enabling wilderness:
*Creating the opportunity for disabled tramping within
New Zealand's National Parks.*

Enabling Wilderness
by
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A 120-point thesis submitted to the Victoria
University of Wellington in partial fulfilment of
the requirements for the degree of Master of
Landscape Architecture.

Victoria University of Wellington,
School of Architecture.

2017

Acknowledgements:

The past five years has been a great journey and there are numerous people I would like to thank for helping me not only complete this thesis, but helping me through my time at Victoria University.

To my supervisors, Jacqui and Bruno, thank you for the constant guidance and enthusiasm that has helped me to stay motivated throughout the duration of this thesis.

To the people who have helped me to envision this project, in particular:

- Lorraine and Jason; from Barrier Free New Zealand,
- Jonathan Thomas; from the Department of Conservation,
- Bridget Meyer; from the Halberg Disability Sport Foundation,
- And last, but not least, Stew and Ross; members of New Zealand's wheelchair community.

Your professional and personal guidance has been a great help in progressing this thesis to its final outcome.

To Elliot and Findlay, for the numerous pub-lunches to discuss, debrief and de-stress.

And finally, to my parents Bernie and Pippa for the never-ending support, advice and faith in my decisions. From when I first shifted to Wellington, to discovering what I want to pursue post-university, you have always been there and for that I can't thank you enough.

Abstract:

Internationally known for its picturesque landscapes, New Zealand encourages both locals and tourists to experience them first hand by walking one of the many tracks around the country, an activity locally known as tramping. The Department of Conservation has identified a small number of these tracks as showcasing particularly picturesque areas; naming them the 'Great Walks' of New Zealand. These allow fit individuals to traverse unique landscapes over multiple days, staying over night in rustic huts. The relationship between healthy wellbeing and outdoor experiences is well documented; however, not every fit individual is physically able to experience some of New Zealand's most significant landscapes due to the difficulty of access.

This thesis combines elements of landscape architecture with the existing practises of construction in a conservation area to propose a new 'Great Walk' for New Zealand that would allow athletes with a physical impairment to experience New Zealand's unique landscapes. In doing so, it will provide the opportunity for physically impaired people to continue tramping, or discover a new outdoor activity that not only improves their physical and mental wellbeing; but also allows them to establish personal connections to the land they are from or visiting. Physically pulling/pushing and manoeuvring through 'backcountry' landscapes, this research-led-design encourages the physically impaired community to engage with difficult terrains in a multi-sensorial manner.

Hollyford Valley ↑

- 📍 Lake Marian 1 km
- 📍 Humboldt Falls 17 km
- 📍 Hollyford Track 18 km

Hollyford Camp ↑

Museum, Cabins, Campsite & Shop 8 km

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Glossary:

Backcountry:	<i>Sparsely inhabited rural areas.</i>
Backpacker:	<i>A colloquial term describing a tourist travelling around a country with all their belongings in a backpack.</i>
D.o.C:	<i>The Department of Conservation, a government agency tasked with the role of protecting the National Parks.</i>
Kiwi:	<i>A colloquial term describing someone from New Zealand.</i>
Tramping:	<i>A colloquial New Zealand term for hiking or trekking.</i>
Wellbeing:	<i>An individuals state of mind affected through physical, mental, social and spiritual experiences.</i>

All maps follow a north-up orientation.

Disclaimer: All images, unless stated, have been created or taken by the author.

Research Question:

How can access be designed within New Zealand's National Parks to give physically disabled athletes the opportunity to immerse themselves within the landscape and experience wilderness?

Introduction:

New Zealand is a country that is internationally renowned for its picturesque landscapes. A popular travel guide, The Lonely Planet, wrote that it is the home of “sublime forests, mountains, lakes, beaches and fiords” making New Zealand “one of the best destinations on earth” (Belich 2014). Everywhere you look there are awe-inspiring landscapes, easily experienced through a day-walk or a multi-night tramp.

The National Parks are considered to be a key part of the country's national identity. This underlying belief is evident through the Department of Conservation's [D.o.C] mission statement that “New Zealanders gain environmental, social and economic benefits from healthy functioning ecosystems, recreation opportunities, and living our history” (Conservation 2012). However, currently only a particular demographic of the population is able to adventure and explore within some of New Zealand's most beautiful areas (Education 2012).

Experiencing nature, and in particular wilderness, is an intimate and personal journey. To form the type of connection to the land that New Zealanders advocate, one must fully immerse themselves into the landscape. Mick Abbott, in his PhD thesis ‘Designing Wilderness as a Phenomenological Landscape’, breaks down how we experience such landscapes into two categories; the visual and the haptic. He states that anyone can “gain a visual appreciation of the surrounding endemic flora”, however it is “difficult to assert that the track is an

integrate part of the ecologically indigenous landscape” without physically being within the landscape (Abbott 2008 p233). To fully experience wilderness one needs to not only see, but also feel the landscape and the most popular way ‘kiwis’ currently connect with their country's natural identity is through one of the thousands of walking tracks in New Zealand's National Parks.

Tramping within New Zealand is the third most popular activity, with 1.7 million people estimated to walk a track in 2013 (Angus & Associates Limited 2013). Considering that New Zealand has a national population of just over 4 million people, this is a significant number. Amongst the 2,895+ tramping tracks around New Zealand (Pietzsch 2010), are nine ‘Great Walks’ that D.o.C has highlighted as their flagship tracks. These traverse “the most awe-inspiring landscapes on premiere walking tracks” (Conservation 2014).

These outstanding landscapes are only accessible via rugged terrains and they are currently only available to those who are physically fit and able-bodied. They are inaccessible to those who have a physical impairment that prevents them from walking. According to Statistics New Zealand and their 2013 Disability Survey, 24% of New Zealand's population is classed to be living with some form of impairment (Statistics New Zealand 2013). Of this number, 18% of individuals over the age of 15 are living with a physical impairment which prevents them from walking. This equates to approximately 632,000 New

Zealanders who cannot immerse themselves within the wilderness that New Zealand boasts about. They are also denied from the opportunity to create the memories, experiences, and an overall appreciation for the country that they call home. This number significantly rises to approximately 980,000 disabled people when the inclusion of international tourists is added (Tourism New Zealand 2016).

The current perception of a physical impairment is one of pure loss. However people who live with a disability actually tend to form other strengths through their body compensating for the said loss (Oliver Sacks). This ideology is illustrated in the documentary film 'Murderball', directed by Henry Rubin and Dana Shapiro, which follows the American and Canadian national wheelchair-rugby teams and their pursuit for a Paralympic Gold Medal. Through the interviews they conduct and the in-game footage they acquire, it is clearly evident that upper-body and core strength has been considerably strengthened as their body compensates for the loss of their legs. 'Murderball' highlights the fact that, despite suffering a great loss, they still have the key attributes required to complete a Great Walk; courage, determination, and athleticism.

The scope for this dissertation is to design such access and create a design strategy that can be applied to New Zealand's tramping tracks and create a way for physically impaired athletes to form personal connections to their surrounding landscapes; thus enabling wilderness.

“it must be said that from the outset that a disease is never a mere loss or excess – that there is always a reaction, on the part of the affected organism or individual, to restore, to replace, to compensate for”

Oliver Sacks, 1985

Defining a Disability // Specifying a Client:

Designing a 'Great Walk' with disability access will appeal to a specific client demographic as even within the able-bodied community, completing a multi-day tramp in New Zealand's backcountry areas is not for everyone. In addition to walking up to 15km in a day, the participant must also carry their own food, cooking equipment, clothing, and bedding. Traversing such landscapes not only tests a user's physical fitness but also their mental capability, pushing themselves through rough terrains and what seem to be never-ending inclines.

This study proposes a strategy of landscape interventions, applied to an existing track, to allow it to be accessible to 'physically impaired athletes'. These are people who had/have an interest in the outdoors, but due to an incident or condition, are no longer able to partake in tramping as they have been confined to a wheelchair. Through the use of designed modifications this study aims to enable these athletes and adventurer's to complete the track independently. It is designed for the strengths of these individuals while also minimising the impact of the path that could advantage the able-bodied.

A precedent client, Caleb Brousseau, can be found in the short film 'Caleb', directed by Blair Trotman. As an able-bodied snowboarder Caleb had a promising future, however in 2007 he misjudged a jump leading to a broken back and the loss of the use of his legs. Rather than let this impairment get in the way of his passion for the outdoors he joined the Canadian Para-Alpine Ski Team, representing

his country at the Paralympics and also became a white-water kayak instructor during the summer months (Canadian Paralympic Committee 2013).

Brousseau describes his initial experiences of impairment as frustrating stating he was "bored" and was "spending way too much time at home". After being convinced by a friend to try kayaking, he discovered that he could independently recover from a mistake. This was an incredibly empowering discovery after being reliant on others for so long.

This is just one of the many examples of people in this world who provide inspiration for this project; individuals who don't consider themselves 'disabled' but rather 'enabled' in another aspect.

"First time I went kayaking, we ended up rolling over and as soon as I rolled over I felt as if these chains fell off me..."

Everytime I roll upside down I get super stoaked, this is freedom! It feels like I'm not in a chair...

It feels like I don't have the restriction I live with every day...

It allows me to be free!"

Caleb Brousseau
(Trotman, 2014)

Literature Review:

Understanding disabilities.

Designers throughout history have applied models of mobility and ergonomics to inform their designs and develop the way we approach designing for the human body. Obvious examples of this are Leonardo Da Vinci's 'Vitruvian Man' and Le Corbusier's 'Modulor Man'. Darni Struijck, in her thesis 'Augmenting Access & Mobility', evolves these figures to illustrate a model of mobility and ergonomics that relate to someone confined to a wheelchair. Naming it the 'Prosthetic Human' she questions "the salient line between body and technology" and that it "stands for universality, accessibility and mobility where imperfection is the new ideal. The Prosthetic Human grid and scale offers a series of measures that reconcile to a human being in a wheelchair" (Struijck 2015).

While it is important to understand the physical limitations of a wheelchair bound person, understanding the mental impact of one is equally as relevant. In a research study based around interviews with recently impaired individuals, Lauren Barlew's journal 'The Experience of Being Grounded' explains that there are four categories of mental difficulties that someone with a physical disability will experience; humiliation, frustration, loss and humility (Barlew 2013).

The first difficulty, humiliation, is a response to the reactions of strangers and friends as you complete everyday tasks. Public spaces become a stage that not everyone wants to be involved in with some of the interviewee's saying they "plan their day in such a way to avoid humiliation" (Barlew

2013 p197). Everyday humiliation is what often leads to the second difficulty faced, frustration. Frustration is an emotion that is commonly felt by everyone with an impairment, mental or physical. Constant fears of falling, the inability to do ordinary things with ease, and the constant need of help making one believe they are a burden on society. Frustration is also a personal emotion, with one participant explaining her self-image caused this feeling with it being difficult to "maintain her body" (Barlew 2013 p197). With a disability comes loss; the loss of independence and privacy, the need for an aid to move, the inability to complete a basic task such as going to the toilet. This loss of freedom means they cannot participate in certain activities with their friends bringing the feelings of loneliness and helplessness. These feelings are articulated by another interviewee stating you "find out who your real friends are" (Barlew 2013 p198). The final category Barlew talks about is humility, a personal form of humiliation; the personal acknowledgement of limitations. This is said to be a humbling experience, and with it the constant reminder that they are no longer fully able. These emotions are critical to understand, as they will be fully tested when completing a track that could last 5-7 days.

A remedy for these difficulties associated with a physical impairment is nature, and its offer of mental and physical benefits which can ultimately contribute to our total state of wellbeing (Humberstone 2015). In her writing, 'Embodiment, Nature and Wellbeing', Barbara

Humberstone conducts an investigation to prove these benefits associated with "being in forest and other green spaces" (Humberstone 2015 p61). She references Geoff Cooper's book 'Outdoors with Young People' where he wrote:

"On the way back from the nature trail, something had happened to change the group. They were more alert, more interested in what was around them; they were closer to each other."
(Cooper 1998 p10)

What had produced the change was the need for play, for spontaneity and for adventure. A chance to feel the natural environment through their bodies, to be freed from the restrictions of the urban environment; the need "to run, skip, jump and feel the freedom of a wild area, in a new and uncertain environment" (Cooper 1998 p10). Being immersed within nature affords an emotional experience that is unique for each individual, creating the sense of freedom that is not generally experienced within a city or town. Humberstone explores this situation further asking what it is about these spaces that seems to enhance our individual wellbeing and health.

“People construct a sense of themselves and their environment through single and collective understandings of self and sense of place. Through embodied, sentient practises (as walking, standing, climbing, surfing and so forth), by the way of the sense, people engage with diverse natural spaces and places engendering non-cognitive attractive feelings and emotions.”

(Humberstone 2015 p63)

Experiencing nature connects human beings to the land; it is a symbol of where they are from and humbles them as they realise the complex ecologies that they are a part of. Although both Humberstone (2015) and Cooper (1998) refer to the experiences of able-bodied people, the same principles are just as valid, if not more so, to those with a disability.

Literature Review: Experiencing wilderness // the Sublime.

Landscapes constantly surround us; they subconsciously effect the path we take walking, command our visual focus and provoke certain emotions that inspire us to associate memories with a certain location. Why and how this occurs however, is not understood very clearly. W.J.T Mitchell (2005), in his book ‘Landscape and Power’, discusses this topic through challenging the existing view of what ‘landscape’ is; creating the argument that it should be a verb, rather than a noun. He highlights the landscapes ability to provoke personal moments that helps to form an individuals identity, contrasting the traditional view of the land; the picturesque and pastoral.

Mitchell argues that a landscape is too often ‘overlooked’ and not ‘looked at’. He believes that the majority of individuals then make the landscapes’ power redundant by viewing it as a background.

“As the background within a figure, form, or narrative act emerges, landscape exerts the passive force of setting, scene, and sight... this peculiar indeterminacy reveals itself as a kind of redundancy when one rephrases the landscape imperative as we do in everyday parlance: ‘look at the view’. Not ‘look at the mountain’.”

(Mitchell 2005 pVIII)

▲ Figure 1.01
- “Chalk Cliffs on Rügen, 1817”, Friedrich.

However, not every landscape is capable of provoking personal experiences and emotions. Examples of landscapes with such power can be understood through artworks, particularly the artworks of the sublime. Caspar David Friedrich's artworks exaggerate these emotions, depicting a human being in a dangerous situation due to the landscape. The landscapes that were illustrated were often found deep in the wilderness and in areas that very few people would adventure too. His artwork, and others produced in the Romantic era, literally gives the landscape power through fear. Mitchell (1994) explains these emotional responses depicted in the sublime can be designed for.

"Natural features such as trees, stones, water, animals, and dwellings can be read as symbols in religious, psychological, or political allegories... an instrument of cultural power, perhaps even an agent of power than is independent of human intentions."

(Mitchell 1994 p1)

New Zealand is covered in wild landscapes, with its 14 National Parks covering more than 30,000 square kilometres of the country (New Zealand Tourism Board 2010); these create ample space for emotions and experiences to be provoked.

▲ Figure 1.02:
"Wanderer above the Sea of Fog", Friedrich.

▲ Figure 1.03:
"Clearing in the Forest", Friedrich.

Literature Review: **Design response.**

Taking W.J.T Mitchell's ideas and arguments, the beliefs associated with the artworks of the sublime and personal experiences around New Zealand's wilderness, eight emotional responses to the land have been identified. These emotions are:

1. *Fear: the point in the journey where mental capability is seriously tested.*
2. *Awe: a moment where one marvels at the wondrous landscape surrounding them.*
3. *Humility: a feeling of realisation of larger forces at play.*
4. *Frustration: a response to the winding/repetitive nature of wilderness and the possibility of getting lost.*
5. *Pride: an emotional pause reflecting on the journey to a desired location.*
6. *Reminiscence/Introspection: an individual reflection of the journey, through life and the track.*
7. *Freedom: a rush caused by the release from urban restrictions.*
8. *Spirituality: a personal connection between human and land.*

Referring back to the work of Struijck (2015), her adaptation of the Prosthetic Human creates a starting point for a new mobility framework that refers to physically impaired athletes and the new possibilities for the bodies' range of movement. For example, they can turn on a more defined axis compared to someone requiring full balance; i.e. an able-bodied person with the use of their arms and legs. Their upper-body and core strength is constantly developed, which leads to opportunities that involve lifting themselves to move around obstacles; metaphorical 'superpowers'.

Understanding the physically disabled athlete's compensatory abilities can create a new way of tramping, unique to their abilities. The two design considerations are:

1. *Physical: considering the unique attributes of the physically impaired person, modifying the track to privilege their strengthened abilities and eliminating the tracks disabling features.*
2. *Mental: designing the track for immersion in nature with references to emotionally rich views and multi-sensory interaction.*

▲ Figure 1.04:
"Prosthetic Human", Darni Struijck

With carefully designed aids the impaired athlete may traverse the track in a mixed group of abled and disabled bodies. Completing the trek without the constant help of others will create a greater sense of achievement and contribute to life-long wellbeing; something that will only happen as a result of enabling wilderness.

▲ Figure 1.05:
“The Disabled Athlete”

fear

awe

humility

frustration

▲ Figure 1.06:
“Emotive Responses”

▼ Figure 1.07:
“Photograph of a swing bridge on the Hollyford track”

pride

*reminiscence /
introspection*

freedom

spirituality

Site:

Site selection.

To evaluate the economic value of a landscape, Deng, Kind and Bauer (2002) wrote an article titled 'Evaluating Natural Attractions for Tourism'; discussing the need and importance of a formal rating system regarding natural areas. They believe it is a pivotal part of nature-based tourism as it allows for a country to identify their dominant attractions, whilst also creating a criteria of standards that those spaces need to uphold with regard to environmental quality. To a certain extent New Zealand has adopted this initiative with the Department of Conservation advertising only a few of tracks as 'Great Walks'. The New Zealand Institute of Landscape Architecture has their own assessment criteria referencing the national Resource Management Act, which encourages a sustainable method of preserving New Zealand's landscapes. However both methods evaluate the relative landscapes value in relation to the immediate community, creating confusion when adapting to an international scale. Henry Sanoff creates an opposing argument to this monetary evaluation through his book 'Visual Research Methods in Design' (1991) where he references the 'psychophysical paradigm'.

"According to the psychophysical paradigm, landscape is valued for its ability to stimulate responses in observers.

Based upon traditional experimental psychology, psychophysical research measures the conditioned aesthetic response of observers to external and invariant properties of a landscape, which designers and managers can then manipulate in creating and enhancing environments."

(Sanoff 1991 p8)

Sanoff's argument, while more difficult to measure, becomes highly applicable as without providing a rich experience the track will be dull and unappealing; lacking the ability to provoke emotions, to able-bodied and impaired athletes alike. When selecting a site it becomes appropriate to apply this guide and assess a landscape based on its:

- *Dominant Elements: contrast, sequence, enframement, axis.*
- *Variable Principles: motion, light, atmospheric conditions, season, distance, scale, time. (Sanoff 1991)*

These elements and principles highlight certain situations that create picturesque environments that provoke emotion when seen within the landscape.

"If you want to truly absorb the splendour of the New Zealand outdoors, there is only one thing to do and that is walk"

(New Zealand Toursim 2015)

As mentioned before, New Zealand's Department of Conservation has applied their own evaluation criteria and highlighted 9 multi-day walking tracks, coined the 'Great Walks', as the flagship walks of New Zealand traversing forests, lakes, rivers, rugged mountains and vast valleys. These tracks are located all around the country, with the largest grouping in the Fiordland National Park.

● great walks of new zealand

► Figure 2.01:
"Map of New Zealand"

Three of the ‘Great Walks’ are located in Fiordland; found on the south-west of New Zealand’s South Island. These tracks are the Milford track, the Kepler track and the Routeburn track; the Milford track being regarded as the “finest walk in the world” (Baughan 1911). In addition there are 1,179 other walking tracks in the area; 115 of which are considered by D.o.C to be of a ‘Great Walk’ standard, the most of any National Park in the country (Dobbie 2008). Fiordland is also the largest National Park in New Zealand, covering 1,260,200 hectares of land and forms the Te Wahi Pounamu World Heritage Area (Conservation 2006). The area is one of New Zealand’s premier recreation and international tourism areas with Queenstown, Wanaka and Milford Sound nearby; providing areas rich with amenities catering to kayaking, fishing and hunting (Kerry Wray 2010).

With fourteen fjords and valleys spanning 215 kilometres of New Zealand’s west coast, Fiordland is also renowned as the ‘Walking Capital of the World’ (Fiordland N.d). Stationed amongst this stretch of coastline is the Hollyford Valley; home to Lake McKerrow, Martins Bay, the Hollyford River and subsequently the Hollyford Track. M.H. Holcroft, a local journalist, writes about the area in his book titled ‘Dance of the Seasons’.

^ Figure 2.02:
“Key areas surrounding Fiordland”

“But the mountains are sublime where man would be awkward; their massive foundations and inorganic composition give them the dignity that comes with stillness. Nevertheless, there is something in that tremendous variety of form and structure, breaking everywhere into a clear individuality, which belongs also to human experience”

(Holcroft 1952)

Fiordland is also a location within New Zealand associated with the sublime, with artists J.C. Hoyte (1870) and Eugene von Guérard (1877) both depicting Milford Sound and Mitre Peak in particular, with attributes of the romantic and picturesque. The grandeur of the area has been well documented with magazine ‘National Geographic Traveler’ using “words like ‘majestic’, ‘colossal’, and ‘sublime’, comparing other mountains flat little nothings before the glory of Mitre Peak” (Traveller 2004 p134).

Site:
The Hollyford Valley.

Rather than modify an existing 'Great Walk' this dissertation proposes the redesign of an existing track of a lower classification.

The existing track needed to:

- venture into the depths of Fiordland's wilderness.
- contain a reasonable amount of difficulty regarding the terrain and slope.
- contain the supporting landscape to provoke emotional responses.
- provide the existing infrastructure to become a 'Great Walk'.

After evaluating potential tracks, only the Hollyford track addressed the required criteria.

► Figure 2.04:
"the Hollyford Valley"

The existing Hollyford Track connects Lower Hollyford Road to Martins Bay. Currently the trek is walked over a period of six days traversing through native ecologies. Surrounded by the high peaks of Fiordland the tramper will encounter five huts, two significant waterfalls; notably Hidden Falls and Homer Falls, two lakes and a natural coastal spit. A diverse range of hazards create difficulty; for both abled and disabled persons alike. The predominant hazards are track deterioration and track slope. The track also includes Little Homer’s Saddle; a 100 metre incline and decline over a short space.

Another dominant hazard on the track is the ‘Demon Trail’; a fourteen kilometre length of the track where the standard of care drops severely due to constant erosion. Fiordland averages approximately 200 days of rain-per-annum resulting in frequent flooding and stress on bridges and sections of track (Conservation N.d).

martins bay

the demon trail

little homer’s saddle

lower hollyford road

Site:
The Hollyford Valley - Ecologies.

Formed through the impact of a glacier 20,000 years ago, the area officially became a valley when sediment deposits disconnected Lake McKerrow from the Tasman sea. In conjunction with the glacier the valley was further formed through erosion caused by numerous rivers; forming a unique landscape (Tourism 2016) (Fig 2.06). Located on the west coast, the Hollyford Valley passes through four distinct landscape typologies as you move towards the coast. These are forest, alpine, lake and coastal.

The flora in the area is predominantly silver beech forest with matai and rimu forming a thick canopy and an abundance of ferns, mosses and lichens composing the understory (Tourism 2016). Being the home to a diverse range of ecologies, the most unique and fragile are located around the coastal area of the valley where a wetland, marshland and dune system co-exist.

- streams
- rivers
- lakes

► Figure 2.06:
"Hydrology Map of the Hollyford Valley"

▸ Figure 2.07:
“Typical Sections of the Hollyford Valley”

Site:
The Hollyford Valley - Ecologies - Coastal.

Aristotelia serrata
makomako

Coprosma lucida
karamu

Cordyline australis
cabbage tree

Coriaria ruscifolia
miomio

Dacrydium cupressinum
rimu

Elaeocarpus dentatus
hinau

Freycinetia banksii
kiekie

Hemitelia smithii
soft tree fern

Phormium tenax
flax

Podocarpus spicatus
matai

Podocarpus totara
totara

Pteridium esculentum
bracken

Rubus cissoides
tatarakeke

Sophora microphylla
kowhai

▲ Figure 2.08:
“McKenzie Lagoon Flora Palette”, Various

Located on the coastline Martins Bay, the McKenzie lagoon in particular, is the home to a diverse ecosystem; including marine, swamp, forest and wetland conditions (Coutts 1971). These ecologies are afforded protection by sand dunes that run along the Martins Bay spit; formed through the winds of the Tasman Sea. This results in a delicate and natural network protecting fragile ecologies. The history of the site dates back to the original Māori settlers, being the site of a village that specialised in fishing and canoe building (Coutts 1971).

As the land stretches from the Tasman Sea to Lake McKerrrow the site could be categorised into further ecological subdivisions; foreshore and marine, grassland, lagoon and swamp, and forest. The resulting dynamic of the existing ecologies have created an environment that accommodates for a diverse range of fauna to thrive in, however this ecosystem is not only crucial to those who inhabit it.

▸ Figure 2.09:
“McKenzie Lagoon Ecology Zones”

^ Figure 2.10:
"McKenzie Lagoon Fauna Palette", Various

Through sand dunes, the foreshore and marine space provides shelter for the swamp and marshlands, which in turn provides a fertile grassland for the forest to cultivate. These unique relationships are currently overlooked at the present time with the existing track traversing the other side of the river bed; missing an opportunity to explore the environment.

^ Figure 2.11:
"McKenzie Lagoon Ecology Section"

Site:

The Hollyford Valley - Hazards.

Due to the isolated location of the track the construction elements such as huts, boardwalks and bridges are designed to be very practical and minimalistic. Personal observations of the track raised concern for track conditions and the quantity of steps used.

With the high level of rain that regularly covers the sight, large areas of mud have been created that causes the track to appear at a very low standard. Also associated with the levels of rain is the deterioration of surrounding vegetation, with landslips and flora damage often covering and destroying the track.

Damage from landslide

Unaccessible bridge

Narrow track extension

Unbridged river crossing

Poor track marking

Track terrain - decline

Steep edge of track

Track terrain - incline

The Huts, as architectural designs, are all of a high standard being fully serviced by the Department of Conservation and containing running tap water and heating facilities. While being a 'modern backcountry' design, they have been created in a way to be conservative towards their respective landscapes; opposed to embracing them and their unique, and natural, characteristics. However they have been designed solely for able bodied trampers.

To limit the risk of damage to the constructed elements of the track, steps have been constructed to raise bridges above flood-risk areas; a sign of no wheelchair access. In areas subjected to high landslip risk narrow boardwalk structures have been built; again with no wheelchair access. The huts built along the track are also a symbol of an able-body orientated environment, all requiring the visitor to trek up a flight of stairs to access. Other subjects of limited access within the huts are the narrow doorways, the widths of the living spaces and the inaccessibility of amenities; benches, beds and toilets.

▲ Figure 2.14:
“The existing switchback system; one of the main hazards existing on the track”

Site:
The Hollyford Track.

^ Figure 2.15:
"Series of Images of the Track, p1"

Site:
The Hollyford Track - Existing site issues.

Little Homers Saddle

24 metres - above sea level

168 metres - above sea level

60 metres - above sea level

Beginning of the track

high track deterioration

undulating track

► Figure 2.16:
“Track Spot Levels”

► Figure 2.17:
“Hazardous Areas on the Track”

Site:
The Hollyford Track - Existing track examples.

The bridge design is highly vulnerable to rain-induced erosion.

▲ Figure 2.18:
"Water Damaged Bridge"

Nature of the terrain means sections of the track require to be fully constructed.

▲ Figure 2.19:
"Narrow Track"

For stability the bridges are backed into the land as far as possible; this results in a limited turning circle for a wheelchair.

▲ Figure 2.20:
“Limited Turning Circle”

Once on the bridge, the widths are generally suitable for full accessibility.

▲ Figure 2.21:
“Existing River Crossing”

▲ Figure 2.22:
“Existing Boardwalk System”

▲ Figure 2.23:
“Existing Terrain”

Site:

The Hollyford Track - Existing hut examples.

The huts are inwards-focused with little emphasis of viewing the surrounding landscape.

^ Figure 2.24:
"Lake Alabaster Hut"

To reduce the impact of the hut's foundations they are built on stilts which incur a set of steps for access.

^ Figure 2.25:
"Staircase Entry to Hut"

The existing huts are relatively modern containing their own gas and water systems.

^ Figure 2.26:
"Public Amenities"

For hygiene reasons the toilets are placed well away from the hut.

^ Figure 2.27:
"Private Amenities"

▲ Figure 2.28:
“Existing Hut Access”

^ Figure 2.29:
"Existing Accessibility Heights"

▲ Figure 2.30:
 "Series of Images of the Track, p2"

Site:
Design Response.

The track has been segregated into four typologies which predominantly reflect on their immediate surroundings; forest, alpine, lake and wetland.

The forest typology of the track covers the initial twenty-five kilometres of the track, spanning three days and passing under some of Fiordland's most striking beech forest; crossing creeks and passing awe-inspiring waterfalls. It includes two of the huts; Hidden Falls hut and Lake Alabaster hut.

Following the forest environment is the alpine section which occupies the smallest overall area. Occupying five kilometres of the track it highlights the vast mountains that create the Hollyford Valley and follows the constructed track to the base of Lake McKerrow.

Covering the greatest area of the site is the lake typology where the existing track follows the edge of Lake McKerrow to the coast line where it meets the final landscape typology; wetland.

The wetland area covers the final section of the track and crosses numerous ecologies; notably wetlands, marshlands and sand dunes. This area comfortably leads the impaired athlete to an existing airstrip to complete the tramp.

Typology 1: Forest.

Typology 2: Alpine.

Typology 3: Lake.

Typology 4: Wetland.

4. Wetland

3. Lake

2. Alpine

1. Forest

► Figure 2.31:
"Design Typologies"

▼ Figure 2.32:
"Photograph of a waterfall along the Milford road"

Implementing a Path: Making and Taking a Path.

Designing a path that will provoke emotion and memory involves numerous external influences that have the potential to dramatically alter users the experience. Catherine Dee, in her book 'Form and Fabric in Landscape Architecture', summarises these opportunities as:

The following illustrations are adaptations of Catherine Dee's ideas regarding the implementation of a new path within the Hollyford Valley.

Create spaces that attracts the attention of visitors.

Renew the focal point of the area through the use of effective edges.

Using the paths edges and direction to create suspense regarding the final destination.

Create a field of vision to highlight the focal point of the space.

Orientate the path to either showcase or mask the final destination.

(Dee 2005)

Implementing no path, resulting in the user dictating their own path. This creates no official focal point as they choose their own destination.

Implementing a desired path, created by people walking across the existing vegetation. This results in subtle focal points as while there is a clear destination at the end of the unofficial track, the user is still in control.

Implementing a detached path, creating a clear focal point and destination as their destination has been decided for them through the constructed track.

▲ Figure 3.01:
"Creating Place", Author (Adapted from Dee, 2005)

A direct path creates no anticipation or interest, clearly showcasing the final destination.

A dynamic path creates both anticipation and interest, constantly changing the focal point of the track.

▲ Figure 3.02:
“Adapting Focal Points”, Author
(Adapted from Dee, 2005)

Rather than work against the topography users tend to choose one path and move along ridge-lines, across the summit or around the base of a slope.

When presented with uneven terrain, the users will take the most efficient pathway when approaching the slope. This means either moving around the slope, or over top of the slope.

▲ Figure 3.03:
 "Resulting Pathways", Author
 (Adapted from Dee, 2005)

A series of diagrams illustrating how the topography can be used to turn a direct path into a dynamic path. This is a common technique when designing switchback systems to navigate a slope.

▲ Figure 3.04:
“Adding Dimensionality”, Author
(Adapted from Dee, 2005)

These principles can be directly applied to this dissertation, predominantly around Martins Bay and the McKenzie lagoon where there is no existing track yet are multiple features and ecologies unique to that particular area of the Hollyford Valley.

Implementing a Path: *D.o.C Specifications - Tracks.*

Comparing Catherine Dee's approach to designing a pathway to the Department of Conservations methods, it is clear that the latter has a much more conservative approach. This is due to D.o.C aiming to implement the track with minimal impact to the landscape.

Currently D.o.C groups New Zealand's walking network into six different categories with the aim of creating a set of tracks that accommodate to a diverse range of needs. These categories also dictate the condition of the track, and the amount of maintenance that the track receives. These groupings are:

1: Easiest (easy access short walk): Easy walking for up to an hour. Suitable for people of all abilities, wheelchairs, buggies and strollers. Even surface, well formed with no steps or steep sections.

2: Easiest (short walk): Easy walking for up to an hour. Suitable for people of most ages and fitness levels. Track is well formed, with an even, drained surface. There may be steps.

3: Easy (walking track): Gentle walking from a few minutes to a day. Suitable for people with low to moderate fitness levels and abilities. Track is mostly well formed, some sections may be steep, rough or muddy.

4: Intermediate (great walk/easier tramping track): Comfortable multi-day tramping/hiking. Suitable for people with limited backcountry experience. Track is generally well formed, some sections may be rough, muddy or steep.

5: Advanced (tramping track): Challenging day or multi-day tramping/hiking. Suitable for people with moderate to high level backcountry skills and experience, navigation and survival skills required. Track is mostly unformed, some sections may be rough and steep.

6: Expert (route): Challenging overnight tramping/hiking. Suitable for people with moderate to high level backcountry skills. Complete self-sufficiency required. Track unformed and natural, may be rough, muddy or very steep.

(Conservation N.d)

Conservancy	Short Walks	Short Walks - disabled	Walking Tracks	Great Walks	Easy Tramping Tracks	Tramping Track	Routes	Total
Northland	16	2	263	15	0	313	0	609
Auckland	6	0	148	0	12	137	0	303
Waikato	18	1	164	0	0	547	27	757
Bay of Plenty	8	1	161	40	0	362	32	604
Tongariro/Taupo	5	2	113	48	0	319	23	510
East Coast	11	1	125	46	10	1193	199	1585
Wanganui	10	2	77	56	25	576	59	805
Wellington	0	0.4	143	0	72	534	19	768
Nelson/ Malborough	16	2	188	93	150	1208	316	1973
West Coast	33	6	186	42	38	581	232	1118
Canterbury	16	4	217	0	95	760	215	1307
Otago	21	0	440	7	125	718	122	1433
Southland	3	1	83	155	61	672	207	1182
Total	163	22	2308	502	588	7920	1451	12,954

^ Figure 3.05:
"Location of Tracks", Conservation, N.d

Out of New Zealand’s 12,954 tracks, only 0.2% are classified as accessible to people with physical impairments. For a track to be classed as ‘disability friendly’ the gradient must not exceed an average of 10°, with fifty metres allowed to be at a 15° slope. Attention must be brought to not only the fact that a wheelchair accessible track is segregated as its own group, creating non-inclusive tendencies, but the track is limited to being “up to an hour” long. Comparing this to a ‘Great Walk’s’ specifications; which have no maximum grade, it is appears that this is a safety precaution.

Currently no tracks are suited to young, fit and capable wheelchair athletes. The tracks that are accommodating for wheelchair access are designed for the frail, unfit and the elderly; taking away any sense of adventure from the trail. From assessing the ‘Track Construction and Maintenance Guidelines’ (Dobbie 2008) it is therefore clear that a new classification will be required; Intermediate, accessible ‘Great Walk’/accessible tramping track.

Track Classification	Gradient	Comment
Short Walk	Maximum of 10°	Grade may increase to 15° for 50 metres as long as firm footing in wet conditions is provided.
		Length of track between 10° and 15° shall not exceed 5% of track length.
Walking Track	Maximum of 15°	Grade may increase to 20° for 100 metres as long as firm footing in wet conditions is provided.
		Length of track between 15° and 20° shall not exceed 10% of track length.
Great Walks/Easy Tramping Track	No maximum grade.	
Tramping Track	No maximum grade.	
Route	No maximum grade.	

^ Figure 3.06:
“Maximum Track Gradients”, Conservation, N.d

Implementing a Path: D.o.C Specifications - Huts.

Completing a 'Great Walk' consists of walking for multiple days, staying overnight at one of D.o.C's backcountry huts. By definition a 'backcountry hut' is a building that:

a. Is located on land that is administered by the Department of Conservation for conservation, recreational, scientific, or other related purposes, including any land administered under:

- i. The Conservation Act 1987;*
- ii. The National Parks Act 1980;*
- iii. The Reserves Act 1977*

b. Is intended to provide overnight shelter to any person who may visit and who carries his or her own food, bedding, clothing, and outdoor equipment.

c. Contains only basic facilities:

- i. Sleeping platforms or bunks;*
- ii. Mattresses;*
- iii. Food preparation surfaces;*
- iv. Appliances for heating;*
- v. Appliances for cooking*

d. Does not contain any connection, except by radio-communications, to a network utility operator.

(Ministry of Business 2014)

Because of this definition, backcountry huts in New Zealand have simplified Building Code requirements meaning that they do not require:

- 1. Smoke alarms*
- 2. Emergency lighting*
- 3. Access and sanitary facilities for wheelchair users*
- 4. A drinkable water supply*
- 5. Artificial lighting*

(Building Performance NZ 2014)

These standards expand the scope of this project as they require the redesign, or refurbishment, of the existing huts on the track to bring them to an accessible standard in addition to allowing them to represent and showcase their immediate landscapes.

▲ Figure 3.07:
"Hidden Falls Hut"

▲ Figure 3.08:
"Lake Alabaster Hut"

The constructed elements that currently exist on the track have been designed to be safe and robust while also durable and resistant to the elements. Similar to the backcountry huts, the tracks and structures are also exempt from certain standards in the Building Code; clause D1 – access routes in particular (Building Code 2004). This has led to the bridges and boardwalks being as narrow as 600 millimetres (Humbolt Creek Bridge Dunedin 1994) and the track width acceptable as between 300 millimetres and 600 millimetres (Tracks and Outdoor Structures 2004). The recommended width for an accessible path is 700

millimetres (Joachim Fischer 2009) which means that certain parts of the track may require modification.

Modifications will also be required for river crossings with the majority of the current bridges not accessible. One existing structure provides an opportunity for a change in perspective towards disability access; the cableway carriage. Designed for crossings when a river is in flood the carriage is not directly intended for people with a physical impairment, however is possible to begin to see the opportunity for development in this sense.

◀ Figure 3.09:
"Cable Cart River Crossing - Section", Author
(Adapted from D.o.C)

▲ Figure 3.10:
"Section of Suspension Bridge - A", Author
(Adapted from D.o.C)

▲ Figure 3.11:
"Section of Suspension Bridge - B", Author
(Adapted from D.o.C)

▼ Figure 3.12:
“Humboldt Creek Bridge”, Author
(Adapted from D.o.C)

Case Studies:

Within the practise of landscape architecture, few examples of accessible great walks exist. Therefore two examples of a wheelchair athlete completing a track have been selected as case studies. A study of existing technologies has also been included as a case study, in relation to possible track interventions.

Heaphy Track

In the recent past there has been two instances where a physically impaired person has completed one of D.o.C's 'Great Walks'. In 2015 a visiting backpacker completed the Heaphy track and more recently in 2016 a local completed the Abel Tasman track. While neither of these two case studies are examples of independent wheelchair tramping, the objective of this thesis, they are two instances where an individual has shown great mental and physical strength to stop an impairment limiting their life.

Arnon Amit, a traveller from Israel, completed the Heaphy track on the second of January in 2015; becoming what is believed to be the first person to do so in a wheelchair (Amit 2015). In 2008 Arnon was injured in a car accident while on duty for the Israeli Army, injuring his C-6 and C-7 vertebrae resulting in the loss of his legs (Murray 2015). Passionate about the outdoors he refused to let this injury stop him from losing an interest and with the help of his close friends he completed one of New Zealand's 'Great Walks' as well as sections of the Abel Tasman coastal track and walks around Cape Reinga (Amit 2015).

The Heaphy track is located in the Kahurangi National Park, connecting the Nelson Bays region to the West Coast.

Spanning eighty kilometres the track traditionally takes four to five days with a highest point of 1000 metres above sea level. The trek traverses native forests, alpine tussock-lands, beech forests and coastal beaches creating a diverse range of ecosystems to view as well as breath-taking views over the national park (Conservation - Heaphy Track N.d).

"The first steep section is definitely the hardest part.... We found it was easier if you took off the two front wheels and replaced it with a larger, thicker wheel."(Amit 2015)

Being pulled, pushed and sometimes carried over the track, Amit and his supporters traversed the area in horrendous weather; stranded in the James McKay hut for two days due to flooding. Amit iterated that the uphill sections were by far the toughest due to its known nature and not attempting anything like it before.

"It wasn't easy. But was very good, very fun and the sights were amazing. You would turn one corner and feel like you were on a completely different track" (Amit 2015)

Describing the downhill sections as the most enjoyable, getting airborne on more than one occasion, Amit's story is one that highlights two important facts on this topic. Firstly this showcases that despite having a severe disability and weather working against them, there are people out there with such passion that these factors are

barely an obstacle and secondly, although Amit was aided for a lot of the track it is possible.

▲ Figure 3.13:
"Arnon at Kohaihai", Nadav Amit

▲ Figure 3.14:
"Nadav & Arnon", Gul Janovsky

► Figure 3.15:
"Locating the Heaphy Track"

A series of examples of the possible landscape typologies encountered along the Heaphy Track, moving from the Kahurangi National Park onto the West Coast.

▲ Figure 3.16:
“Heaphy - Day One”, Department of Conservation

▲ Figure 3.17:
“Heaphy - Day Two”, Department of Conservation

▲ Figure 3.18:
“Heaphy - Day Four”, Department of Conservation

Elevation of the Heaphy Track, showcasing the difficulty of the track in certain areas.

▲ Figure 3.19:
"Elevation of the Heaphy Track"

Case Studies:

Abel Tasman Coastal Path

In accordance with the Halberg Disability Sport Foundation and Merle Bradley, a wheelchair user, the Department of Conservation have begun an initiative 'Healthy Nature Healthy People'; recognising the link between a person's total wellbeing and nature (Watson 2016). Experimenting on the popular Abel Tasman coastal track, D.o.C tested several off road wheelchairs acknowledging that people with disabilities and aid had been able to summit Mt. Kilimanjaro and reach Mt. Everest Base Camp.

***"We're interested in finding out what sort of information and support people with mobility issues need when they are planning to challenge themselves on a longer trail."
(Watson 2016)***

Merle, a keen tramper', was diagnosed with motor neurone disease in 2004 and since has not let her condition affect her life style travelling around Africa, Europe, the United Kingdom, America and Canada. Traversing thirty kilometres of the Abel Tasman coastal track, Merle was able to visit a select few of the areas golden beaches on what is considered to be one of New Zealand's most popular summer tracks.

"Blessed with a mild climate, golden beaches and lush, coastal native bush, the Abel Tasman coastal track has it all" (Conservation - Abel Tasman N.d)

Similar to Amit, Merle did not complete the track without a great deal of help from others however was still able to access part of New Zealand's wilderness, in particular a part of her backyard that before the experiment was inaccessible. She is another great example of why such access should be created, and once again that it is possible.

- ▲ Figure 3.20:
"Merle in on of the off-road wheelchairs", D.o.C (Jose Waston)
- ▲ Figure 3.21:
"DOC improving accessibility for wheelchairs", Nicky Wagner
- ▶ Figure 3.22:
"Locating the Abel Tasman Coastal Track"

A series of examples of the possible landscape typologies encountered along the Abel Tasman Coastal Track, passing from bay-to-bay around the Abel Tasman National Park.

^ Figure 3.23:
"The French girls with their packs", Elle Crook

^ Figure 3.24:
"Abel Tasman Coastal Track_DSCF2893 ", Elle Crook

^ Figure 3.25:
"Abel Tasman Coastal Track_DSCF3030 ", Elle Crook

Elevation of the Abel Tasman Coastal Track, showcasing the rough an undulating nature of the track.

^ Figure 3.26:
"Elevation of the Abel Tasman Coastal Track"

Case Studies:

Existing Technologies

Traversing places where there is an underlying risk that they may lose control, a wheelchair athlete becomes fully reliant on their skill and strength with a wheelchair to remain in a safe state; constantly fighting the undulating nature of the track. This is similar to a rock-climber, where it is the climbers skill, strength and knowledge of equipment that keeps them safe.

“a willingness to put oneself in danger, the drive to push what has been done before, beyond existing physical and mental limits.” (Heywood 2006 p456)

Ian Heywood, in his article ‘Climbing Monsters’ (2006) explores the ‘technical, cognitive and deliberate aspects of the sport’, investigating the development of the bodies capacity and skill level and the relationship to the use of the equipment available. Relating back to philosophical terms, Heywood compares this relationship between man and technology to Plato’s ‘techne’ and ‘thumos’, technology and technique, and the drive to overcome and subdue.

“While anyone can go and get themselves killed on steep rock, the social reality of high performance, high risk, climbing involves exacting physical and mental preparation, considerable knowledge, training, experience, and technical refinement” (Heywood 2006 p456)

‘Well-informed risk taking’ is the core of rock climbing, similar to tramping on a lesser scale; knowing where on

the cliff-face is stable, knowing where is safe to trek. Heywood references the motion picture ‘Hard Grit’ (1998), a film that exhibits this theory of ‘techne’ and ‘thumos’. The film demonstrates the necessity of the technological side of the sport with the idea that in times of peril it will ultimately save the users life; assuming the experience of the climber has led to it being placed in a suitable location. Heywood’s approach to the idea is very theoretical, similar to ‘Enabling Wilderness’ in highlighting the connection between calculated risks and experiencing nature.

“enjoyment of movement on rock, or a feeling of closeness to nature, or a sense of the immanent limits to embodied freedom, are quite distinct from the states of mind necessary for undertaking extreme risk.” (Heywood 2006)

Climbers on a cliff face equip themselves with a diverse range of technologies with a different purpose to be used at different times; all to ensure their safety with respect to the laws of gravity. Currently on the Hollyford track, a wheelchair athlete would be in constant danger of falling off the track or losing control of their chair as they ascend and descend slopes. Combining ideologies from rock climbing to the creation of independent physically disabled tramping, a balance of technologies could implement a method for independency while tramping.

Body Harness - Designed to be a comfortable point of connection between the user and technologies.

The Roll N' Lock - Designed to only allow rope movement in a single direction.

The Easy Move - Designed to stop a user from falling down a cliff's face.

The Sparrow200 - Designed to control the users speed when descending a cliff's face.

▲ Figure 3.27:
"Examples of rock climbing technologies", Author
(Adapted from Climbing Technology)

The company 'Climbing Technology', in conjunction with 'Aludesign SpA', produce equipment specifically designed for safety while pursuing a personal interest or within a professional environment. They design numerous forms of connections, buckles, rings and components that have a single task to achieve when dealing with tough slopes (Technology N.d). Designs of particular interest to this research-led-design are connections related to speed control and direction of movement.

Fitted with a de-accelerating system the Sparrow 200 is designed to manipulate the connected ropes to control one's speed when descending a cliff face. Holding the free end of the rope, the Sparrow 200 lets the user fight the forces of gravity giving them complete control of their situation (Technology - Sparrow200 N.d). Climbing Technology's Roll N' Lock has a similar task as the Sparrow 200, however instead of controlling speed it only allows rope movement in a single direct making it suitable for ascending slopes as it allows for the user to stop and rest safely (Technology - Roll N' Lock N.d). These when used in conjunction with the Easy Move, a device that halts the ropes if a fall occurs, create a safe mechanism when faced with an immediate fall (Technology N.d).

Combining such technologies with Landscape Architecture, in a backcountry environment, could enable a method for wheelchair access to safely navigate difficult terrain and provide a network of safety devices to use when faced with a high-risk situation.

Case Studies:

Through the investigation into existing examples of wheelchair athletes it is evident that such a feat is possible, however only with the help of others. It was also found that the desire for a track that allows for independent wheelchair tramping exists after conducting interviews with members of the disabled community.

Through these interviews, connections were made to the rock climbing technologies through the interviewee's sailing background; creating parallels between general safety and backcountry tracks.

In summary, the idea of an accessible 'Great Walk' is possible; through the adaptation of existing technologies and implementation along the Hollyford Track.

The Accessible Great Walk:

To form a design process that establishes a track classification, further study focusing on the existing nature of the track was required. This has been explored by breaking down the track into typologies. The investigation takes place between the beginning of the track [Lower Hollyford Road] and the McKerrow Island hut; the initial thirty kilometres of the track.

Through combining this investigation with the opinion of local wheelchair athletes, a new classification purposed for an accessible 'Great Walk' was formed. The method for this investigation was:

- **Map the gradient of the track into an accurate transect.**
- **Review the D.o.C specifications, regarding recommended track slopes.**
- **Quantify the difficulty of the slopes, with reference to wheelchair athletes.**
- **Identify the suitable track adjustment (see figure 3.30).**
- **Implement the intervention onto the transect.**

The Accessible Great Walk: Forest Typology - Gradient Study.

To label the necessary track requirements, the respective track gradients have been sorted into four groups relating the slope to wheelchair accessibility; that with further iterations will progress to a set of design specifications.

- Easy: 0° to 5° / 1:12 + gradient
- Intermediate: 5° to 10° / 1:12 to 1:8 gradient
- Hard: 10° to 15° / 1:8 to 1:5 gradient
- Extreme: 15° to 20° / 1:5 to 1:3 gradient.

Applying these groups to the thirty kilometre length of the track it was found that the majority of the track is applicable to the 'easy' gradient, with little-to-no sections of the track classed as 'extreme'.

- Easy: 83%
- Intermediate: 5%
- Hard: 10%
- Extreme: 2%

▼ Figure 3.28:
“Gradient study of the Forest typology on the redesigned Hollyford Track”

The Accessible Great Walk:

Forest Typology - Gradient Study - Little Homer's Saddle.

Comparing this back to the Department of Conservations 'Track Classification' the Hollyford track is regarded as a 'Great Walk'; with respect to the average gradient of the track. The underlying issue with this track promotion is therefore the quality of the track. Referencing knowledge regarding wheelchair accessibility and the existing track construction guidelines (Dobbie 2008), design responses to this issue have been created from the gradient categories. These are:

- *Regraded Track: for places where the track is susceptible to high levels of erosion.*

- *Geocells: for slopes that do not require technology aids, but can be hazardous after heavy rainfall.*

- *Track Technologies: for steep slopes that create an immediate danger.*

- *Switchbacks: for sections of the track that contains a steep slope over 20 metres.*

To implement these onto the track, the following system was used; with regard to D.o.C's existing track classifications:

Difficulty	Gradient %	Adjustment
Easy	0% - 8.75%	Regraded Track
Intermediate	8.75% - 17.6%	Geocells
Hard	17.6% - 26.8%	Track Technologies
Extreme	26.8% - 36.4%	Swtichback

Regraded Track.
Rebuilding the track with a better suited aggregate and sub-grade textiles.

Geocells.
Including geocells underneath aggregate to improve quality.

Track Technologies.
Placed in areas where the slope becomes between 10°- 15°. Designed to create a safety backup for a wheelchair moving up/ down a slope.

Switchback.
Where the slope becomes more than 15° the technologies will be backed up by a switchback to return the slope to a safer angle.

little homer's saddle

◀ Figure 3.29:
“Suitable track adjustments”

▲ Figure 3.30:
“Implementing the appropriate track adjustments onto Little Homer’s Saddle”

	Rise:Run	Percentage	Design Response
1	1:13	10%	Geocells
2	1:245	0.4%	Regrade Track
3	1:10	10%	Geocells
4	1:61	1.6%	Regrade Track
5	1:12	8.3%	Track Technologies
6	1:33	3.0%	Regrade Track
7	1:12	8.3%	Geocells
8	1:96	1.0%	Regrade Track
9	1:13	7.6%	Geocells
10	1:33	3.0%	Track Regrade
11	1:13	7.6%	Geocells
12	1:8	12.5%	Track Technologies
13	1:13	7.6%	Geocells
14	1:3	33%	Switchback

▲ Figure 3.31:
“Track gradient data from overall study”, Author

The Accessible Great Walk: Track Classification.

This gradient study, with reference to D.o.C guidelines, has also led to the creation of a new track standard; the accessible 'Great Walk'.

Comfortable multi-day tramping/hiking. Suitable for people with limited backcountry experience, including those who are reliant on a wheelchair.

Track is generally well formed, some sections may be rough, muddy or steep. Technologies have been implemented to afford access through the difficult sections of the track.

Track has signs, poles or markers. All stream and river crossings are bridged. All bridges and structures are inclusive.

▼ Figure 3.32:
"Photograph of a stream along the Hollyford track"

Design Iterations and Process:

The scope of this project is to design a method to implement access within New Zealand's National Parks. The corresponding goal is to allow the opportunity for wheelchair bound athletes to connect to their local landscapes. Highlighting the relationship between a person's wellbeing and nature, this thesis aims to create a concept for a new 'Great Walk' through the refurbishment of the Hollyford Track. Utilising the existing landscape, this new track offers a multi-sensory experience for those who walk it; abled and disabled.

As a process this track concept has been developed in four typologies; forest, alpine, lake and wetland. This is so each typology that one was to adventure through reflects the immediate landscape features that make the site so unique.

While the elements designed are implemented into specific areas along the track, each has a unique set of principles so that it may be adapted to be included in other tracks that may be deemed suitable for such access. These elements include huts, track technologies, lookouts, kayak launches and landings and an ecologically focused boardwalk.

Forest

Alpine

Lake

Wetland

▲ Figure 4.01:
“Typologies of the track”

Forest.

► Figure 4.02:
"Forest Typology"

Forest:

The ‘forest’ length of the valley composes the initial twenty-four kilometres of the track and the first two days of tramping. Starting at Humboldt Falls and finishing at Lake Alabaster the track meanders through native beech forest, crossing multiple streams and one dominant river that helped to shape the Hollyford Valley.

Two spaces along the track have been highlighted for their ecological properties; the Hidden Falls waterfall and the peak of Little Homer’s Saddle. With their close proximity to natural features, they provide an enjoyable environment to break up the walk.

Along the existing track there are two huts each of which has been redesigned to allow for a greater engagement of their respective immediate landscape as well as for wheelchair access. The ‘forest’ leg of the Hollyford Track also includes, with regards to a wheelchair user, the most difficult section of the trek; Little Homer’s Saddle. This is a space where the highest amount of track intervention has taken place to allow for a safe crossing.

- ecologies
- huts
- technologies

Forest: *Ecologies - Hidden Falls*

Currently, the waterfall at Hidden Falls is most commonly seen from the bridge as you cross the stream, with a proper view of the waterfall only accessible through leaving the track. This inspires a sense of way-finding as you choose your own path depending on how much rain has fallen in the recent weeks as you pass over the heavily trampled understory of the forest.

^ Figure 4.05:
"Photo of Hidden Falls"

Existing track and flooding influences and how current visitors respond.

▲ Figure 4.06:
"Hidden Falls Flooding"

▲ Figure 4.07:
"Resulting Wayfinding"

Design with little-to-no flooding.

Design with average flooding.

▲ Figure 4.08:
“Designing for a sense of Wayfinding”

Design with high flooding.

Design area completely flooded.

As seen in figure 4.08 the design is heavily dictated by the weather with the level of flooding in the space deciding what path one may take. This creates a sense of wayfinding as the visitor subconsciously creates their own path.

Taking inspiration from the Nordic viewing platforms shown, the Steigasten and Askvagen viewing platforms, the designs aim to contrast the similarities between natural and designed elements of the site. Suspending the lookout over the landscape creates a space surrounded by wilderness, rather than overlooking it.

In the Hidden Falls concept, through placing the lookouts within the rocks allows them to stay dry as the water rises, connecting the visitor to the water at a higher level compared to back on the bridge. It also safely replicates the experience of an able-bodied visitor moving over the rocks to get closer.

▲ Figure 4.09:
"Stegastein Lookout", Alla_pj (TripAdvisor User)

▲ Figure 4.10:
"Askvagen", Ken Schluchtmann

▲ Figure 4.11:
“Long section of Lookout concept”

Taking inspiration from Nordic architecture, contrasting the similarities between designed and natural ruggedness.

^ Figure 4.12:
"Overlooking the water"

As the water rises, way-finding methods become increasingly limited, placing the designed path at the mercy of the land.

▲ Figure 4.13:
"Choosing your own path"

Forest:
Hut - Hidden Falls

The existing Hidden Falls Hut has been placed in a forest clearing, located twenty minutes off the main track. The immediate landscape is overshadowed by the Darran range that forms one half of the valley. The hut has been re-designed to allow for wheelchair accessibility and to place focus on the surrounding mountains.

view of darran mountain range

hollyford river

dense native beech forest

Initial concept was to mimic the valley, creating a dominant inward focus where visitors gather.

Second concept was to embrace the valley, creating multiple platforms to discover the landscape through.

◀ Figure 4.14:
"Land influences of the site - Hidden Falls"

▲ Figure 4.15:
"Hidden Falls orientation experiments"

The hut includes outdoor and indoor spaces from which to view the landscape. A unique feature of this hut is the glass-enclosed porch that allows the visitors to keep warm inside while also immersed within the surrounding valley; during daytime or night, away from urban light pollution.

▲ Figure 4.16:
"Concept section of the Hidden Falls Hut"

► Figure 4.17:
"Concept plan of the Hidden Falls Hut"

View to the Darran
Mountain range.

Forest: *Terrain Technologies*

Little Homer's Saddle, the highest point of the track, involves a high level of difficulty and danger. To provide a safe crossing, technology inspired by rock climbing tools has been implemented to stop the physically impaired users to scale uneven sections of the track without the fear of falling backwards/forwards. With the high level of physical exertion, for able and disabled bodies alike, extra breaks in the track have been added in this area to allow for comfortable resting spots as well as the opportunity to view out over the native beech forest below.

^ Figure 4.18:
"Adapting existing technologies to suit a Wheelchair Athlete"

Combining the adapted technologies and rope/cable systems allows for a simple safety system permitting the wheelchair athlete to scale inclines without the anxiety of falling backwards.

The nature of the adapted technologies allows for a simple 'clip on, clip off' method when moving to a different slope or section of the track.

^ Figure 4.19:
"Diagrams showing the implementation of technologies onto varying terrain"

To limit the risk of moving off the track, low-level barriers have been included in this concept as a precaution in particularly hazardous areas. This also allows a view to be gained over the top; acknowledging the lowered view of a wheelchair athlete.

▲ Figure 4.20:
“Section showing a typical barrier along the track; providing a sense of safety”

▲ Figure 4.21:
“Section showing the redesigned switchback system”

▲ Figure 4.22:
“Section showing the beginning of an incline along a typical transect of the track”

▲ Figure 4.23:
“Section showcasing a possible lookout, created through the
implementation of a landing along an incline”

^ Figure 4.25:
"Analysis of movement around Little Homer's Saddle"

Again gaining inspiration from Nordic architecture, this lookout uses principles found at the Trollstigplatået viewpoint where the architect used strategic angles to guide the eye. The lookouts separation from the track allows it to become a space to fully enjoy the surrounding landscapes; breaking the journey.

^ Figure 4.26:
"Trollstigplatået", Landezine

^ Figure 4.27:
"Trollstigplatået", Landezine

— afforded view
— desired view

Dominant angles tend to judge where a visitors view is pointed meaning a square does not direct the eye to the appropriate areas of the site

Adapting the Trollstigplatået design strategy, this concept uses an irregular shape, to guide the visitors eye.

^ Figure 4.28:
“Experimenting with shape and form, regarding how a lookout functions”

▲ Figure 4.29:
“Elevation showing the separation of the lookout from the track; creating a
clear boundary”

▲ Figure 4.30:
“Section showing the relation of the lookout to the track; the lookout
affording shelter for the track”

Forest:
Hut - Lake Alabaster

The second hut within the 'forest' section is located on the shoreline of Lake Alabaster. While the existing hut looks out over the lake, it remains highly inward-focused containing no designated space to engage with its surrounding landscape. The redesigned concept for this hut creates space for people to be outside and immerse themselves within the site's unique wilderness.

lake alabaster

lake-front

pyke river

The existing orientation only connects to the lake-front via a small decking space, predominantly used for gear storage.

The proposed orientation creates space to be used for public amenities outside, encouraging visitors to engage with their surroundings.

◀ Figure 4.31:
"Land influences of the site - Lake Alabaster"

▲ Figure 4.32:
"Lake Alabaster orientation experiments"

Utilising existing flora to create sight-lines from the hut towards the lake.

- ▲ Figure 4.33:
"Elevation of Lake Alabaster, as seen from the lake-front"
- ▶ Figure 4.34:
"Concept plan of the Lake Alabaster Hut"

*Beach access
to Lake
Alabaster.*

Alpine.

► Figure 4.35:
"Alpine Typology"

Alpine:

Covering the end of day three, and beginning of day four, the alpine section of the track is the smallest, spanning 5.25km. However it is possibly the most powerful in terms of gaining a sense of wilderness.

Passing through the edge of the beech forest into grass meadows, the space provides a view over Lake McKerrow whilst being dwarfed via the surrounding mountain ranges generating a great sense of awe, affording a powerful connection to New Zealand's backcountry.

Being a relatively easy gradient across the area this typology is predominantly located on McKerrow Island and involves the design of a new bridge to cross over the Hollyford river and a refurbished hut.

- huts
- technologies

- ◀ Figure 4.36:
"Alpine Track Path"
- ▲ Figure 4.37:
"Alpine Track Path Elevation"

Alpine: ***Bridged Crossing***

The existing river crossings either involve an extremely narrow suspension bridge, or no bridge at all; creating a hard challenge for a wheelchair athlete to utilise. Located on another track within New Zealand is a historic piece of D.o.C technology purposed for use when the river is in flood.

The crack-powered cable-cart bridge provides a possible alternative to regular river crossings, using a wheelchair athletes heightened upper-body strength to power their way across a river or stream.

^ Figure 3.38:
"Myself in the cable car crossing the Olivine River",
Joe's Diner

The redesigned cable-cart system providing a ramped access up to the landing platform.

- ◀ Figure 4.39:
"Location of all bridged crossing on the track"
- ▶ Figure 4.40:
"Section/plan of the existing cable-cart system"

^ Figure 4.41:
"Concept section of a typical bridged crossing"

Providing a method of access to the landing platform, a wheelchair athlete is able to utilise the cable-cart; therefore providing a safe river crossing.

Alpine: Hut - Lake McKerrow

Located at the northern point of McKerrow Island, this redesigned hut is placed in a way that all focus is towards the lake. This has been done by splitting the hut into two identical sides creating a 'valley' for the visitor to pass through, mimicking the mountain range on either side. This strategy confines the visitor to a small space before experiencing the wondrous valley they are now located in. This creates a humbling sense of awe as they scan the huts immediate landscape features.

Through being surrounded by beech forest, then huts walls, the visitor is constantly enclosed which places more emphasis on the open nature of the building upon arrival; whilst also showcasing the beginning of the next day's adventure.

lake mckerrow

hollyford river

Making the focus of the hut out the front to direct all attention to the lake, overlooking it in between the mountains.

Creating a 'valley' in between the two sides of the hut to mimic the surrounding mountain influence.

◀ Figure 4.42:
"Land influences of the site"

▲ Figure 4.43:
"Orientation experiments of McKerrow Island Hut"

The visitor moves between the two huts, mirroring the surrounding valley; increasing the importance of the landscape and affording a greater connection.

^ Figure 4.44:
"Elevation of the hut showcasing the 'valley' created between the buildings"

▸ Figure 4.45:
"Concept plan of the McKerrow Island hut"

*View over Lake
McKerrow into the
valley.*

Lake.

► Figure 4.46:
“Lake Typology”

Lake:

The original track in this section follows the exterior of Lake McKerrow. Known as the 'Demon Trail' this part of the track is found to be extremely difficult and is avoided in this design of the track.

To avoid it the wheelchair athletes are able to kayak across the lake, placing them on the ecological highlight of the area creating a direct connection to the landscape.

Designed in this area is a kayak landing and launch system, and a new hut with two existing huts being refurbished.

-- proposed new path (via kayak)

— existing demon trail

■ huts

■ technologies

◀ Figure 4.47:
“Lake Track Path”

▲ Figure 4.48:
“Lake Track Path Elevation”

Lake: *Kayak - Landing + Launch System*

The kayak system is designed to allow for independent access where the wheelchair occupant can use a side transfer method to lower themselves into a kayak. The kayak is rested in a cradle in the water; preventing any sudden influences from the lake. Initially a ramp concept was developed, with a crane-like system also considered however these produced difficulty in safely accessing a kayak.

Gaining inspiration from the E-Z Launch Kayak system; researching existing ideas of how kayaking and wheelchair users currently interact.

▲ Figure 4.49:
“Image of the E-Z Launch Kayak”, Knight Boat Docks

▲ Figure 4.50:
“Diagram of movement from wheelchair to kayak”

A ramp system that the wheelchair athlete could move into the kayak into using a bar and side-loading method.

Taking inspiration from a container crane system based on a pulley system, this option creates a tower that a user can pick the kayak up with and place it in the water; affording a greater sense of independence.

▲ Figure 4.51:
“Experimenting with different kayak access systems”

cradle sitting within
the water for a
controlled transfer.

Developing the ramp idea and creating a set of ledges to
allow a slower, more controlled, transfer into the kayak.

the posts combine with a
flotation device to keep the
cradle at water level. this
allows direct access to the
water.

Allowing the dock to float so the kayak can be controlled
in the water when transferring into it.

▲ Figure 4.52:
“Conceptual axonometric of the kayak launch/landing”

▲ Figure 4.53:
“Conceptual section of the kayak launch/landing”

Lake:
Hut - Lake McKerrow

Designed to connect with the lake, the concept for the new Lake McKerrow hut is made up of a series of narrow, wide rooms directing all attention across the lake towards the Skippers mountain range.

Embedded within the lake-front forest, the hut offers a wide exterior deck to allow visitors to find their own space and connect with the immediate landscape in the most secluded hut along the track.

To create a sense of connection to the lake, the front of the hut is where the main focus of the visitors attention should be placed.

Creating a wider, shallower, hut creates ample space for visitors to have their own space outdoors.

- ◀ Figure 4.54:
"Land influences of the site"
- ▲ Figure 4.55:
"Orientation experiments of Lake McKerrow Hut"

Creating ample space at the front of the hut allows visitors to have a private moment by the lake without being disturbed.

▲ Figure 4.56:
“Elevation of the hut showcasing the open front of the building”

▸ Figure 4.57:
“Concept plan of the McKerrow Island hut”

*View over Lake
McKerrow towards
Skippers range.*

Lake:
Huts - Demon Trail + Hokuri / Inclusive Design

The design strategy for refitting and designing the new huts is to create inclusive spaces; allowing able and disabled bodies to work together.

Below is a diagram of the differences between furnishing heights, adapted from information in Joachim Fischer's book (2009). Applying these too all of the huts creates a cohesive system of huts along the Hollyford Track.

Refurbishing the existing huts along the Demon Trail to allow access if the wheelchair athletes would prefer to link up with their non-kayaking friends.

- ◀ Figure 4.58:
"Diagram showing the height differences of furnishes for able and disabled bodies"
- ▲ Figure 4.59:
"Concept elevation of the refurbished Demon Trail and Hokuri huts"

Creating spaces so that the two parties (abled and disabled) can work together in the huts, opposing segregation.

Re-prioritising the bunk-bed design to allow for both parties to stay in the same room, keeping a social aspect to the trip.

▲ Figure 4.60:
“Diagram showing inclusive kitchen spaces”

▲ Figure 4.61:
“Diagram showing inclusive bedrooms”

Including a space where a disabled athlete can clean their chair before entering the hut, to keep the space clean for the next visitors.

Having bathrooms orientated to suit the wheelchair users to allow for easy access to essential amenities.

- ▲ Figure 4.62:
"Diagram showing wheelchair friendly bathrooms"
- ▲ Figure 4.63:
"Diagram showing a wheelchair maintenance station"

Hidden Falls.
All plans 1:100 @ A4.

Lake Alabaster.

McKerrow Island.

^ Figure 4.64:
"Conceptual floor plans of the huts along the Hollyford Track"

Lake McKerrrow.

Demon Trail/Hokuri.

McKenzie Lagoon.

Wetland.

► Figure 4.65:
“Wetland Typology”

Wetland:

Moving to the opposite site of the river to the existing track, this section of the track occupies the last 8km of the journey. The decision to take the track to the opposite side is to highlight the fragile and important ecologies located there; a wetland, a lagoon, marshlands and sand dunes.

This is the easiest section of the track; designed to be a space so that the visitors, abled and disabled, can focus on visually engaging with the fragile ecologies rather than completing the days trek.

Designed in this space is a boardwalk crossing these ecologies and the final hut.

- ecologies
- huts
- technologies

- ◀ Figure 4.66:
"Wetland Track Path"
- ▲ Figure 4.67:
"Wetland Track Path Elevation"

Wetland: Ecologies - the McKenzie Lagoon

The boardwalk over the space is designed to enhance the experience of the track for all users, showcasing the unique ecologies within the area. This is through using a strategy of constantly changing the direction of the path to guide the eye to special moments in the lagoon.

Moving over wetlands, lagoons, marshlands and sand-dunes, this boardwalk aims to showcase and educate visitors of the importance and beauty of the fragile ecologies around New Zealand.

- Figure 4.68:
"Allowing for wheelchair access over the ecologies"
- Figure 4.69:
"Creating a concept that would appeal to both able and disabled bodies"

The lagoon.

The three dominant ecologies present around the McKenzie Lagoon.

The wetland.

The marshland.

► Figure 4.70:
"The existing ecologies within the McKenzie Lagoon; in relation to the path"

A series of experiments investigating what route offers what types of views.

Using the changing of direction to differ the changing of view that the user experiences.

Locating key spots around the lagoon that could spark interest; where people could get closer to the ecologies.

- key locations along concept
- ◀ possible view created through track

^ Figure 4.71:
“Experimenting with possible paths and their resulting views”

A

B

▲ Figure 4.72:
"Crossing the different ecologies - 1"

▲ Figure 4.73:
"Crossing the different ecologies - 2"

▲ Figure 4.74:
 "Crossing the different ecologies - 3"

Wetland:
Hut - McKenzie Lagoon

The concept of the McKenzie Lagoon hut is to embrace the ecologies, acting as a border between the lagoon and the ocean; where fresh water meets salt water. Offering 360° views, this hut is designed to create a relaxed environment where all visitors can find a private spot to reflect of their accomplishment.

tasman sea

sand dunes

mckenzie lagoon

wetland

marshland

Using the hut to form a threshold between two ecologies, passing up to the hut from the wetland and leaving the hut into the sand dunes.

having an outward focus when outside the hut and an inward focus inside the hut.

The second concept experimented with utilising exterior space to direct the attention of the visitors to the hut.

creating a full view around the hut; showcasing all of the ecologies.

- ◀ Figure 4.75:
"Land influences of the site"
- ▲ Figure 4.76:
"Orientation experiments of the McKenzie Lagoon hut"

Having two distinct sides of the hut, one that overlooks a wetland and the other that overlooks the sand-dune systems.

- ▲ Figure 4.77:
"Elevation of the hut showcasing the hut forming a connection between the two ecologies"
- ▶ Figure 4.78:
"Concept plan of the McKenzie Lagoon hut"
- ▼ Figure 4.79:
"Photograph of a waterfall on Lower Hollyford road"

*Border between the
differing ecologies of the
immediate site.*

Final Design:

The core idea of this thesis is to develop and use landscape architectural principles to provoke emotions within wilderness. Referring to the literature review, it is evident inspiring emotions helps people to develop a stronger connection to the landscape; allowing them to form their own memories.

Implementing technologies and wheelchair access along the track allowed for the possibility to alter the user's orientation and direct their view to certain parts of the track. These views are what inspire us to continue the journey, and what make us excited to discover a new location; because of the involuntary, yet powerful, feelings that overcome us. Whether it is fear, pride or simply freedom, these emotions are what make the journey through the Hollyford Valley so unique.

The following pages contain a series of images from the final design concept for the Hollyford Track, showcasing the possible scenarios a wheelchair athlete, and their trekking party, could come across and the possible feelings they may encounter along the way.

Fear:

The point in the journey where mental capability is seriously tested.

Pride:

An emotional pause reflecting on the journey to a desired location.

Awe:

A moment where one marvels at the wondrous landscape surrounding them.

Reminiscence/Introspection:

An individual reflection of the journey, through life and the track.

Humility:

A feeling of realisation of larger forces at play.

Freedom:

A rush caused by the release from urban restrictions.

Frustration:

A response to the winding/repetitive nature of wilderness and the possibility of getting lost.

Spirituality:

A personal connection between human and land.

Days 1 and 2: Traversing the forest.

► Figure 5.01:
"Track reference - Forest"

▼ Figure 5.02

1. Passing one of the many waterfalls located on the track.

Fear

Awe

▼ Figure 5.03

2. Arriving at Hidden Falls Hut, surrounded by the native forest.

Pride

Reminiscence
Introspection

▼ Figure 5.04

3. Overlooking the hut at night, covered by the night sky.

Awe

Reminiscence
Introspection

Spirituality

▼ Figure 5.05

4. Descending Little Homer's Saddle.

Fear

▼ Figure 5.06

5. *Passing-by the Hollyford River's edge.*

Fear

Frustration

▼ Figure 5.07

6. Arriving at Lake Alabaster Hut.

Pride

Figure 5.08

7. Connecting to the lake front via the huts new access and newly afforded views.

Spirituality

▼ Figure 5.09

8. *Beginning the journey into an alpine environment.*

Reminiscence
Introspection

Spirituality

Day 3: Entering the valley.

► Figure 5.10:
“Track reference - Alpine”

▼ Figure 5.11

9. Crossing over to McKerrow Island.

Fear

▼ Figure 5.12

10. Crossing over the Hollyford River.

▼ Figure 5.13

11. *Venturing into the open valley.*

Awe

Humility

▼ Figure 5.14

12. Moving down towards Lake McKerrow.

Frustration

▼ Figure 5.15

13. Beginning the journey across Lake McKerrow.

Freedom

▼ Figure 5.16

14. Generating envy within the able-bodied trampers.

Pride

Freedom

Day 4: Crossing Lake McKerrow.

18

17

15, 16

► Figure 5.17:
“Track reference - Lake”

▼ Figure 5.18

15. Overlooking the lake at Lake McKerrrow Hut.

Pride

Freedom

▼ Figure 5.19

16. A lake retreat, surrounded by wilderness.

Awe

Humility

Pride

Spirituality

▼ Figure 5.20

17. Up close with inhabitants of the lake.

Spirituality

▼ Figure 5.21

18. Approaching the kayak landing fresh at the McKenzie Lagoon.

Pride

Reminiscence
Introspection

Days 5 and 6: Connecting with the delicate, local ecologies.

► Figure 5.22:
“Track reference - Wetland”

▼ Figure 5.23

19. *Crossing numerous ecologies and meeting their inhabitants.*

Awe

Humility

Spirituality

▼ Figure 5.24

20. Re-entering the forest, waiting to appear in a new world.

Frustration

▼ Figure 5.25

21. The McKenzie Lagoon Hut, the meeting of land and sea.

Humility

Spirituality

▼ Figure 5.26

22. The hut bordering a saltwater and fresh water environment.

Awe

Pride

▼ Figure 5.27

23. Beginning the final day, passing in between wetland and dune ecosystems.

Humility

▼ Figure 5.28

24. Taking the time to connect with as many ecologies as possible.

Freedom

Spirituality

▼ Figure 5.29

25. The final river crossing, over to the existing Hollyford Airstrip.

Pride

Conclusion:

The experience of New Zealand's wilderness is deemed an essential right and a crucial part of 'being a Kiwi' (Conservation 2012). However, this experience is currently reserved for fit, athletic and abled bodies. This thesis challenges this oversight and explores opportunities for the redesign of a scenic trek within New Zealand's National Parks to provide independent access for wheelchair athletes and the ability to immerse themselves in the landscape and experience wilderness.

Following a review of appropriate literature, discussion with the respective organisations, communication with the physically disabled community and analysis of how previous landscape architects had dealt with the issue, the scope of the research expanded to include a wide range of elements required to make the track accessible. This research extended to researching a suitable wheelchair for wilderness treks; redesigning the existing accommodation; adapting existing specialised safety equipment; and designing wheelchair orientated technologies for ascending and descending slopes, and wheelchair transfers.

The final design produced an inclusive 'Great Walk; where able bodied and disabled people could complete the trek together through the redesign of the existing Hollyford track. The trek allows visitors to experience four different landscape typologies and challenges both their mental and physical strength. Avoiding the near-impossible existing 'Demon Trail' section of the current track, the inclusive track re-directs the athletes to kayak Lake McKerrow, showcasing the valley from a completely different perspective and leading the visitors through a currently

undeveloped wetland on the opposite shore. The inclusive track is designed by accentuating the existing natural systems to provoke a multi-sensory experience for both disabled and able-bodied, prompting emotional responses, inspiring personal memories and facilitating the social aspects associated with tramping the journey together.

Research found that by combining new perceptions with opportunities made available through landscape design, a new method of experiencing space can be created which is visual and haptic for able and disabled adventurers alike. The combination of modifying existing technologies and a systematic approach to track analysis effectively resulted in a comprehensive method to implement the design. The use of embedded technologies allows for a wheelchair athlete to 'feel' the landscape; pushing and pulling themselves with appropriate aids, physically feeling the imperfections of the track as they gain a greater appreciation for the landscape and form a closer connection to wilderness.

Reviewing design iterations with design academics and professionals, in conjunction with feedback from the disabled community, resulted in an accessible redesign of the Hollyford track.

Thesis time constrains only permitted a brief exploration of appropriate technologies. This is an area that would benefit from further investigation. While the technologies have been thoroughly considered in theory, actual testing

and further exploration of how they are incorporated onto such a delicate landscape could be defined at a much closer scale.

In terms of contributing to the discipline of Landscape Architecture, this thesis offers a different perspective when designing in conservation spaces. Taking influence from examples in Norway, the design produces concepts that challenge the idea of 'designing with the goal of minimal impact'. Instead, using heavy materials and conventional shapes, the design contrasts with the natural forms of the landscape; placing emphasis on the raw beauty of the valley. The redesign of the huts also contributes to the discipline as it provokes the idea of designing spaces to highlight their immediate landscape features, opposed to designing purely for functionality or building aesthetics.

Finally, developing a track like this can create an 'Everest' for people living with a physical disability; something they can aspire to complete in their lifetime. Through acknowledging impairment, but negating disability, it creates an 'ultimate achievement' for the wheelchair-bound athlete, and a sense of inclusion for those who may be interest but not wanting to directly participate.

► Figure 5.30:
"Connecting with New Zealand's wilderness"

▼ Figure 5.31:
"Photograph of Mitre Peak"

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