform indicative plans</u>

Inclusive trail guidelines: pedestrian | walking trails

NZCT		NZCT 1		
RA MTB grading		RA Grade 1		
DOC cycle track		DOC Grade 1		
Track standard	SNZHB 8630:2004 Path for PWMD	SNZHB 8630:2004 Short Walks	SNZHB 8630:2004 Walking Tracks	SNZHB 8630:2004 Easy Tramping Track/Great Walk
Specification	A0 All Abilities – Easiest	A1 All Abilities – More Challenging	A2 Inclusive Walking Trail – Intermediate	A3 Inclusive Easy Tramping Trail Great Walk – Advanced
Description	People of all abilities ages and fitness levels can enjoy a safe and enjoyable experience. The trail has a hard, smooth, well-groomed surface with low gradients, wide paths and gentle turns. Trail is well-defined with good contrast to the surrounding environment. Trails are likely to be short and in easily accessible public areas with wheelchair accessible facilities. The trail allows for users to be side by side most of the time. Low/limited speed zone. This is an outdoor trail, not an 'access route'. Users may expect variable conditions, depending on the seasons, weather, and level of maintenance on the trail. Trail is step-free.	Suitable for all ages and most fitness levels. The trail feels safe as a first walk/ride/push. It is more challenging with a regular wheelchair, and for those wanting an easy gradient or experience. Trails are well-formed, flat, wide, may be compacted or firm gravel. The trail allows for users to be side by side most of the time. Users may expect variable conditions, depending on the seasons, weather, and level of maintenance on the trail. Trail is step-free.	Suitable for most ages and abilities, with a lower level of experience in the outdoors. This trail is for people looking for more challenging experience, with some steeper gradients, and narrower sections where people may not be able to walk/wheel side-by-side. Assistance may be required on steeper sections. Users may expect variable conditions, depending on the seasons, weather, and level of maintenance on the trail. Trail is step-free.	Suitable for people with experience on outdoor trails, experienced outdoor mobility equipment users, and trail users with a support person physically able assist them on-trail, if needed. Trail may be the entire duration of a shorter trail or the first section of a longer track network, potentially leading to a hut or camp site. Assistance recommended on steeper sections of the track. Track is generally well formed, some sections may be rough, muddy or steep. Variable conditions are to be expected. All bridges and structures are step-free, narrower sections to be expected.
Experience	Looking for a safe, predictable experience using day-to-day mobility aids without any extra equipment or planning necessary. Can be shorter trails, or longer trails with options to turn-back or with exit/entry points along the trail.	Looking for an experience that is not on a regular footpath that may access interesting natural environments or points of interest. May require additional equipment or planning.	Looking for a more challenging experience in the outdoors. May require additional equipment or planning.	Is developing skills and confidence in the outdoors, and is looking for a more challenging experience and an outdoors environment. Requires thorough-planning.
Equipment guide	Suitable for all wheeled mobility devices and adaptive equipment, including double prams. Stable surface for crutches/walking frames, people with service dogs, and long cane users (outdoor tip may be advised). Standard active footwear suggested.	All mobility devices with wheels can manage but smaller wheels may struggle on loose gravel. Crutches and walking frames to be mindful of potential loose gravel. Suitable for people with service dogs, long cane users (outdoor tip recommended).	Suitable for outdoor mobility equipment such as the trail rider, day chairs with a third wheel (or power assist) attachments, or off-road wheels, and all-terrain chairs. Crutches, walking frames and regular day-chair users to be mindful of potential loose gravel and uneven terrain. Suitable for people with service dogs, long cane users with outdoor tips. Users to be mindful of narrower sections of track.	Suitable for modified outdoor equipment such as the trail rider, all-terrain wheelchair, off-road wheel attachments are recommended. People with service dogs to be mindful of narrower sections of track, outdoor cane tip recommended. Users with walking poles or crutches to be mindful of slip hazards.
Trail width minimum (single track wider widths required for 2-way and shared use trails)	2m across whole length of route.	1.5m min.	0.9m min. General width 1.2m+.	0.9m min. General width 1.2m+.
Average gradient (up and downhill, 90% of the trail)	0-2° (1 in 29).	0-2° (1 in 29).	Track gradient varies. Where track exceeds 6° (1 in 9.5) or stairs are involved, alternative step-free structures or switchback route is recommended.	Track gradient varies, but limited where possible in line with natural environment. Where track exceeds 11° (1 in 5.1) or stairs are involved, alternative step free structures or switchback route to be considered.
Maximum gradient (up to 10m up/down)	Max 4° (1 in 14.3).	Max 5° (1 in 11.4).	6° (1 in 9.5). Any sections longer than 10m must have a rest landing or pull over area.	11° (1 in 5.1). Any sections longer than 10m must have a rest landing or pull over area.
Turn radius to outside of tread	> 6m.	> 6m.	1.5m min.	1.5m min.
Handrails	Handrails recommended on both sides when the gradient steeper than (1:20) to assist users up terrain. Top rail 90cm from ground, lower rail 75cm from ground. For barriers and guardrails please refer to the SNZ HB 860:2004 for 'paths'. For accessible handrail design, please refer to NZS 4121:2001.	Handrails recommended on both sides when the gradient is steeper than (1:14) to assist users up terrain. Top rail 90cm from ground, lower rail 75cm from ground. For barriers and guardrails please refer to the SNZ HB 860:2004 for 'short walks'. For accessible handrail design, please refer to NZS 4121:2001.	Handrails recommended based on the trail experience, e.g. may be recommended where gradient is 1 in 10, on loose, rougher terrain to assist users on steeper sections. For the use of safety barriers and guardrails, please refer to the SNZ HB 860:2004 for 'walking tracks'. For accessible handrail design, please refer to NZS 4121:2001.	Handrails recommended based on the trail experience., e.g. may be recommended where gradient is steeper than 1 in 10, to assist users on steeper sections. For the use of safety barriers and guardrails, please refer to the SNZ HB 860:2005 for 'great walks and easy tramping tracks'. For accessible handrail design, please refer to NZS 4121:2001.
Bridges and boardwalks: minimum width (wider if not straight)	2m. All water courses must be bridged.	1.5m+. All water courses must be bridged.	1.2m. All water courses must be bridged.	1.2m. All major watercourses must be bridged. Minor water courses less than 1m wide in normal flow conditions (without water going over the top of footwear), may be bridged.
Bridges and boardwalks: surfaces & kickboards/handrails	Must have non-slip surfaces. Must have kick boards on either side. Refer to SNZHB 860:2004 for 'paths' for further safety guardrail and barrier guidance on boardwalks and bridges.	Must have non-slip surfaces. Must have kick boards on either side. Refer to SNZHB 860:2004 for 'short walks' for further safety guardrail and barrier guidance on boardwalks and bridges.	Must have non-slip surfaces. Must have kick boards on either side. Refer to SNZHB 860:2004 for 'walking tracks' for further safety guardrail and barrier guidance on boardwalks and bridges.	Must have non-slip surfaces. Must have kick boards on either side. Refer to SNZHB 860:2004 for 'great walks and easy tramping tracks' for further safety guardrail and barrier guidance on boardwalks and bridges.
Bridges and boardwalks: minimum entry turn radius	> 6m flat corner.	> 6m flat corner.	1.5m.	1.5m.
Bridges and boardwalks: maximum entry lip height	10mm max lip height. Step-free entry onto bridge/structure.	10mm max lip height. Step-free entry onto bridge/structure	20mm max lip height. Step-free entry onto bridge/structure	20mm max lip height. Step-free entry onto bridge/structure
Cross slope	Level, 0-2° (1 in 29) max.	Level, 1- 2° (1 in 29) max.	Level, 2-3 (1 in 19)° max for a max distance of up to 25m, before returning to a flat gradient.	Level, 3-4° (1 in 14.3)° max for a max distance of up to 25m, before returning to a flat gradient.
Trail surface	Hardened and smooth — no loose material such as concrete, asphalt, hard-packed limestone/gravel/pumice, or board walk. Contrasts well from the surrounding environment.	Hardened, well-formed and even — may have some loose material (smaller than 5mm in diameter), such as compacted natural surface, limestone/pumice/aggregate.	Mostly hardened, well-formed and even — may have loose material/gravel pebbles, such as compacted natural surface, aggregate composite, limestone/pumice.	70% of total track length to have a surface that provides adequate firm and even base. 30% of track may have uneven, steep or rough sections broken by rocks, roots, or deep-muddy sections. These sections must still provide reasonable ground in wet weather conditions.
Tread obstacles (rocks, roots, ruts)	None.	None.	Some obstacles may be present, obstacles max 20mm high.	Rocks, roots, deep-muddy sections. 50mm or less.
Muddy sections	No muddy sections.	No muddy sections.	Up to 2% of the total length of trail in wettest season, provided it is no deeper than 50mm. with a hard packed surface underneath. To ensure that wet or muddy sections of trail are not excessively long, they should constitute no more than 1m in every 50m.	Up to 2% of the total length of trail in wettest season, provided it is no deeper than 50mm. with a hard packed surface underneath. To ensure that wet or muddy sections of trail are not excessively long, they should constitute no more than 1m in every 50m.
Surface breaks/path gaps (cracks, gaps in boardwalks etc.)	Max 15mm.	Max 15mm.	Max 15mm.	Max 15mm.
Additional Clearances	Vegetation cleared to allow clear headroom of at least 2.4m (3.7 to allow for horse riders) vegetation cleared to at least the trail width, no vegetation to protrude trail.	Vegetation cleared to allow clear headroom of at least 2.4m (3.7 to allow for horse riders) vegetation cleared to at least the trail width, no vegetation to protrude trail.	Vegetation cleared to allow clear headroom of at least 2.4m. Vegetation cleared to at least the trail width, no vegetation to protrude trail.	2m min height clearance.
Step downs	No steps.	No stepped drops.	All steps will be accompanied by an alternative, step-free ramped route that is suitable for wheelchairs, pushchairs and mobility equipment.	All steps will be accompanied by an alternative, step-free/ramped route that is suitable for off-road, all-terrain wheelchairs, pushchairs and mobility equipment.

Side slope and track width guideline for building				
Side slope < 5°	Minimum trail tread width one-way or two-way: 2m.	Minimum trail tread width one-way or two-way: 1.5m.	Minimum trail tread width one-way or two-way: 0.9m.	Minimum trail tread width one-way or two-way: 0.9m.
Side slope 5–15°	One-way or two-way: 2m.	One-way or two-way: 1.5m.	One-way or two-way: 1.2m.	One-way or two-way: 1.2m.
Side slope 15–30°	One-way or two-way: 2.5m.	One-way or two-way: 1.8m.	One-way or two-way: 1.5m.	One-way or two-way: 1.5m.
Side slope 30–45°	One-way or two-way: 3m.	One-way or two-way: 2m.	One-way or two-way: 1.8m.	One-way or two-way: 1.8m.
Side slope over 45°	One-way or two-way: 3.5m.	One-way or two-way: 2.5m.	One-way or two-way: 2m.	One-way or two-way: 2m.

Modifications required to existing NZ grades to meet inclusive grades				
SNZHB 8630:2004 Path — people with mobility difficulties	<ul style="list-style-type: none"> reduce max grade from 1 in 11.4 to 1 in 14.3 increase min boardwalk/structure width from 1.2m to 2m. 			
SNZHB 8630:2004 — 'people with mobility difficulties'		<ul style="list-style-type: none"> Increase minimum width of trail and boardwalks from 1.2m to 1.5m Same max grade for PWMD, reduce max grade of 'short walk' 1 in 3.7 to 1 in 12. 		
SNZHB 8630:2004 Walking Tracks			<ul style="list-style-type: none"> reduce max grade from 1 in 3.7 to 1 in 10 Where track exceeds 6deg or stairs are involved, alternative switchback route to be provided Increase minimum trail width from 0.6m to 0.9m (absolute minimum) but 1.2m general width increase minimum structure width from 0.75m to 1.2m Some obstacles may be present, obstacles max 20mm high. 	
SNZHB 8630:2004 Easy Tramping Track/ Great Walk				<ul style="list-style-type: none"> provide alternative path solutions for track sections with stairs or exceeding 11° Expand the track width. Currently 0.3m (min) in open forest, 0.6m (min) in steep slopes, 1m (max) where passing is required) Bridges and structure clear to 1.2m (currently 0.6m). <p>MM thesis, Enabling Wilderness, has an initial case study looking at the key differences (pp. 144-149).</p>

▲ Appendix diagram 1: Inclusive trail guidelines: pedestrian | walking trails.

Inclusive trail guidelines: mountain biking

NZCT		NZCT 1	NZCT 2	NZCT 3	NZCT 4	NZCT 5
RA MTB grading				RA Grade 3		
			RA Grade 2			
		RA Grade 1				
DOC cycle track		DOC Grade 1	DOC Grade 2	DOC Grade 3	DOC Grade 4	DOC Grade 5
Track standard SNZHB 8630:2004	SNZHB 8630:2004 Path for PWMD	SNZHB 8630:2004 Short Walks				
Specification	aMTB Grade 0 - All Abilities - Easiest	aMTB Grade 1 - All Abilities - More challenging	aMTB Grade 2 - Easy	aMTB Grade 3 - Intermediate	aMTB Grade 4 - Advanced	aMTB Grade 5 - Expert
Description	People of all abilities ages and fitness levels can enjoy a safe and enjoyable experience. The trail has a hard, well-groomed surface with low gradients, wide paths and gentle turns. Trails are likely to be short and in easily accessible public areas with wheelchair friendly, accessible facilities. The trail allows for users to be side by side most of the time. low/ limited speed zone.	Suitable for all ages and most fitness levels. The trail feels safe as a first ride for non-cyclists or a more challenging with a regular wheelchair or mobility devices, and for those wanting an easy gradient or experience. Trails are well-formed, flat, wide, may be compacted or firm gravel. The trail allows for users to be side by side most of the time.	Suitable for beginner or unconfident riders who can enjoy a safe experience on well- formed, smooth, predictable tracks with gentle climbs and no surprises. Trail has a social aspect with riders able to ride side by side at times but majority of the trail provides for a single rider. Suitable for most ages and fitness levels. Assistance unlikely to be needed but assistant recommended.	Suitable for intermediate riders developing controlled braking skills on gentle hills, and learning to position the bike on the trail intentionally with speed. Riders need to be able to stay in control on tracks that are bike width on uneven terrain . Berms are safe and good for learning to control and position the bike throughout the turn. Short steep sections unlikely to include other technical features. Some feeling of exposure on side slopes and may need to steer to avoid or ride over obstacles.	Riders develop accurate line choice, controlling braking on the edge of traction and may need to maintain speed in narrow tracks with camber or burmed turns to remain stable. Obstacles increase in size and frequency and are unavoidable, track width varies with wheels often outside the track. Steeper sections require competent braking control and include other technical difficulties. Some turns may require 3 point . Side slop may be steep with narrow uneven track. Assistance necessary.	Riders can control a bike where multiple technical challenges are faced at the same time. Riders must be able to control the bike with loss of traction or regain control after loss of control. Obstacles can not be avoided, track width varies with outside wheels frequently outside track in rough terrain . Speed and momentum will be required to manage steep berms and steep camber sections. Tight turns will require 3 point turns. Steep side slope with narrow uneven/ unstable/ off camber track. Steep ups and downs requiring momentum and controlled braking. Assistance necessary.
Experience	Looking for a safe, predictable experience using day-to-day mobility aids without any extra equipment or planning necessary. Can be shorter trails, or longer trails with options to turn-back or exit the trail	A experience that is not on a regular footpath that may access interesting natural environments. May require additional equipment or planning. Or low skill and confidence on a adaptive bike.	Looking to become familiar with an adaptive bike on MTB tracks in a safe outdoors environment. Low skill or low confidence but looking to develop.	Is developing skills and confidence and looking for a more challenging experience and a outdoors environment. longer trails may require more thorough planning.	Has a high degree of skill and confidence and enjoys challenging themselves while exposed to risks.	Has a high degree of skill and confidence and is looking to test personal and equipment limits while exposed to high degrees of risk.
Equipment guide	Suitable for all wheeled mobility devices and adaptive equipment, including double prams, stable surface for crutches/walking frames, people with assistance dogs, long cane users, standard active footwear suggested.	All mobility devices with wheels can manage but smaller wheels may struggle on loose gravel. Crutches and walking frames to be mindful of potential loose gravel. Suitable for people with assistance dogs, long cane users. All types of modified and adapted bikes.	All types of adaptive bikes at least 20 inch wheels. Non electric assist ok but more enjoyable with. Not suitable for most wheelchairs.	2 wheel bike with at least 20 inch wheels. Lower body position, electric assist and at least 800mm wheelbase.	2 wheel mountain bike with large wheels and low centre of gravity full suspension and electric assist.	2 wheel mountain bike with large wheels and low centre of gravity full suspension and electric assist.
Track width minimum (single track wider widths required for 2-way and shared use trails)	2m across whole length of route 2-way.	1.5m min.	1.5m.	1.2m min.	1m min	1m min.
Gradient 90% of the trail	0-2° (1 in 29).	0-2° (1 in 29).	0-4° (1 in 14.3).	5° (1 in 11.4).	5° (1 in 11.4).	7° (1 in 8.1).
Maximum gradient (up to 10m up/down)	Max 4° (1 in 14.3).	5° (1 in 11.4).	7° (1 in 8.1).	11° (1 in 5.1).	15° (1 in 3.7).	20° (1 in 2.7).
Turn radius to outside of tread	> 6m.	> 6m.	6m min.	6m flat corner min. 4.5m bermed corner min.	4m flat corner min. 4m bermed corner min.	3.5m flat corner min. 3.5m bermed corner min.
Bermed corner camber	Level.	Level.	10° max.	10 -20° max.	20- 30° max	no camber restrictions.
Handrails	If shared use trail, handrails recommended where gradient steeper than (1:20). Top rail 90cm from ground, lower rail 75cm from ground. For barriers and guardrails please refer to the SNZ HB 860:2004.	If shared use trail, handrails recommended where gradient steeper than (1:14). Top rail 90cm from ground, lower rail 75cm from ground. For barriers and guardrails please refer to the SNZ HB 860:2004.	For barriers and guardrails please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.	For barriers and guardrails please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.	For barriers and guardrails please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.	For barriers and guardrails please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.
Bridges and boardwalks: minimum width (wider if not straight)	2m. All water courses must be bridged.	1.5m+. All water courses must be bridged.	1.5m+. All water courses with less than 100mm of water in normal flow and can be easily ridden (with hard-packed surface underneath) may not have bridges. All other water courses should be bridged.	1.2m. All water courses with less than 100mm of water in normal flow and can be easily ridden may not have bridges. All other water courses should be bridged.	1m. All major and minor watercourses shall be bridged, except fords with less than 200mm of water in normal flow.	1m. All major and minor watercourses shall be bridged, except fords with less than 200mm of water in normal flow.
Bridges and boardwalks: surfaces and kickboards/ handrails	May have non-slip surfaces. Must have at least kickboards on either side. For barriers and guardrails on structures, please refer to the SNZ HB 860:2004.	May have non-slip surfaces. Must have at least kickboards on either side. For barriers and guardrails, please refer to the SNZ HB 860:2004.	May have non-slip surfaces. Must have at least kickboards on either side. For barriers and guardrails, please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.	May have non-slip surfaces. Must have at least kickboards on either side. For barriers and guardrails, please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.	May have non-slip surfaces. Must have at least kickboards on either side. For barriers and guardrails, please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.	May have non-slip surfaces. Must have at least kickboards on either side. For barriers and guardrails, please refer to the RA Mountain Bike Guidelines relating to application of SNZ HB 860:2004 on MTB trails.
Bridges and boardwalks: minimum entry turn radius	> 6m flat corner.	> 6m flat corner.	6m flat corner.	6m flat corner.	4m flat corner.	3.5m flat corner.
Bridges and boardwalks: maximum entry lip height	10mm max lip height. No steps.	10mm max lip height. No steps.	10mm.	20mm.	20mm.	50mm.
Surface breaks/ path gaps (cracks, gaps in boardwalks etc.)	Max 15mm.	Max 15mm.	Max 20mm.	Max 50mm.	Max 100mm.	Max 100mm.
Cross slope	Level, 0-2° (1 in 29) max.	Level, 1- 2° (1 in 29) max.	Max cross slope 3° (1 in 19).	Max cross slope 3-5° (1 in 11.4).	Max cross slope 5° (1 in 11.4).	Max cross slope 5° (1 in 11.4).
Trail surface	Hard and smooth — no loose material such as concrete, chip seal or asphalt, board walk, or hard-packed compacted limestone/gravel/ pumice.	Hardened, well-formed and even — may have some loose material (smaller than 5mm in diameter). Compacted aggregate AP20mm.	Firm and stable.	Mostly stable, some variability.	Mostly stable, some variability.	Widely variable.
Tread obstacles (rocks, roots, ruts)	None.	None.	Obstacles full width, 50mm high or less.	Obstacles full width, 100mm high or less.	Obstacles full width, 200mm high or less.	Obstacles full width, 250mm high or less
Mud	No muddy sections.	No muddy sections.	Trails can have up to 2% wet and muddy sections. These shall be no deeper than 50mm and should be rideable, with a hardpacked surface underneath. To ensure that wet or muddy sections of trail are not excessively long, they should constitute no more than 1m in every 50m.	Trails can have up to 2% wet and muddy sections. These shall be no deeper than 50mm and should be rideable, with a hardpacked surface underneath. To ensure that wet or muddy sections of trail are not excessively long, they should constitute no more than 1m in every 50m.	Trails can have up to 2% wet and muddy sections. These shall be no deeper than 50mm and should be rideable, with a hardpacked surface underneath. To ensure that wet or muddy sections of trail are not excessively long, they should constitute no more than 1m in every 50m.	Trails can have up to 2% wet and muddy sections. These shall be no deeper than 50mm and should be rideable, with a hardpacked surface underneath. To ensure that wet or muddy sections of trail are not excessively long, they should constitute no more than 1m in every 50m.
Additional clearances	Vegetation cleared to allow clear headroom of at least 2.4m (3.7 to allow for horse riders) vegetation cleared to at least the trail width, no vegetation to protrude trail.	Vegetation cleared to allow clear headroom of at least 2.4m (3.7 to allow for horse riders) vegetation cleared to at least the trail width, no vegetation to protrude trail.	2m min height clearance.	2m min height clearance.	2m min height clearance.	2m min height clearance.
Technical features: jumps	No jumps.	No jumps.	No jumps.	Jump or rollers angle max 20° that could be rolled over safely.	Jump ramp angle max 25° that could be rolled over or have "B" line.	Jump ramp angle above 30° that could be rolled over or have "B" line.
Step downs	No steps.	No stepped drops.	Stepped drops maximum height of 100mm with gentle downhill transitions.	Stepped drops 100 - 200mm with gentle downhill transitions.	Stepped drops max height of 200mm, combined with other technical features.	Stepped drops greater than 200mm combined with other technical features.
Technical difficulty	Zero features combined will be encountered.	Zero features combined will be encountered.	1 feature will be encountered at a time, e.g. burmed corner.	2 features combined will be encountered simultaneously, e.g. tight turn and downhill slope.	3-4 features combined will be encountered simultaneously, e.g. tight turn on downhill slope, with narrow track width and steep side slope.	4 or more features combined will be encountered simultaneously, e.g. tight turn, downhill slope, narrow track with obstacles and steep side slope.

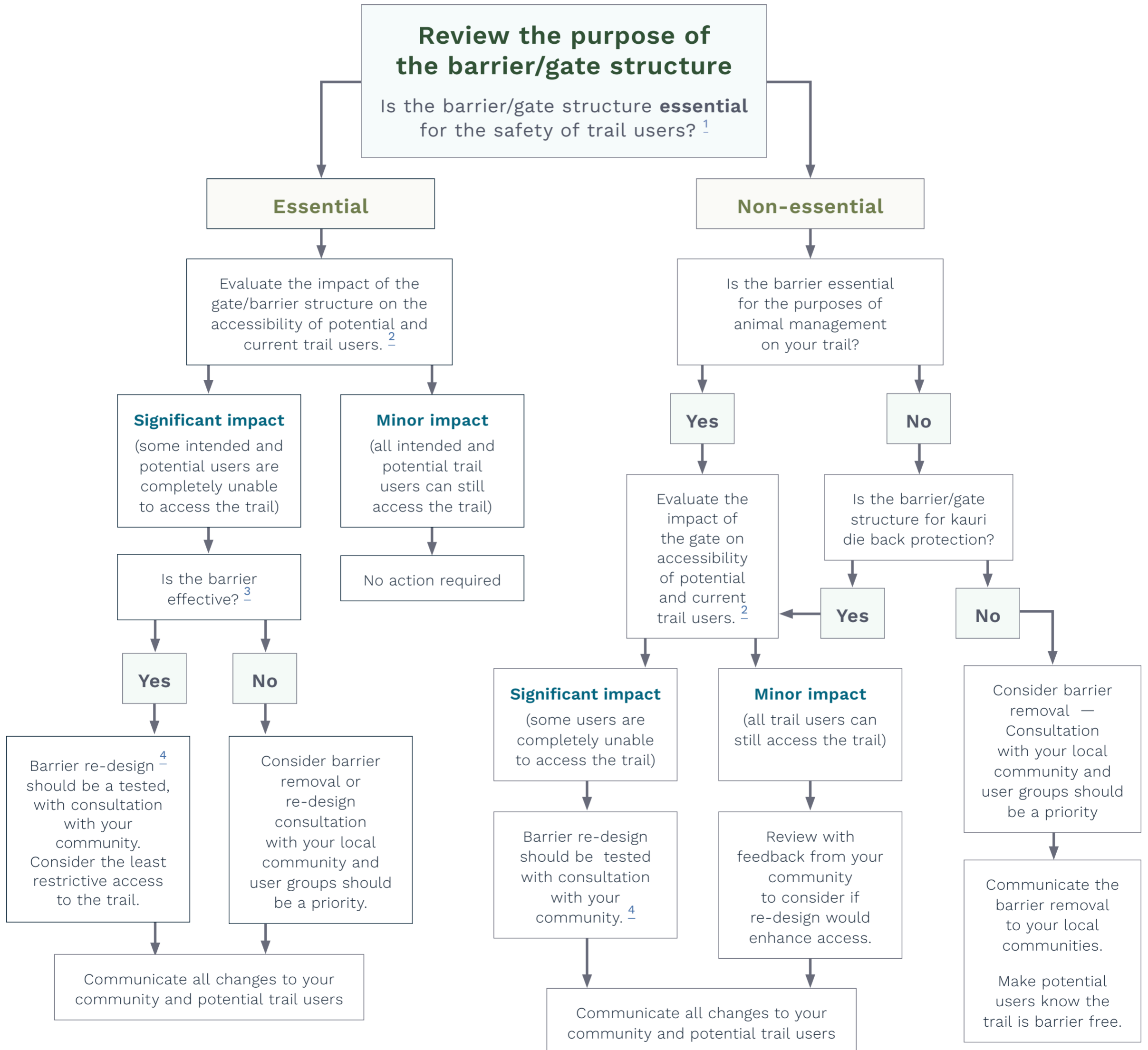
Side slope and track width guideline for building						
Side slope < 5°	Minimum trail tread width one-way or two-way: 2m.	Minimum trail tread width one-way or two-way: 1.5m.	Minimum trail tread width one-way: 900mm, two-way: 1.2m.	Minimum trail tread width one-way: 900mm, two-way: 1.2m.	Minimum trail tread width one-way: 1m.	Minimum trail tread width one-way: 1m.
Side slope 5–15°	2m.	1.5m.	900mm, two-way: 1.2m.	900mm, two-way: 1.2m.	1m.	1m.
Side slope 15–30°	2.5m.	1.8m.	1.2m.	1.2m.	1m.	1m.
Side slope 30–45°	3m.	2m.	1.2m.	1.2m.	1m.	1m.
Side slope over 45°	3.5m.	2.5m.	1.5m.	1.5m.	1m.	1m.

Modifications required to existing NZ grades to meet accessible grades						
NZCT Grade 2			<ul style="list-style-type: none"> increase minimum trail width from 0.9m - 1.5m increase minimum turn radius from 4m to 6m increase minimum bridge width from 1m to 1.5m. 			
RA Grade 2			<ul style="list-style-type: none"> reduce corner camber from +20-3 to 10° max increase turning radius to 6m flat reduce stepped drop max height from 200mm to 100mm reduce max gradient from 8 to max 7 for 90% trail reduce average gradient from 5 to 0-4° increase min structure width from 1.2m to 1.5. 			
NZCT Grade 3				<ul style="list-style-type: none"> increase minimum trail width from 0.6m to 1.2m. increase minimum turn radius from 4m to 6m (flat) and 4.5 bermed corner increase minimum bridge width from 1m to 1.2m. 	<ul style="list-style-type: none"> increase minimum trail width from 0.6m to 1m. 	
RA Grade 3				<ul style="list-style-type: none"> increase min structure width from 0.9m to 1.2m increase min trail width from 0.6m to 1.2m reduce average gradient from 6 to 5° for 90% trail increase min turn radius from 2.5m to 6m flat corner min or 4.5m burmed corner min. reduce stepped drop max height from 400mm to 200mm reduce corner camber from +40 - 3 to max 3-5°. 		
NZCT Grade 4					<ul style="list-style-type: none"> increase minimum trail width from 0.3-0.6m to 1m increase minimum bridge width from 0.6m to 1m increase turn radius to 4m. 	
RA Grade 4					<ul style="list-style-type: none"> increase min trail width from 0.3m to 1m increase min structure width from 0.6m to 1m reduce average gradient from 7 to 5 for 90% of trail increase turn radius from 2m to 4 m reduce stepped drop max height from 600mm to 200mm. 	

▲ Appendix diagram 2: Inclusive trail guidelines: mountain biking.

Decision-making matrix for existing barriers on-trail

The following guidance can support you to determine whether the existing structure is required, and what options can be considered for upgrades or removal.



▲ Appendix diagram 3 Decision-making matrix for existing barriers on-trail.

1. Health and safety of trail users

- » When considering whether the structure is essential for the health and safety of users, consider the following:
 - › Was the initial structure put in place in response to illegal vehicle use on trails? Or was it put in as a preventative measure?
 - › What recorded vehicle incidents have been documented? What impact have these incidents had to other trail users? Have the documented incidents been on the particular part of the trail where you're reviewing the barrier?
 - › Which type of vehicles have been involved in the recorded incidents (cars, 4-wheeled bikes, 2-wheel bikes)? The type of vehicle should be reflected in the design of the structure, as detailed in section 2 and 4.

2. Impact of structure on accessibility

When evaluating the impact of the barrier/gate structure on accessibility for current and potential future users, consider this relative to your overall trail accessibility and to the structure itself:

- » **Structure:** How wide is the clear space between the barrier structure, or around the side of the structure?
 - › Space less than 1m wide is likely to restrict access to all adaptive equipment and mobility aids, prams, buggies and other legitimate users.

- › 1m wide clear space will still restrict access to some wider mobility equipment.
- › Ideally clear tread space should be 1.2m wide, within or around the structure, to allow access for all mobility and adaptive equipment used on trails. 1.5m will allow a wheelchair user and person to pass comfortably.
- » **Trail:** Consider the relative accessibility of your trail:
 - › If your trail otherwise meets the inclusive trail guidelines (link to this), the impact of the gate structure on accessibility is going to be significant
 - › if your trail is grade 3 or lower, or a step-free walking trail with a trail width >0.9m, the impact on accessibility for current and potential users is likely to be significant.
 - › There is a wide variety of off-road equipment and mobility aids that can support people to access the outdoors. This equipment has enabled access to trails that were traditionally 'inaccessible'. If someone could access the trail on other side of the barrier and participate in the trail activity, the impact is significant.
 - › If you have already received complaints or feedback on the restricted access caused by the barrier, these also help to measure the significance.
 - › If you are assessing a barrier on a grade 5+ trail or backcountry tramping trail with narrow trail widths (<0.9m), steep gradients, steps or tight turning surfaces, the impact on accessibility is likely to be lesser, as this terrain is less suitable for prams, adaptive or mobility equipment.

3. Effectiveness of the barrier

When assessing how effective the barrier structure is at restricting particular vehicle access on trails (e.g. motorbikes, cars) – consider whether:

- » A vehicle can currently get around the existing structure? If there is a gap around the side of the barrier structure, or the vehicle has another means of entry on to the trail, the barrier is likely ineffective.
- » Vehicles been seen or reported on the trail with the barriers in place? If vehicles have been seen on the trail, even with the barrier in place, this is a good indicator it's ineffective.

4. Suggested improvements and re-designs

Signage discouraging vehicle use, including information on consequences or fines, along with game cameras, are recommended as alternatives to non-essential barriers

- a. If you have a **squeeze gate or croquet hoop**, but there is a high health and safety risk to users on the trail from vehicles, and the structure currently restricts access to a number of users, re-design options could include:
 - i. A contrasting bollard with 1.2m (1.5m even better) clear space in between the bollards would prevent 4WD vehicles and cars from entering the trail. Chains (or similar) between the bollards should be avoided
 - ii. A re-designed croquet hoop would maintain restriction for motorcycle access, while enhancing access to some trail users.
- b. If you have a **forestry gate** with a clear space less than 1.2m around the side:
 - i. consider widening the clear space around the structure to at least 1.2m – this will still prevent 4WD access
 - ii. [United States Department of Agriculture \(Accessible Gates for Trails and Roads\)](#) have design examples for forestry gates.
 - iii. a Bluetooth lock on the gate where entry can be pre-arranged, or you can call/text a number at a sign on the gate, will allow access for legitimate users, while restricting vehicle access.
- c. If you have a **fence style barrier** with a clear gap less than 1.2m:
 - i. Increasing the clear width to at least 1.2m would still prevent access for 4WD vehicles, while enhancing access for a significant number of users.

- iii. A gate added adjacent to the squeeze gate with a clear space of at least 1.2m with a key or Bluetooth (FRID) lock that entry can be pre-arranged (or you can call/text a number at a sign on the gate) will allow access for all legitimate users, while restricting vehicle access.

Any gate or barrier structure should be identifiable to users. For example, a gate should clearly contrast in colour from the rest of the fence, so users can locate it easily. Like the clear width between structures will limit access for people using mobility aids, a barrier structure that blends into the surrounds may prohibit people with low vision accessing the trail.

d. If you have a **bollard /concrete block**:

- i. Increasing the clear width between the bollard/block to at least 1.2m would still prevent access for 4WD vehicles, while enhancing access for a significant number of users.

[Bollard spacing of 1.5m will still restrict vehicle access while enhancing accessibility.](#)

e. If you have a **kissing gate**:

- i. Consider widening the structure to allow for wider and longer equipment to clear the gate, or replacing with a bollard.
- ii. United States Department of Agriculture (Accessible Gates for Trails and Roads) have design examples for wider kissing gates.
- iii. Consider replacing for the modified croquet hoop and squeeze gate if you're wanting to restrict access for motorbikes, while enhancing the accessibility to some (not all) users.

f. If you have a **chicane style barrier**.

- i. Consider re-design increase the spacing between the structures.
- ii. [Disability Sport Northern Ireland](#) have an example of a more accessible chicane structure (page 49)

g. If you have **stock grate**:

- i. Consider a clearance width (at least 1.2m) with a spring (self-closing) gate to the side of the stock grate to allow access for users who cannot navigate a stock grate (i.e. regular wheelchair users, people using crutches, horses or cane users).
- ii. Consider a nudge bar. Self closing spring can be difficult to open for wheelchair user or an adaptive rider especially if not opening both directions.

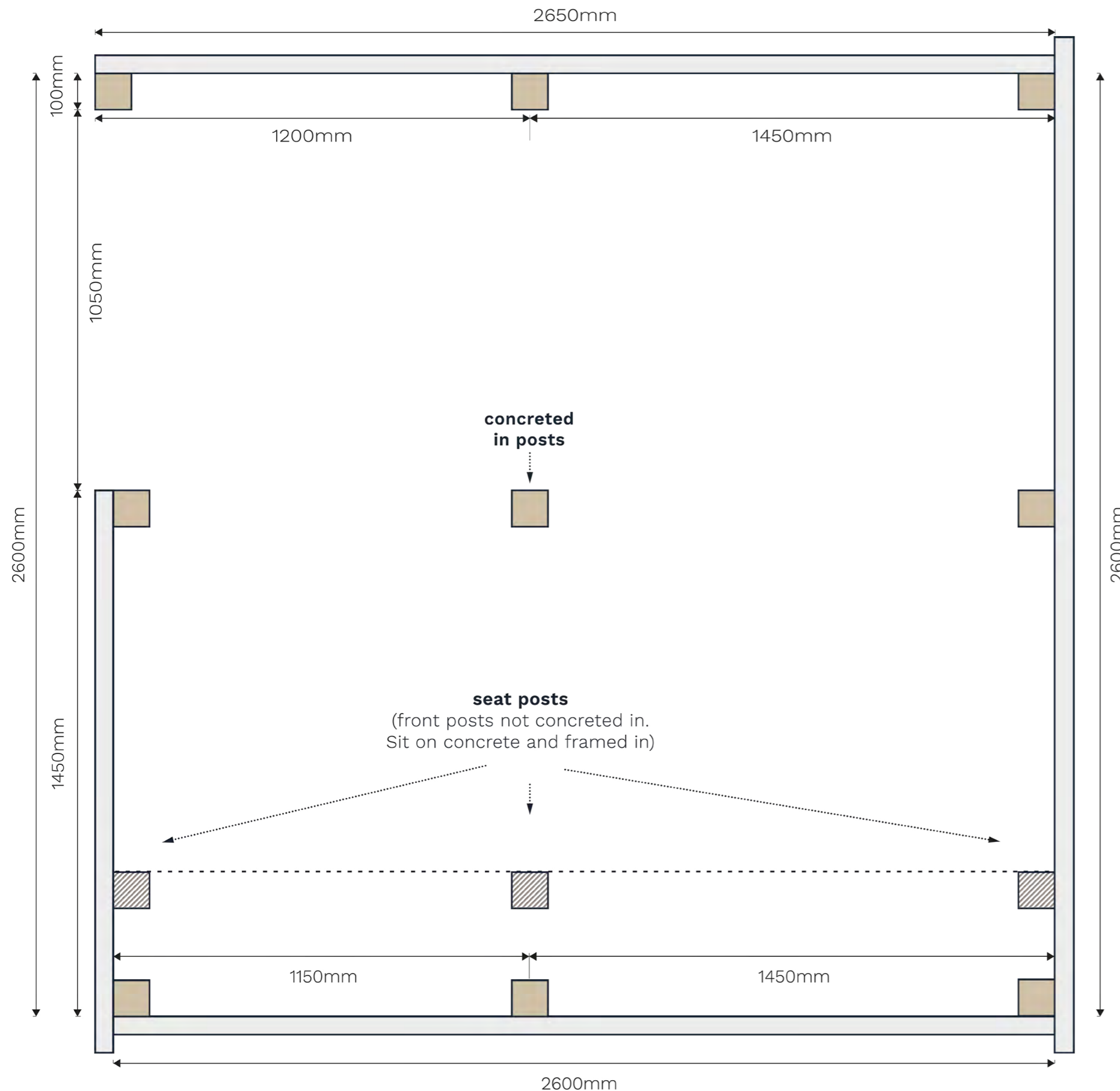
h. If you have a **latch gate**:

- i. Consider a spring/self-closing gate with a nudge/push plate, so users do not have to get off their equipment or use their hands to open.

i. If you have a **stile gate**:

- i. To limit stock movement, consider replacing for a farm style or self-closing gate.
- ii. A gate without a lock is more accessible, but if needed, consider a blue-tooth lock system.

Consider re-design to increase the spacing between the chicane structures (at least 1.2m width clearance).



Seat along the entire rear of stand (Maimai) to be,

- » 400mm wide
- » 500mm high (at top of seat)

Shelf for wheelchair shooter to be on side wall (not front)

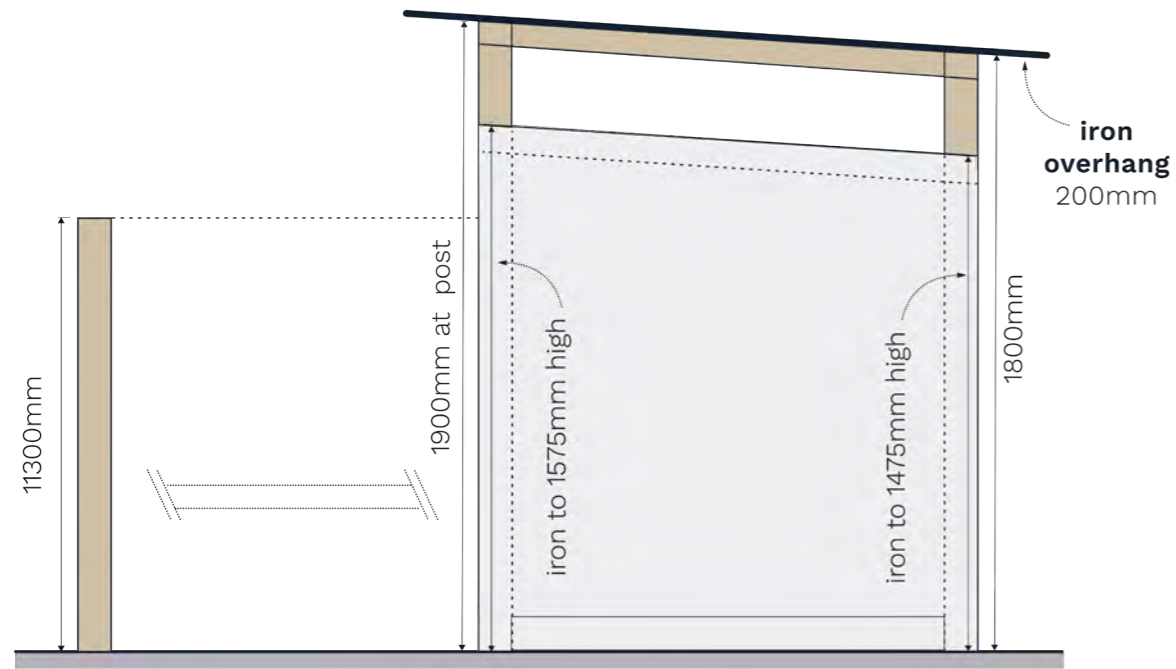
- » 800mm high
- » 150mm wide
- » With support hole/frame for ammo box and cup.

Front wall bottom framing to be 250mm high at base of 4x2 (50mmx100mm timber) to enable feet to be under frame and touch corrugated iron – to enable (shooter) to be close to front wall as possible.

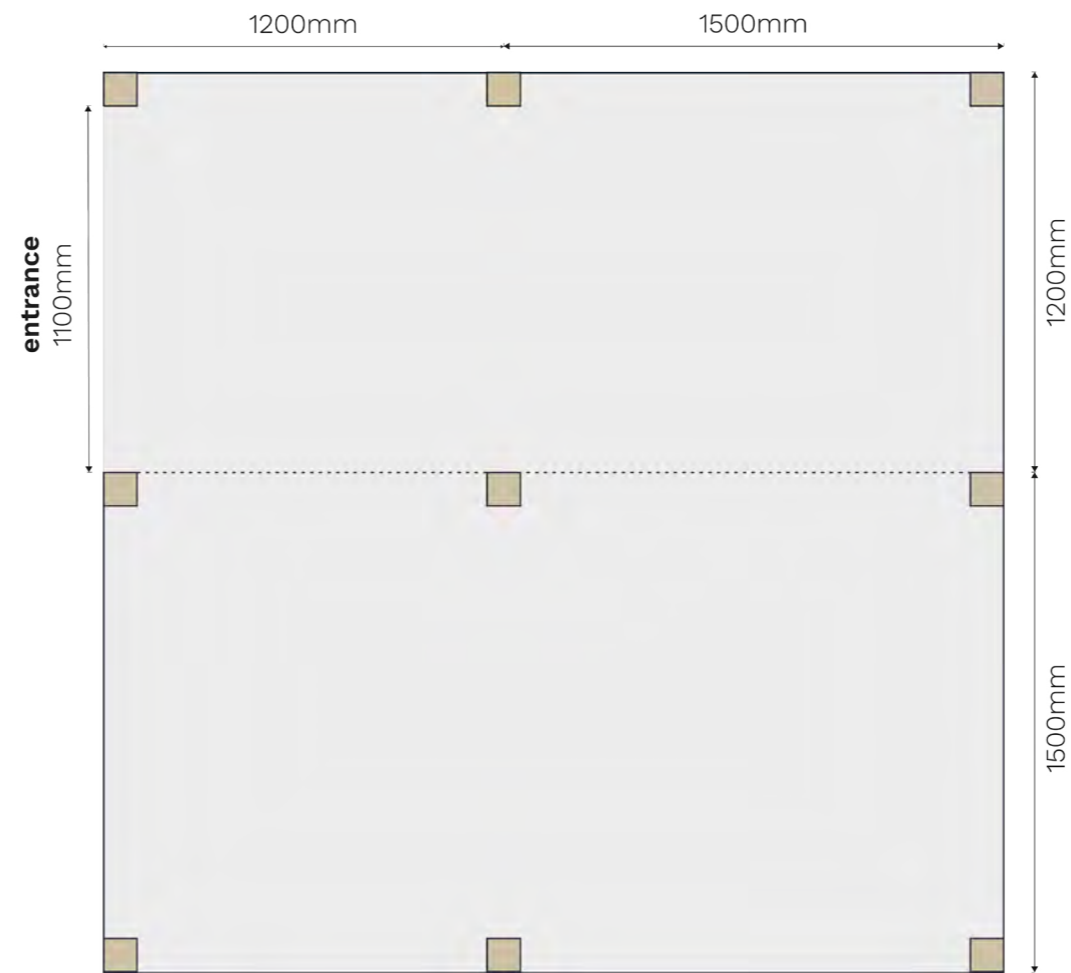
Add gun stand/frame (rack) to face out the front of maimai, in steel.

◀ **Appendix diagram 4:**
Maimai indicative plans.

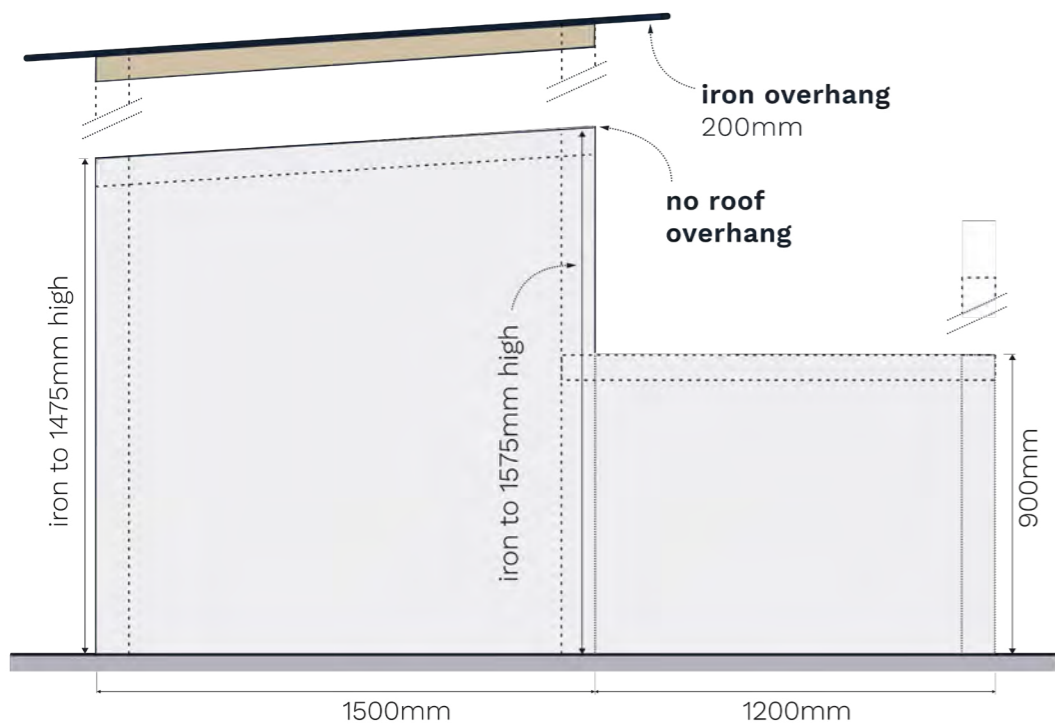
Disclaimer: Structural elements are indicative only, based on an existing built structure. Due diligence should be taken to ensure design is suitable for your context.



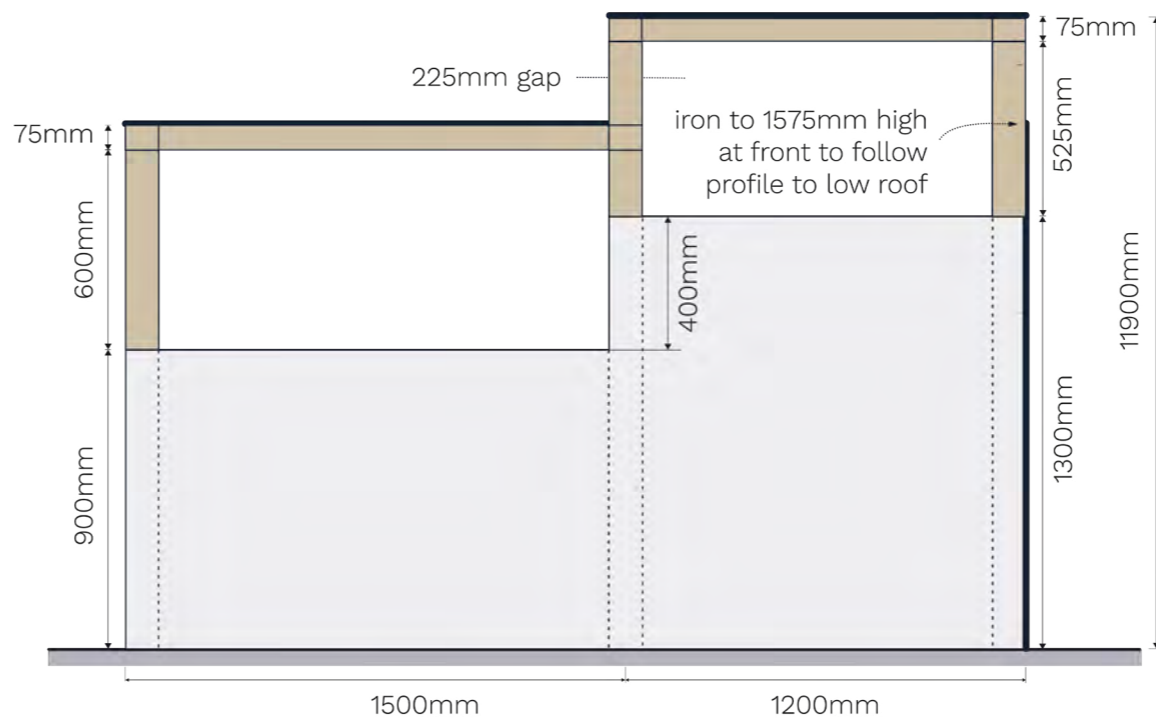
left (entrance) side



top view



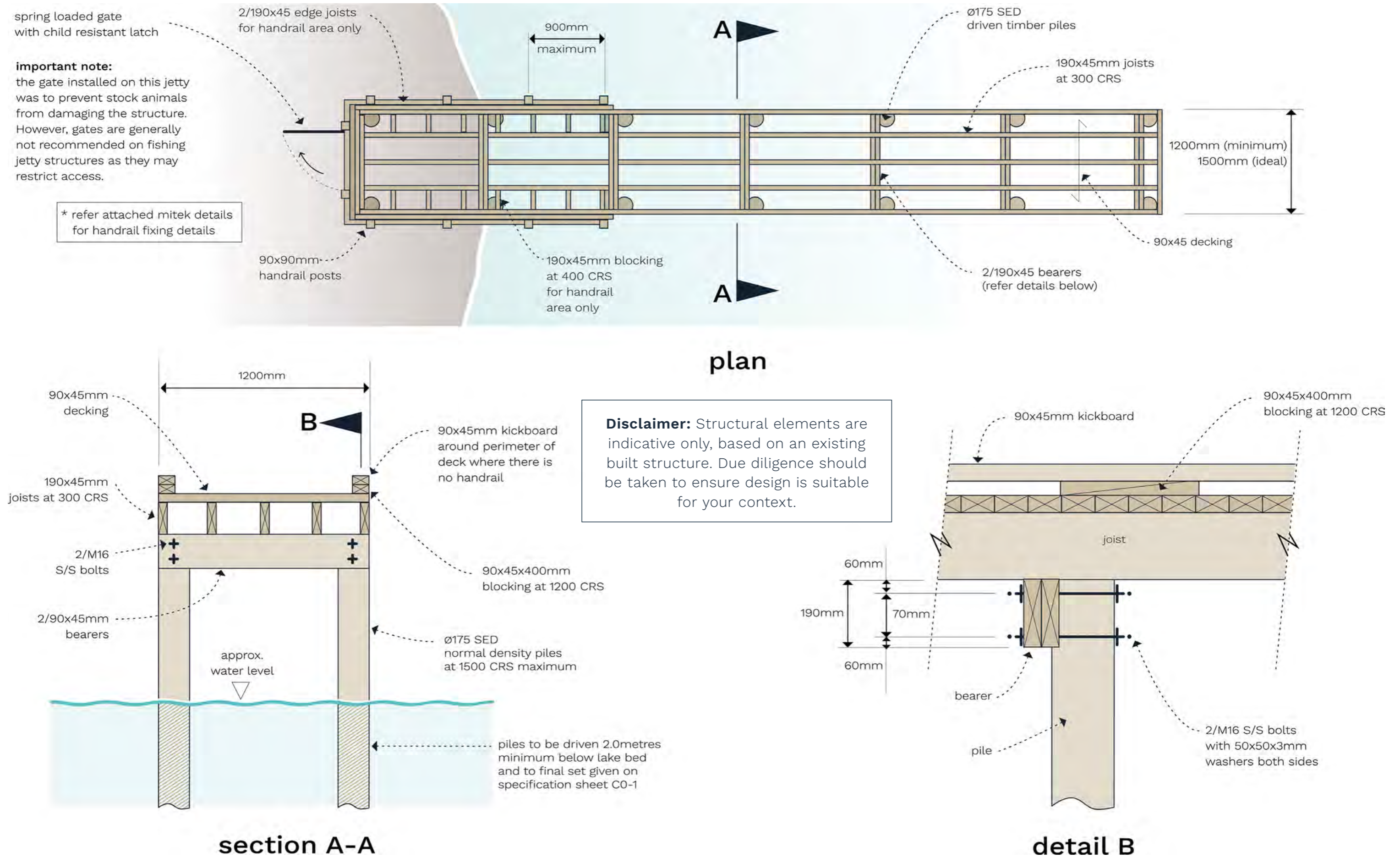
right side



front view

◀ **Appendix diagram 4:**
Maimai indicative plans.

Disclaimer: Structural elements are indicative only, based on an existing built structure. Due diligence should be taken to ensure design is suitable for your context.



▲ Appendix diagram 5: Lake Mangamahoe casting platform indicative plans.