| Off- Piste

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Designing on a Mountain

By Samantha Rollinson

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| Chapter 1.

INTRODUCTION

Fig 0.1: Off trail adventure site visit

ACKNOWLEDGMENTS

To my supervisor Jacquie, you have constantly pushed me to think further and dig deeper. Thank you for grasping a concept so personal to me, relating to my understanding of this special place. You have challenged the way I think about the mountain helping to expand my design ideas.

To my family, thank you for the encouragement you have given me this year. Being even closer this year than expected has involved you more than any other year, helping me with my ideas. Putting up with constant nagging and discussion of my work has guided my starting point of this thesis, thanks for all your help setting me up to take on the rest of the year.

Mum, your support in times when most needed has kept me going and pushed me through this year. Often giving me the words that I can't get out on my own. Your understanding of the mountain constantly reminds me why I am passionate about this topic. Thank you.

Fig 0.2: Off trail site 2 visit

ABSTRACT.

Mount Ruapehu is an apex for New Zealand's North Island. Not only does the grand scale of the mountain captivate many, the geological features of this vast landscape are also part of the maungas charm and unique to this place.

In 1887 this sacred landscape was gifted to the people by paramount chief of Ngāti Tūwharetoa, Te Heuheu Tukino IV. This gift launched the creation of New Zealand's first National Park. Overtime this place of significance has become commercialized. Hosting two ski fields which gathers hundreds of thousands of people every year and constantly growing.

This thesis addresses the question, how do we engage visitors with such an extraordinary landscape, representing the unique place it is.

Researching through design around key themes such as place, cultural landscapes, therapeutic landscapes and meaningful experience. Unraveling many key qualities of the site, merging a pathway of discovery, joining both cultural and physical needs into design.

Design explorations take place at three quintessential sites of Ruapehu. The River. The Peak. The Summit Zone. Drawing from the elemental qualities that make up each site, atmosphere within each design and overall form strives to represent these natural properties. Each site works through four design phases investigating the possibilities of development amongst the landscape.

Ruapehu is a unique site carrying the weight of a long history of cultural and geological significance. This thesis introduces a discussion about the future of tourism in our sacred landscapes. Exploring possibilities of how architecture can respect and enhance such a unique place.

“Beneath the speaking mountains our two cultures have come together and must continue to meet in a strong and creative relationship. Our task is to continue to cement the ancient bonds, and to guarantee future protection of the land, so that it may continue to speak of forces beyond us.”

(Bruce Jefferies, Chief Ranger, Tongariro National Park, 1986, Quoted Tongariro management plan, 2006)

PREFACE

As I sit here writing, I peer out into the distance where I see a place with so much meaning. A place of fond memories filled with challenge, danger, thrill and satisfaction. It seems merely impossible to imagine in the coldest days of winter, I venture across those cliffs and race through the gullies.

The relationship I have with this environment is something that I hold close to my heart and it gives me great respect for such a place. When choosing to design for such a place this year, one of the key decisions to make was how to design for such a grand landscape with so many environmental, natural and cultural significant factors. There was no key issue that came to mind until digging deeper looking further into the history and meaning of the mountain for various different people.

Being the year of a pandemic, confined to everyday spaces, gazing up at the mountain from afar was a strong reminder. The experience of such rare places is a unique experience that cannot be attained from everyday places, or through a screen.

As a keen skier, I realise that it is not the sport that has me coming back for more but the place itself. The true essence of place is something that should not be underestimated. The true thrill of being in a landscape so rare and untouched is what satisfies me and what I wish to convey through my design.

Fig 0.3: Study from home in covid lock down

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Fig 0.4: Frozen lift on winter site visit

INTRODUCTION.

Mountains capture people in a way like no other. These geological formations located all around the world, have the power to create a sense of awe through their majestic heights, slopes, ridges and summits. Many mountains hold similar qualities, formed by the elements of fire and water. Fire holds much power in active volcanoes and often molds the earth angled at great peaks. Fire in the molten core causes uplift, creating new surfaces. Water takes away. With its many states it can carve out the earth, eroding gullies and fluidly moving to form glaciers, rivers and lakes.

New Zealand mountains have a unique presence, through geology, biology and culture. This has affected the way that people use the mountains over the years in a different way to other mountains internationally. This opens an opportunity to investigate how architecture can help to represent this unique place.

The cultural significance of the site is an important factor, Maori people have a deep-rooted connection to mountains as the land is sacred for local iwi. New Zealand has a unique relationship and history with the mountains. In 1886 Mt

Ruapehu was the first mountain in New Zealand to be climbed. Since then, this volatile volcanic mountain has been a focus for attention both nationally and internationally. As a National park, it has gained dual world heritage status for its cultural significance and natural qualities, it has become host to two ski fields and has erupted multiple times. These events make Ruapehu the unique place it is today and enhance the desire for tourists, both local and international to visit it. New trends in tourism indicate that its popularity as a destination will only grow.

The allure of these dramatic landscapes sparks an urge in some people, to explore and conquer. However, the fascination has seen people claiming and commercializing these sublime environments for access and profit. For New Zealand in particular, world renowned for its scenic landscapes, the desire for exploration has paved the way for outdoor recreation such as skiing and hiking, setting the scene for today's tourism industry. The sport has become prioritized over landscape and the architecture has become about accommodating for the sport rather than reflecting the unique setting it sits in. With a push for backcountry skiing "Tourists are looking

increasingly for adventurous experiences by exploring unusual and interesting landscapes.” (Erfurt-Cooper P, 2017, p. 86).

Tourism needs to really engage the users, they don't just want a memory, they want the experience of a place to change them in some way. “With regard to current developments in the tourism industry, wellness and health tourism have become some of the most promising markets... This leads to a need for specialization and differentiation of suppliers of the product, wellness tourism, by means of a coherent concept of quality in order to stay competitive. It becomes a challenge to develop original and authentic products that are difficult to imitate and highly valued by guests.” (fischer, 2006, p. 13)

Architecture on Mt Ruapehu acts as a fixed reminder of who we are, what we do and how we interact with the land and therefore comes with its own challenges and responsibilities. Access is important for both the locals, but also tourists and it provides an opportunity to educate people about the unique qualities of this sacred land to our culture? Giving the mountain the respect it deserves. It also provides the opportunity for growth and rejuvenation as its stories and knowledge are passed down through generations of Tangata Whenua and visiting families, which has begun to diminish. “Sense of place is an important issue that can strengthen the relationship between human and place. It can be influenced

by personal and collective's values, beliefs, and behaviors... People's willingness to contribute to social activities have been attributed to the strength of the sense of place.” (Steele, 1981, p.10). However, the existing architecture on Mt Ruapehu does little to reflect our culture or the mountains unique qualities and history.

Many buildings in such an extreme alpine environment have restrictions brought on by construction techniques, environmental conditions and cultural sensitivities. Steele Notes that “... the sameness of our buildings and the digital age diminishes a sense of place.” (1981, p. 24). This brings up an important factor, to make people remember that place needs to capture people's attention.

One of Ruapehu's unique qualities is the extreme environment. This causes snowfall in winter to cover the orange volcanic rock with white. Ruapehu in this aspect has two seasons, defined by snow and no snow. Middle seasons autumn and spring are usually a mix of fresh snow covering or no snow due to melt. Although the Tongariro mountains are a popular tourism destination in the summer for tramping and mountain biking, facilities do not provide for this season as they do the winter. Extreme conditions of winter such as snow and ice, operating infrastructure faces constant challenges of de-icing and avalanche control to provide for skiers, snowboarders and sightseers. Summer facilities in this aspect are a missed opportunity to showcase Ruapehu's summer qualities.

As the population increases and Ruapehu become a more popular destination, the ski fields face more scrutiny about their capacity to host people to the level of enjoyment that people expect. “Weekend peaks caused consumer disruption.” (RAL, 2018, p. 4). Large influx of people in the weekends are decreasing the experience for users who find themselves waiting in queue most of the day being surrounded by people instead of the natural environment.

Although not yet fully resolved as a place reflecting its history, culture and unique environment. It raises the question, what does it mean to interact with this land and what should we be doing on it? Reflecting the space is important for the tourism industry, ensuring this place doesn’t just become another ski field that can be visited elsewhere and replaced. Is it time we rethink the way we design for our precious Alpine landscapes?

This presents Ruapehu with an opportunity to provide tourists with something more to take away than sore legs and a goggle tan. The site presents an opportunity to provide people with a space for learning about and connection to the natural world. These therapeutic qualities provide a powerful place for healing in a world today where people are looking for escapism from urban centers. “With regard to current developments in the tourism industry, wellness and health tourism have become some of the most promising markets.

International competition is growing, and wellness guests have become more sensitive to quality. With the wellness boom in recent years, the diversification and quality standard of the wellness offer has increased tremendously. This leads to a need for specialization and differentiation of suppliers of the product, wellness tourism, by means of a coherent concept of quality in order to stay competitive. It becomes a challenge to develop original and authentic products that are difficult to imitate and highly valued by guests.”(Pechlander & Fischer, 2006, p. 67)

How can architecture balance limited natural landscapes with population expansion, desire for exploration and development?

This thesis will explore how architecture can help people become more aware of the magnificent place that is Ruapehu. It will test different possibilities of experiential atmospheres putting focus towards the natural elements that make up the mountain including wind, ice and fire. The architecture will take people on a journey, highlighting different qualities and unlocking knowledge of the place manipulating atmosphere to determine how people feel and what they see.

When comparing the Tongariro National Park to other key natural settings around the world there is no denying “In its own right it is an internationally significant and unique landscape.” (DOC, 2016, p. 132)

With this in mind the question lies, how should architecture portray this unique place and give an experience that differs from other unique places internationally?

Fig 1.0: Ruapehu Summit Zone 17

SCOPE.

The scope of the design is limited to three sites to offer three perspectives those qualities necessary to reflect the unique place that is Ruapehu. These qualities include aspects of volcanic landscape, extreme environment (linked to water), cultural qualities and therapeutic aspects.

Choosing three sites provides the opportunity to explore the elements of water and fire throughout the journey of their different states on the mountain. It allows for the investigation of the three quintessential environments on Ruapehu, sub-alpine, alpine, and summit region. Each site having a connection to the next through the natural systems that are linked but also a visual connection through view shafts.

Using a sub-alpine river site provides the opportunity to design around a glacial fed stream amongst the native beech trees. The alpine site allows for exploration of volcanic rock and outlook. The crater zone site will provide ice and wind caused by extreme weather, it will also involve glaciers and fire through the active vent. To access the unique landscape qualities, the three sites need to be located at a large distance from one another.

Giving three perspective of the mountain: looking up from water, looking down from the fire and looking across to reflect on the two. The sites reflect the creation of the place and the landscape that comes from the collision of the two opposite elements, fire and water.

“Here you may see the heart bared, see the process of the making and molding of the land by fire, ice and water. Mother-Earth reveals her inmost secrets here; she pulses with never ceasing, sometimes fiery, energy.” (James Cowan, 1927, p. 23)

Fig 1.1: Urban Design Scope Sketch

Fig 1.2: Mountain Map
Locating the Three Sites

METHOD.

A significant part of the method is using myself as a tool, connecting with the mountain, immersing myself physically and mentally. Studying its qualities throughout the different seasons. Utilizing my many experiences skiing, hiking and living around the mountain (action research). Deepening my understanding through artistic methods by drawing, sketching, painting qualities of the place. Examining all existing architecture by visiting and reflecting these designs educating myself with the cultural meaning and history. This will help me grasp the true place of Ruapehu and what unique qualities I must design for.

Another important part of the process is to read theories about experiential architecture such as phenomenology. This will help to understand what qualities of architecture can create an atmosphere that will engage users with the natural environment.

This is followed by the access of work of architects who explore similar design challenges in this work. Reviewing previous designs will provide strategies, techniques and greater knowledge to learn from.

Using this literature combining these theories with practice within a scope that achieves a body of work that addresses the research question.

Developing my work through research through design, generating options, evaluating and refining them, exploring different scales and interventions/work to evolve a design that reflects the landscape in which it sits and enhances people's experience of the site.

Constant review and reflections form part of my method. Presenting designs with a group of experts, namely, other notable architecture academics and practitioners and discussing positive and negative qualities of the design. Reflecting on the design outcomes and developing each design further for another future review.

Eventually developing a final design based on deep reflection of all the previous designs and my own. A final critique of the outcome will be the last step, here I discuss the success and areas for further consideration and development any future possibilities.

REFINE SCOPE

REFLECTION

DESIGN PHASE 1

Concept

DESIGN PHASE 2

Expand Programme

DESIGN PHASE 3

Minimal Impact

DESIGN PHASE 4

Small Scale

Fig 1.3: Method Diagram

| Chapter 2.

THE MOUNTAIN

4 key aspects of place

Volcano

Sacred Indigenous Land

Extreme Environment

Commercial Ski Fields

Fig 2.0: Turoa Ski Field base looking up

LOCATION:

Fig 2.1: New Zealand Alpine Ranges

Fig 2.2: Alpine Contours of New Zealand

Fig 2.3: Alpine Contours of North Island

TAUPO VOLCANIC ZONE

Ruapehu is an andesite stratovolcano. The name itself is based on two words Rua 'Pit' and pehu 'to explode'.

The current active vent located in the summit region of the mountain and is occupied with a crater lake.

The mountain shape has undergone 4 different stages of 'cone building' due to eruptions that have left us with the form we have today. Amongst this, volcanic mud flows and erosion have carved out gullies in the mountain and glaciers that occupy much of the top land.

"Many of the values of the park are not found elsewhere in New Zealand. The distinctive volcanic landforms of Mounts Ruapehu, Ngauruhoe and Tongariro and the landscape formed by volcanic processes sit in sharp contrast to the surrounding mountain lands and terraced forest country."
(Department of Conservation, 2006, p. 4)

MT RUAPEHU

Fig 2.4: North Island TVZ

Fig 2.5: 3D view of TVZ

“Mount Ruapehu, the apex of the North Island... grandly crowns the Tongariro National Park. Its contour, especially viewed from the North, certainly resembles a great crown, sweeping up from the domed center of the island to a supernal series of glittering points of ice-fire.” James Cowan, 1927

TONGARIRO NATIONAL PARK

Ruapehu is one of the three active volcanoes that forms part of the Tongariro National Park, New Zealand's oldest National Park. The park has international significance, being one of 29 sites in the world having a dual world heritage title. This reflects the unique volcanic features representing the natural value of the park and significance of the space (particularly the mountains) for local iwi, reflecting the cultural value of the park.

Key:

- Tongariro National Park Boundary
- Tongariro National Park Zone
- Mt Ruapehu

Fig 2.6: Tongariro National Park Map

Ruapehu has been an active volcano for centuries. The many eruptions, lava flows and lahars have overtime carved out the shape of the mountain to the shape it is now. As can be seen but the frequency of the eruptions, a major eruption occurs every 50 years or so. Overtime measures have been put in place to alert people of an upcoming eruption. Measuring the crater lake temperatures, PH balance, seismic and magnetic surveys. A gully has formed to take the majority of lava and lahar flows out in minor eruptions. In a major eruption there are posters and sirens on ski fields to warn people to move towards higher ground.

MAJOR ERUPTION TIMELINE

More then 40 steam eruptions have been reported within the past 120 years.

Fig 2.7: Eruption Timeline

Fig 2.8: Ruapehu Major Eruption Write Recorder

Fig 2.9: Trampers Witness Ruapehu Erupt 1945

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ERUPTION HAZARDS

- LAHARS
- ASH
- LAVA DOMES
- PYROCLASTIC FLOWS AND LATERAL BLASTS
- PROXIMAL HAZARDS
- VOLCANIC GASES AND ACID RAIN
- TEMPHRA
- VOLCANIC DEBRIS AVALANCHES

- Alert Level
- 5 Major volcanic eruption
 - 4 Moderate volcanic eruption
 - 3 Minor volcanic eruption
 - 2 Moderate to heightened Volcanic unrest
 - 1 Minor volcanic unrest
 - 0 No volcanic unrest

N

PREVIOUS LAHAR PATHS

PYROCLASTIC FLOW DEPOSITS

A RELATIONSHIP WITH FIRE

Ngatoroirangi of Ngati Tuwharetoa tribe climbed Mt Tongariro over 30 generations ago to lay claim to the lands and create a home for his descendants. Many versions are told but the general story says that as he neared the top, winds from the south brought cold weather nearly killing Ngatoroirangi. To survive he called out for help from his sisters at his homeland. This brought on fire under the earth, leaving volcanoes and geysers behind their trail. This made its way to Tongariro which helped warm him. This links the volcanic landscape with the genealogy of Hawaiki (his homeland) and the mountains as tribal ancestors. Showing how important the volcanic mountains are to the iwi and what a unique relationship this is. It is from this that Ngati Tuwharetoa holds the responsibility to protect this central plateau area including Ruapehu.

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Fig 2.11: Ngatoroirangi Calls on Ancestors for Fire.

WHAT DOES IT MEAN TO DESIGN AMONGST THE SACRED LANDSCAPE OF MT RUAPEHU?

Guardianship of Ruapehu is shared between the local iwi, Tu Wharetoa and Ngati Rangi, and Department of Conservation. For the tangata Whenua the mountains are ancestors. This makes them taupu and are sacred places.

KAITIAKITANGA

The Mountains of the central plateau have cultural and spiritual significance to local Iwi that symbols spiritual links between the community and their environment.

A relationship of kaitiakitanga is one that can not be exercised by the crown in a way that the Tangata Whenua can. It consists of the rights and obligations as a guardian of the land, coming from the history of the tribe and actions of Ngatoroirangi. The best ways that this can best be executed today is by controlling and limiting fishing & hunting, harvesting & planting, access to certain areas and activities to certain areas.

RELATIONSHIP TO OTHER MOUNTAINS

Ruapehu is a female mountain with an interesting relationship to the surrounding mountains. Originally married to Taranaki but won over by Tongariro. A battle between the two male mountains saw Taranaki retreat towards the West coast carving out the Whanganui river. The connection between Ruapehu and Taranaki is still one of importance.

TOP- MOST SACRED PART

From the beginning of time it has been the desire of many adventurers to conquer mountains and climb to the peak. For Maori this is very disrespectful as the top of a mountain is the head and therefore Tapu.

Tahurangi- 2797m

Fig 2.12: Peaks of Ruapehu

THE DUAL WORLD HERITAGE SITE'S HISTORY

“The mountains of the south wind have spoken to us for centuries. Now we wish them to speak to all who come in peace and in respect of their tapu.”

(Tongariro National Park Management Plan, n.d, p.29)

Fig 2.13: World Heritage
History Timeline

EXPOSURE

Weather comes in quickly due to Ruapehu's exposure and can change rapidly. While prevailing winds come from the West, the mountain is affected by wind from any direction. Due to the mountains exposure, wind funnels around the upper faces. This creates a very vulnerable state for any position on the mountain with extreme weather increasing on upper terrain. This could consist of blizzard, white out, gale force winds, rain, hail and snow. The extremities of the location effectively reduce the seasons to just 2 for users: snow and no snow.

Fig 2.14: Ruapehu Weather Exposure Map

In the cold winter months, rain and mist often turns quickly to Ice when it gains contact with the mountain. This causes many de-icing problems for the mountain staff, banging the ice off is still the most effective way to clear the lifts.

Fig 2.15: Typical ski field infrastructure dysfunctional due to ice.

DESIGNING FOR 2 SEASONS

SNOW
Winter fresh snow

MIDDLE SEASON
(OCT-DEC, MAY-JULY)

Many months consist of a thin coating of fresh snow lasting only a couple of days before rain washes it off. For this reason designs will focus on these two key conditions.

NO SNOW
Summer glaciers only

Fig 2.16: Snow Season

Fig 2.17: No Snow Season

EXISTING ARCHITECTURE

MT RUAPEHU HOSTS THE NORTH ISLAND'S
ONLY 2 SKI FIELDS TUROA AND WHAKAPAPA

Fig 2.18: Existing Ski Field Map

The current infrastructure facilitates two ski fields with six cafes, seven chairlifts, six DOC huts that accommodate tramping and multiple ski lodges accommodating skiers and snow boarders on Whakapapa. Both ski fields also host buildings to accommodate offices, ticket purchases, ski hire and medical centers. Within all of these different buildings facilitating the ski fields, only one in particular reflects the culture of the place. When designing, focus is put on practicality and function, there is a missed opportunity to use architecture to educate people of the place about cultural myths of history. This is where placelessness occurs in the globalization of today's architectural world.

Turoa- Largest vertical rise of 722m

'Real fun, Unreal Place'

Ruapehu's Slogan

Whakapapa, New Zealand's largest ski field.
44km of total slope length (550ha).

**28% INCREASE IN TOTAL
VISITATION IN 2018**

(RAL 2018 Annual Report)

| Chapter 3.
LITERATURE

“The perspective of ‘place’ has emerged as an important one in many realms of scholarship and professional practice. Ironically, though, tourism- in which place is a central concept- has paid little attention to the concept.” (Smith, 2015, p. 2)

The context in which Ruapehu sits being amongst the Tongariro National Park requires a unique need for place to be the center of attention. While, it's role in tourism cannot be ignored, the focus can be shifted from one of pure sensation shifting to one of awe and thrill. The literature below discusses how architecture can reflect place educating visitors to the mountain?

Fig 3.00: Ruapehu from the Desert Road

LITERATURE REVIEW.

The literature review gives a better understanding of those criteria requiring address for architecture to better reflect the place of Ruapehu. Literature focuses on the key ideas around globalization and placelessness and empty experiences in tourism. With phenomenology, cultural landscapes and therapeutic landscapes as techniques to address these ideas. Two key elements that make up the physical place of Mt Ruapehu are fire and water. Characteristics of these are explored through creative literature such as art, music and poems to form part of the design criteria. The architecture proposed will be reviewed against the criteria to understand how these aspects contribute to the desired outcome.

GLOBALIZATION & PLACELESSNESS

“The perspective of ‘place’ has emerged as important one in many realms of scholarship and professional practice. Ironically, though, tourism- in which place is a central concept- has paid little attention to the concept.” (Smith, 2015, REF) The context in which Ruapehu sits being amongst the Tongariro National Park requires a unique need for place to be the center of attention. To address globalization and placelessness, many have theorized about how alpine architecture can reflect place educating visitors to the mountain.

Relph defines place as “fusions of human and natural order” (Relph, 2007, p. 26). In such a powerful landscape designs must be derived from the existing environment. Whether this is the form taking inspiration from organic qualities of the site, or the materials reflecting existing vegetation/earth. Ruapehu’s unique volcanic landscape provides architecture with a basis for individual design that does not reflect the sameness of other places around the globe.

Relph also gives the sense of ‘place’ as defined by three factors, physical setting, activity and meaning. For this thesis, key themes could be considered to reflect these three factors. With phenomenology being activity, therapeutic landscapes substituting physical setting, and cultural landscapes providing qualities of meaning. Making sure the architecture incorporates the physical setting and provides atmosphere for activity and meaning will be important.

Another perspective is Gussow’s, who believes there are different stages of sense of place broken into three levels. “... the first level of sense of place is familiarity with place... These people do not pay particular attention to the place itself and their experience of place is only superficial. Furthermore, they do not feel that they belong to the place and make no attempt at developing the attachment to place.” (Relph, 2007, p. 26). This could describe feelings for tourists when visiting ski fields around the world. The second and third

levels of sense of place include people having a deep and strong participation with place. Contributing to social activities and symbols and feeling integrated with place. For this reason, it is important that the architecture involves physical activity whether this is through circulation or encouragement for movement over the landscape.

Symbols and meanings can be used to educate people of the unique features of the place. “Reviewed seminal literature revealed that sense of place for phenomenologists is an emotional connection with place via understanding its symbols and meanings.” (Najafi, M., & Shariiff, M. K. B. M, 2011, p. 189). Creating emotional connection through education of natural formations of place. Particularly for Ruapehu fire and water has carved out much of the mountain throughout the years. The architecture can help to educate people by alluding to these elements of nature through circulation, view shafts, materials and programme.

CULTURAL LANDSCAPES

In terms of representing the place on a global stage, one of the key unique factors is the cultural ties to the site. “First of all, I think we have to recognise that architecture and landscape architecture always deal with culture. This means that we only see what we know. Without knowledge, you cannot perceive or value the landscape.” (Gunther Vogt cited in Mateo, 2014, p. 43) The idea that we only see what we know stands true for the people that visit Ruapehu, often unaware that the site is culturally significant in any way.

Educating people of traditions and the sacred significance of the site to understand the cultural heritage of the place is key. Specifically, on Ruapehu “The mountain peaks were set aside to be protected for and enjoyed by all of the people of New Zealand.” (Tongariro management plan, 2016, p. 208) The design must pay tribute and alert visitors of these important sacred features.

Another aspect of cultural tradition by the local Iwi is Kaitiakitanga. “The exercise of customary practices of guardianship, protection, stewardship and sustainable use by the tāngata whenua in relation to ancestral lands, waters, sites, wāhi tapu and other taonga” (General Policy for National Parks, 2005, p. 65) Design techniques can be used to minimise impact to the landscape and reflect these traditions. This could include foundations of building structure, specific building materials and design techniques that minimize disruption to natural systems.

When looking at cultural landscapes to represent place “Relph [26] claims when places cannot be culturally recognized, they suffer from lacking a sense of place; in this case people are faced with placelessness.” He also discusses that “...symbols, traditions, myths, and ritual assist in reinforcement the sense of place. Peterson and Saarinen [21] also claimed that local symbols reflect and enhance Sense of place.” (Najaf & Mohd Shariff, 2011, p. 188).

It will be important to include symbols, traditions, myths and rituals as part of the design. Some of the rituals and traditions are personal to the local Iwi but general knowledge and understanding of the main sacred gifts of the mountain is important. Design techniques to implement the practice of kaitiakitanga will also be key.

Designing on a sacred site that has a lot of meaning to a lot of different people provides a challenging demand to convey the right kind of experience. Making sure that what people take away from the experience must also respect the significance of the site.

Not only considering what the design can provide tourists with knowledge of indigenous beliefs and traditions, but also considering what the design can offer the local iwi's. Baird questions "What is the impact of this designation on indigenous groups and their knowledge systems?" (Baird, 2013, p. 337) With this in mind this provides an opportunity for younger

generations of local iwi to become interested and enthusiastic about their connection to the maunga and re-establish the link between older generations to continue the stream of knowledge and history.

“They shall be a sacred place of the Crown, a gift forever from me and my people.”

(Te Heuheu Tukino IV (Horonuku), paramount chief of Ngāti Tūwharetoa, 1881, Quoted Tongariro management plan, 2006)

“Interpretation is an essential management tool used to introduce, orientate, educate, and develop enthusiasm in visitors for the natural resources around them. It identifies opportunities and enhances the visitors’ experience of the park. A better understanding of the park, its values and resources engenders respect and a greater commitment to preservation.” (Tongarioro management plan, 2006, p. 90)

Fig 3.1: Gratitude Open Chapel Outside Fig 3.2: Gratitude Open Chapel Inside

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Fig 3.3: La Ruta Del Peregrino Lookout point

Fig 3.4: La Ruta Del Peregrino Sanctuary

SACRED SITE & PLACE

LA RUTA DEL PEREGRINO

BY MULTIPLE ARCHITECTS

The pilgrimage of La Ruta del Peregrino is a 117km long journey through sacred land that contains nine interventions of architecture along the way. These interventions provide important landmarks where visitors can relax be educated and learn more about the journey they are on. The designs add to religious rituals that occur on the track but also appeal to a broader audience to increase the flow of visitors. As well as enhancing the religious rituals the designs relate strongly to the landscape.

Many of the interventions provide interesting ways of framing the unique environments of each site.

THERAPEUTIC LANDSCAPES

“Several studies evaluating encounters with nature have been supportive of its restorative and therapeutic effects.”(Ojobo Henry, 2015, p. 5) However Obojo discusses how mountainous environments specifically affect the well-being of people. “The study concludes that contact with mountain landscape environment promotes spontaneous recovery from stress and restoration of directed attention.”(2015, p. 5). After then trying to understand what kind of architecture will aid this benefit it appears a gap in the literature has occurred for such a specific need. Considering the mountain qualities benefiting the well-being of people will give an idea of the design required to involve these landscape features.

“The correlation between wellness and the tourism industry is evident in the literature.”(Kate Bone, 2015, p. 295) Much focus on therapeutic landscapes has been studied on the physical body, around healing and resting but little has been investigated on the mental, emotional and spiritual side. The benefit of Ruapehu is that it has a unique natural world that can aid this mental and emotional healing through spectacular scenes and natural wonders. “There is a long tradition that healing powers may be found in the physical environment, whether this entails materials such as medicinal plants, the fresh air and pure water of the countryside or magnificent scenery.” (Gesler, 1992, p. 736).

When it comes to designing architecture to aid this, design techniques that take advantage of the fresh natural systems and views is key. The idea of pure water is also a key quality of Ruapehu which can be incorporated and highlighted through architecture.

When it comes to therapeutic landscape’s reflecting place “Therapeutic landscapes demonstrate the importance of places for maintaining physical, emotional, mental and spiritual health. Meanings of place and the relationship between place and health have culturally specific dimensions, yet these tend to be overlooked especially with respect to First Nations peoples.” (Kathleen Wilson, 2003, p. 83)

“While experiences are less transient than services, the individual partaking in the experience often wants something more lasting than a memory, something beyond what any good, service or experience alone can offer. People who buy memberships in a fitness center do not pay for the pain but for ongoing exercise regimens that will increase their physical well- being, helping them go from flabby to fit.” (Pine II, B. & Gilmore, 2013, p. 26). Considering this the question lies, what can Ruapehu offer people to change them in some way, not just give them an experience that expires once over. The answer to that question is the benefits to mental health the unique environment provides.

“Living with high stress makes it difficult to find concentrated time to experience the distinct aspects of life beyond everyday issues... environmental qualities can motivate the human spirit in order to deal with and counteract high-pressured environments.” (Najaf & Mohd Shariff, 2011, p. 188).

“Norberg-Schulz [20] hints to the significant role of the architecture as providing physical attributes to space which facilitate habitation of the users as well as their mental and physical wellbeing. Therefore, architecture not only should note to the meanings but it should pay close attention to the physical attributes of the setting [31].” (Najaf & Mohd Shariff, 2011, p. 188). While the design must provide appropriate programme to aid this well-being, it must also involve an atmosphere that reflects the physical attributes of the natural environments setting. This could include many different attributes depending on the designs site. The physical attributes of systems like water at each site will be a key focus within the atmosphere.

Mueller and Lanz Kaufmann have an interesting concept they describe as the ‘Alpine Wellness product’ an experience that “...allows consumers to enjoy customized offers, following the demand trend of individualization; on the other hand, it provides an opportunity to suppliers to develop special and authentic solutions for individual demands and problems of the guests based on local resources.” (Mueller & Lanz Kaufmann, 2001, p. 68). This model involves aspects that they refer to as character determining elements including physical fitness, relaxation, meditation, mental activity, education and environmental sensitivity etc. These character determining elements will be the kind of programme that I will consider for designs.

Specific programme such as relaxation and meditation must be aided by tranquil experience. “One of the experiences which visitors enjoy in the park is solitude. Noise, whether from aircraft, machinery or vehicles, detracts from this experience.” (Tongariro management plan, 2016, p.108) This partly depends on the site selection but can also be enhanced by the layout of design and materials to manipulate what sounds reach the occupants.

The literature discussed above creates a general criteria for designing to achieve my desired outcomes. After analysing this literature, key design considerations have been placed in a graph below. It has been compared next to the design guidelines of mountain communities by Sherry Dorward for designing on a mountain. As can be seen, many of the design guidelines reflect ways in which the criteria from the literature review can be achieved. These will form a benchmark for analysing the case studies below and assessing my designs against.

Fig 3.6: Termas Geometricas, misty architecture

Fig 3.7: Termas Geometricas, looking at the landscape

Fig 3.8: Termas Geometricas, carrying water through design

EMPTY EXPERIENCE

‘This content is unavailable. Please consult the figure list for further details.’

Fig 3.9: Termas Geometricas, pathway through the river

TERMAS GEOMÉTRICAS HOT SPRINGS COMPLEX

BY GERMÁN DEL SOL

17 pools following the path of a natural river, feed off an active volcano in the native forest of the Villarrica National Park. This design focuses largely on embedding itself amongst the raw surroundings. Using the water it aims to seduce everyone into a calm spirit. Techniques like different sounds of flowing water to induce the sense of calmness is created by using traditional architectural methods of carrying water. This not only teaches visitors of local site history but adds to the well-being and spirit of the experience. Using natural materials found at the site to reflect the surroundings, this design uses many techniques to represent the place it moves you through.

MEANINGFUL EXPERIENCE

Creating a stimulating experience for people will be a key aspect in each design "... Steel [35] defines sense of place as a particular experience of a person in a particular setting. He argued that feelings like stimulated, excited, joyous and expansive are examples of this experience... The experience is felt through all the senses (sight, hearing, smell, taste, and touch), and the place experience is in fact a total sensual experience [29]." (Najaf & Mohd Shariff, 2011, p. 188). Engaging all senses within the design's atmosphere will be key. Peter Zumthor also speaks of all of the senses withing the 9 factors that make an atmosphere. Using materials within the architecture to enhance site hearing smell and touch will be important. But also making use of the natural landscape features and how they might impact the senses as well from inside the structures.

Quality and visitor experience is important to Ruapehu Alpine Lifts (RAL)" In recent years RAL has switched from targeting higher daily visitor numbers to providing an enhanced quality of experience for visitors." (RAL, 2014, p. 34) With recent complaints the ski field has reached capacity for visitor satisfaction. To allow for people to experience the natural

landscape at a more intimate level interventions of design could be placed in secluded spaces with limiting number of visitors. These designs should also include qualities discussed below, based on themes of phenomenology, cultural aspects and therapeutic qualities minimising empty experience.

"It would be impossible to appreciate the sublime if one were, say, hanging by a handhold from a cliff face. But if you came just near enough to a waterfall of a cliff edge to suggest to you imagination the possibility of self-destruction, then you would feel a sublime rush." (McFarlane, 2003, p. 75). For this reason The design needs to give people a sense of thrill at the right level to grasp ones imagination. Allowing them to see themselves in a dangerous position without the architecture aiding their safety. The architecture is the guide between people and the natural world.

"The word experience has recurred for a specific reason: I see our experiences as the only things we can really "have" or own as persons... I have therefore focused on having rich place experience as one of the major gains from having good interactions with our settings." (Steele, 1981, p. 32) There is a lot of

discussion throughout literature involving good interactions with settings. For this reason it is important to provide visitors with this good interaction with the setting, which is particularly important when dealing with such extreme environments. But with the risk comes the reward. "A number of experienced backcountry users and concessionaires operate off-track within the park. The experience obtained by these users is significantly different from that obtained by visitors who confine their activities to existing infrastructure. The experience is similar to that sought by users of wilderness areas, who seek a close and direct relationship with the environment." (Tongariro Management Plan, 2006, p. 146) Designing off-track will be a key to exploring the necessary connections with the landscape that these sites offer.

David Leatherbarrow states in his book Architecture Oriented Otherwise "An atmosphere, like a mood. Impresses itself on experience..." (2009, p. 36) The architecture will need to provide the right kind of atmosphere and therefore mood to create the right experience for people in the particular environment of the chosen site. To create an atmosphere of thrill in high intensity environments but also an atmosphere of relaxation in moments of rest.

ELEMENTS

THE THERME VALS

BY PETER ZUMTHOR

‘This content is unavailable. Please consult the figure list for further details.’

Fig 3.10: Texture and light in Therme Vals

Therme Valls, congratulated by its emphasis on the elements of water stone and air. Many years after their completion they act as reference design to enforce the impact of natural materials on sensory design and atmospheric qualities. The design focuses a lot on light withing the atmosphere to convey a scene which reflects that of nature.

In this design, people can taste swirling water, listen to music of stone, use the steam bath or plunge into cold, blue water. In his book Atmospheres, Peter Zumthor writes, “... when you touch and feel the texture of the walls, hear the footsteps echoing through long hallways, and feel a cold breeze on your neck. As you experience a scene like this, it is the combination of all the senses together which create the ‘atmosphere’ of character of the space.” (2006, p. 37). This is something which appears true to this design and highlights the importance of using design to connect with all of the senses in a way that connects people to the natural environment. Key qualities that will be considered when designing is the use of materiality and capturing light.

Fig 3.11: framing the mist in Therme Vals

Fig 3.12: Drawing the eye to the outside, Therme Vals

Fig 3.13: Bathing in the mountains, Therme Vals

The literature discussed above creates a general criteria for designing to achieve my desired outcomes. After analyzing this literature, key design considerations have been placed in a graph below. It has been compared next to the design guidelines of mountain communities of Sherry Dorward for designing on a mountain. As can be seen, many of the design guidelines reflect ways in which the criteria from the literature review can be achieved. These will form a benchmark for analyzing the case studies below and assessing my designs against.

Literature Review

Design guidelines for mountain communities

Can not be the same as others

Knowledge of the landscape

- Respect the landscapes spiritual character
- Take advantage of news and view lines
- Respect visually sensitive scenery
- Recognise the importance of both movement through the landscape and sequence of experience and views.
- Remember the change of seasons.
- Create fantasy by means of snow.

Stimulate through all senses (sight, hear, smell, taste & touch)

- Take advantage of the sense of hearing.
- Take advantage of the sense of touch.

Symbols, Traditions, Myths

- Respect the landscapes spiritual character.

Sense of Thrill without danger

- Attend to the foreground

Good interaction with the setting

- Respect the landscapes spiritual character
- Recognise the importance of both movement through the landscape and sequence of experience and views.
- Protect the continuity of the ground plane.
- Preserve natural water features and add more.
- Interpret time, natural processes and change.
- Take clues to structural forms from the landforms

Impact of design on indigenous groups

- Respect the landscapes spiritual character.

Places of physical fitness but also mental relaxation.

- Recognise the importance of both movement through the landscape and sequence of experience and views.
- Understand the visual impacts of slope.

Fig 3.14: Literature Review Criteria Table

ELEMENTS

The life of Ruapehu is at hold of natural elements. In particular water and fire. To get a deeper understanding of the site creating a design that reflects the living and breathing qualities of Ruapehu is important to engage/educate visitors. “Environmental design is the art of manipulating the formation of landscape images: enhancing perceptions, revealing natural functions and content, reinforcing symbols, expressing meaning. The art demands more than a rational basis for built form; clues from context, ecology, and climate are necessary but not enough.”(Sherry Dorward, 1990, p. 41) Creative literature will be explored such as art, poetry and music to determine a framework for designs.

“The elements relate us to nature as a physical phenomenon that can be experienced with the senses and is therefore directly connected with architecture, which, as we know, addresses the real construction of the world, the alchemic operation that turns concepts into material.” (Josep Lluís Mateo, 2014, p. 13)

WATER

Sense of movement
Different elements that represent the different states it can be
Make people feel differently
Light and nimble yet deep impressed
Provides spaces that allow rest but also energise
Must provide an onward point for continuation on the journey
Connection and relationship with indoor/outdoor
An escape
Blue silver
Both heavy and light
Constant flow in the same direction (sides or down)

FIRE

The end (dying)

What is left behind (Oxidation)(Ash and Smoke)

Uncontrollable

Warm yet dangerous.. something that draws us in.

Provides light and warmth but people must be wary

Can easily disappear/be taken away

Orange, red, yellow, green, blue, brown, black, wood

Constantly moving, upward

Takes form of the wind

Energetic, jumpy

| Chapter 4.

SITE ANALYSIS

Fig 4.0: Mt Ruapehu Site Contour Map

Paretaitonga

Dome

Tahurangi

Te Heuheu

Ringatoto

Girdlestone

Mangaehuehu Glacier

Mangaehuehu Stream

Round the Mountain Walking Track

Overtime the volcanic rocks formed to make Ruapehu have been eroded by rivers, glaciers and ice. This forms the deep gullies and ridges that have been carved out by water overtime.

“The elements relate us to nature as a physical phenomenon that can be experienced with the senses and is therefore directly connected with architecture, which, as we know, addresses the real construction of the world, the alchemic operation that turns concepts into material.” (Josep Lluís Mateo, 2014, p.4)

Fig 4.1: Natural elements that carve out Ruapehu

The Effect of Fire and Water

The life of Ruapehu is at hold of natural elements. In particular water and fire. To get a deeper understanding of the site creating a design that reflects the living and breathing qualities of Ruapehu is important to engage/ educate visitors. "Environmental design is the art of manipulating the formation of landscape images: enhancing perceptions, revealing natural functions and content, reinforcing symbols, expressing meaning. The art demands more than a rational basis for built form; clues from context, ecology, and climate are necessary but not enough."(Sherry Dorward, 1990, p.41) Creative literature will be explored such as art, poetry and music to determine a framework for designs.

Site Selection

Summit Zone

Alpine Zone

Sub-Alpine Zone

Key:

Chosen sites ●

Optional sites ●

Fig 4.2: Site Map of key zones

Site selection started with the upper regions and worked down the mountain to connect with the flow of the natural systems.

Firstly looking at the summit region, finding the best site appropriate for views, memorial, hazard shelter.

The next region of Alpine was to find peaks and ridges to enhance the volcanic rock but also places of glaciers. Responding to the natural elements of fire and water.

The sub-alpine region involved highlighting the rivers that flow down from the glaciers and choosing appropriate crossings that are accessible already (along the round the mountain track).

Choosing a site to reflect these qualities is necessary as the designs must be able to connect with these unique landscapes. Ruapehu is no small site. It is the largest active volcano in New Zealand with the largest vertical drop in Australasia. There are many places within this location to design on but when it comes to a site with the necessary qualities, only few fit the criteria.

Fig 4.3: 3D site highlighting key zones

Fig 4.4: Bridging A Pathway Between Three Sites

Fig 4.5: Perspective map of journey between the three sites

SITE 1-THE RIVER

Site one is all about water. The site is located along the Mangaehuehu river which is formed from the Mangaehuehu glacier. The stream has a wide rocky riverbed that is nestled in amongst thick sub-alpine bush and beech trees. Conditions of the site vary throughout the year, in winter months getting some light snow fall and freezing cold river water. In the summer months the site is much warmer with water heating up as it runs down the mountain over the hot rocks. The trees provide the site with shelter and the outlook of the site is restricted to the view along the river which points up towards Girdlestone peak, site 2.

Fig 4.6: The River 3D site plan

Fig 4.7: Boardwalk in the bush

Fig 4.8: Existing swing bridge

Fig 4.9: Looking Downstream

Fig 4.10: Swing bridge from below

Fig 4.11: Calm water cove

Fig 4.12: Walking off bridge

Fig 4.13: River site analysis map

CONNECTION WITH WATER

Water is the key element of the site and for this reason an extensive understanding of the river was necessary during the site visit. The river was analysed for all of its main qualities such as increasing and decreasing flows due to snow melt. This can change rapidly due to the deep gullies of the mountain picking up water flow. Characteristics of the river were explored such as the natural pools that are formed and the different sounds of the water flowing over the rocks depending on the speed of the water's flow. These interesting qualities and the interaction with water along the bank were recorded and mapped along the river path (figure 4.14).

Fig 4.14: Riverbed analysis

Flow Over Rock Features

Fig 4.15: Riverbed water flow analysis

Snow Fed effect

Fig 4.16: Riverbed water levels analysis

SITE 2- THE PEAK

Girdlestone peak protrudes to the East side of the Mangaehuehu glacier. Reaching its peak at 2658m the rock cliff has a great outlook on the South end of the North Island. The views extend to Mt Taranaki which according to Maori Myth has a rich connection to Ruapehu.

The peak forms a rough point created by the many eruptions overtime and is extenuated by the gully next to it carved out by the glacier. The peak is a deep orange colour due to the volcanic rock that created it. In summer this orange rock is exposed and in winter it is wrapped in ice and snow. The peak can be seen by Turoa ski field, many skiers opt to ski out onto the glacier on a fine day. The main problem that the peak causes for the ski field is the avalanche control.

Fig 4.17: The Peak 3D Site Plan

Fig 4.18: The Pinnacles

Fig 4.19: Volcanic rock lava flow

Fig 4.20: Girdlestone Peak in Winter

Fig 4.21: Girdlestone Peak from ski field

Fig 4.22: Orange textured rock

Fig 4.23: Smooth volcanic rock

SCALE IN METERS
0 25 50 100

- SHADED AREA
- AVALANCHE RISK
- GLACIER
- EVENING SUN
- JOURNEY TRACK
- RIDGELINE

Fig 4.24: Peak Site Analysis Map

Fig 4.25: Avalanche Risk Map

PLACEMENT BEHIND HILL SO NATURAL
LANDSCAPE BLENDS OBSTRUCTION

Fig 4.26: Peak site placement amongst the view

SITE 3- THE SUMMIT ZONE

The summit region of Ruapehu stretches 3km from North to South and 1.5km wide. Taking a capricious form due to eruptions from multiple vents and glacial erosion over the years. The area consists of 7 main peaks and two craters, one currently active.

Most of the summit area is occupied by glaciers and covered by snow and ice year-round. In summer the non-glacial snow melt exposes the volcanic rocks underneath.

The crater of this mountain is located inside the crater lake which sits at an elevation of 2550m. The heat source mixed with the surrounding glaciers causes the lakes temperature to constantly change. This change in temperature is also reflected by the colour of the lake which moves between a grey to light blue.

Being near the top of the mountain, the summit zone is prone to extremely high winds, blizzard conditions in winter and quickly changing conditions. It is also in the range of volcanic hazards if the mountain were to erupt.

Fig 4.27: The Summit Zone 3D Site Plan

Fig 4.28: Volcanic soil at summit

Fig 4.29: Summit old vent

Fig 4.30: Summit soil variation

Fig 4.31: Summit Crater Lake

Fig 4.32: Dark Andesite Rock

Fig 4.33: Volcanic rock peak

Fig 4.34: Summit Zone Analysis Map

CRUCIAL HAZARD AREA

Fig 4.35: Summit Hazard Zone Map

Fig 4.36: Summit Prevailing wind path

PREVAILING WESTERLY WIND PATH

GLACIERS

Fig 4.37: Summit Glacial Map

SITE LAND VS. AIR

Fig 4.38: Summit Land vs. Air Diagram

| Chapter 5.
THE RIVER

SITE 1

PHASE 1

The starting point for the first stage of design at the river explores the conditions of the element of water. Particularly using key qualities from the literature such as fluidity and curved silver appearance. Exploring possibilities of design that interacts with water in different ways to increase connection between people and water.

“With myriad silver-misted wings,
In waterfalls”

GLENN WARD DRESBACH

Fig 5.1: River Concept sketch, silver wings

POTENTIAL OF WATER AT THE SITE

Fig 5.2: River Concept sketch, waterfall possibilities

Fig 5.3: River Concept sketch, angled banks

Fig 5.4: River Concept sketch, exploring under the water

FLUIDITY

To test how fluidity as a quality of water moves, forming paths tests with water and petrol were conducted to get a visual understanding of this. The idea of different paths sparked an interest to see how architecture can interact with the current path (stream of water) the runs down the river.

Fig 5.5: Fluid water river spill test

Fig 5.6: Fluid water petrol water pushes on edge

Fig 5.7: Fluid water dispersed petrol forms

Fig 5.8: Fluid water psychedelic pattern

Fig 5.9: Fluid water patchy appearance

Fig 5.10: River water colour bank design concept

Exploring different design possibilities to manipulate the flow of water. The banks of the river provide an opportunity for designs to work around this natural gradient. Different form explorations on the right can be seen as options. The curved form is most appealing as it not only interacts with water but the form itself reflects qualities of water.

Fig 5.11: River initial concept sketches

COLD WATER PLUNGE POOL

Designing a cold plunge pool for the site is an intervention that takes full advantage of the sites potential with the snow melt water.

Different stages of activity through the cold plunge is the most effective.

Moving up the river, towards the second site is a good way to circulate through the different stages of activity.

Using materials that create a path to guide people but also allow water to flow through not disturbing the natural flow.

Fig 5.12: Initial watercolour concept of plunge pool

PROCESS

1. PREPARE

2. ENTER

2. MOVE

3. PLUNGE

4. EXIT

Fig 5.13: Watercolour form concepts for river

CONSTANT FLUID MOVEMENT

Creating a distraction for people doing the plunge such as movement. The process of constantly moving up the site will keep people moving. Using curved paths for people will aid the sense of continuation, discouraging people to stop like they might if they came to a sharp edge.

Fig 5.14: Watercolour fluid movement atmosphere, around a bend

UP STREAM

Round the Mountain Track

DOWN STREAM

Fig 5.16: River Map, initial programme placement

Fig 5.15: River Map, potential pathway track

Fig 5.17: River Map, initial site plan

Fig 5.18: River water path conceptual render

Fig 5.19: River phase 1 render
looking upstream

Fig 5.21: River Phase 1 Circulation Section

Fig 5.21: River Phase 1 Section

Fig 5.22: River Phase
1 Entrance Render

Fig 5.23: River
Phase 1 End of
path Render

PHASE 2

The second phase further explores qualities of water playing with the idea of transparency colour. Engaging the design with the path of the river and understanding a more advanced programme of hydrotherapy. This phase pushes the idea of a more advanced development along the river.

EXTENDING SCALE- MOVING UP THE RIVER

ELEMENTS OF A HYDRO-THERAPY CENTER

Different hydrotherapy centers have been studied, such as Gem Spa and Lapis Spa. Considering different experiences ranging from steam rooms, plunge pools, showers, saunas and whirlpools. The process was considered and re imagined to suit the natural conditions and potential of the site.

STAGE 1- Rain room, to cleanse.
(medium temp, high pressure)

STAGE 2- Sauna senses, to relax.
(high temp, low pressure)

STAGE 3- ENERGISE hot pool, to soothe.
(high temp, High pressure)

STAGE 4- Cold Plunge Pool, to reinvigorate.
(low temp, low pressure)

STAGE 5- Large relax pool, to recover.
(medium temp, high pressure)

Fig 5.24: River Phase 2
Extending Scale Plan

Fig 5.25: River Phase 2
Site Programme Plan

CIRCULATION AND PROGRAMME

Santani Wellness Resort and Spa Thisara Thanapathy Associates

Form that follows the hillside.
4 key areas
Progressively gets more private

Fig 5.26: Santani Wellness Resort plan analysis

The Therme Vals Peter Zumthor

Fig 5.27: Therme Vals
plan analysis

Allows people to move freely through many
placed rooms.

Circulation through hallway like pathways
Direct route becomes progressively more open

Termas Geometricas Hot Springs German del Sol

- A progressive climb up the gully towards a waterfall.
- A continuous journey through different pools.
- Shelters for food and changing rooms throughout the journey.
- Form and pathways follows the contours of the gully.

Fig 5.28: Termas Geometricas Plan Analysis

FORM AND FLUIDITY

The Qualities of Water

Fig 5.29: Form and Fluidity digital model exploration

Using form to create spaces of different transparencies has potential in the built form to inform people of how to navigate through the space. It could block or highlight different parts of the river. The material overlapping will also create the effect of water and movement through a stationary form. Below I have tested different forms to create different visual effects based on water colour visuals. These were overlaid and extruded to create 3D digital forms which can be seen in figures 5.29.

Fig 5.30: Form and Fluidity water colour model explorations

Fig 5.31: Fluid digital models exploring transparency

Fig 5.31: Close up transparency of Fluid digital models

Fig 5.32: Fluid digital model atmosphere render

Fig 5.33: Fluid Physical Model as Shelter

Fig 5.34: Fluid Physical Model as Path

Fig 5.35: Fluid Physical Model as Seat

These Physical models are a further exploration of the digital models seen in figures 5.31. Experimenting characteristics of transparency as a spatial boundary informing places of rest, shelter, protection a seats and pathways.

Fig 5.36: Fluid Physical Model as Archway

Fig 5.37: Fluid Physical Model Inhabited

ENCLOSED VS. OPEN

Fig 5.38: Fluid Track Flow

MANIPULATING FORM TO FRAME CERTAIN PARTS OF THE RIVER. CREATING PRIVACY WITHOUT BLOCKING NATURAL LANDSCAPE WITH WALLS

WALLS. (FOR PRIVACY)

ROOF. (TO SHELTER)

FLOOR. (TO GUIDE)

Fig 5.39: Transparent model as a room

WHAT DOES EACH SECTION NEED?

STAGE 1 - WALLS. (FOR PRIVACY)

STAGE 2 - ROOF. (TO SHELTER AND GUIDE.)

STAGE 3 - WALLS, FLOOR & ROOF. (TO FRAME EACH SCENE)

STAGE 4- FLOOR. (PATH AND POOL)

STAGE 5- FLOOR. (PATH AND POOL)

VIEW SHAFTS

THE DIAGRAM BELOW INDICATES DIFFERENT VIEW SHAFTS THAT A CURVED STRUCTURE PROVIDES. MINIMISING NEED FOR WALLS, OPENING THE CHANGING ROOMS TO THE NATURAL SURROUNDINGS.

Fig 5.40: River View shafts Plan

Fig 5.41: Framing the scenes of the river landscape

Fig 4.42: Fluid Path Visualization

Fig 5.43: Aerial Perspective Fluid Path Visualization

Fig 5.44: Hydrotherapy Center Site Plan

Fig 5.45: Hydrotherapy Center Open to River Render

Fig 5.47: Hydrotherapy Center Section Indication Plan

Fig 5.49: Hydrotherapy Center Amongst the landscape Render

Fig 5.50: Hydrotherapy Center Changing Room Render

PHASE 3

This third phase take the opposite approach to the last phase and strips a design back to the minimum impact visually and physically. Exploring the potentially for a hidden 'grid' that allows people to climb it to cross the water acting as a bridge.

Fig 5.51: River crossing frame sketch

BLENDING INTO THE ENVIRONMENT

Blending the structure into the landscape.
Highlighting vertical beech trees with thin appearance.

Fig 5.52: Beech trees along track

Fig 5.53: Vertical Structural elements to represent beech trees

Fig 5.54: Circulation over the river structure

GROUNDING THE STRUCTURE

Placing the columns in the most appropriate areas along the river will be the basis for the vertical points that form the grid structure. Avoiding placement in key pathways of water flow will lower disruption to the natural systems.

Volcanic River Bedrock

Glacial melt over submerged bedrock

River Bank Scrub

Fig 5.55: Different ground surfaces diagram

Fig 5.56: Vertical member placement

— Fig 5.57: Grid Structure render from upstream.

Fig 5.58: Looking up at grid structure from river level

Fig 5.59: Walking along the grid

PHASE 4

The final stage of design at the river refines the idea of a bridge and the simplicity of the programme but incorporates some of the aspects of form and water qualities that previous phases test. This phase focuses on specific qualities of the site that the bridge can enhance and make people aware. I focus on bringing attention to all the qualities of the site that can sometimes be missed when on a tramp or walk.

THE BRIDGE

Understanding how a simple structure such as a bridge can be enhanced to heighten people's senses of the surrounding space. The simple act of providing access from one side of the river to the next has much more potential than just a flat pathway.

Being the most accessible site, it is appropriate to explore a simple intervention that can host people with any ability and desire.

SITE 1
BRIDGE

Hut

Blyth
Hut

1300

Round The Mountain Track

Mangaehuehu
Hut

1500

1200

Fig 5.62: Walking onto existing bridge

EXISTING BRIDGE QUALITIES

Currently only allows 1 person at a time. This can be positive because a person can experience crossing in peace by themselves. This also builds anticipation as the bridge construction is challenging.

The thrill of this challenging swing bridge that swings over a large drop provides an exhilarating experience. The positive is that it enhances the current walk but this distraction also take away from the views along the river as you cross. A mix of thrilling moments with areas to rest and take in the surroundings would be ideal.

A successful quality of the swing bridge is that it does not interfere with the river and water flow. The frame at each side requires no foundations within the riverbed to intrude on the natural system. This is a quality that would be successful for the future bridge design.

The current construction of the platform made of corrugated iron allows people to see down to the river right below. This is a successful feature that also adds to the thrill of the experience.

One of the negative factors of the swing bridge is that it does not provide access down to the river. The rock banks on either side of the river also stop people from going down to the river.

Whilst being a bridge to cross the river, it does little to actually allow visitors to connect with the water. This is something that will be explored in the bridge design.

KEY ATTRIBUTES

Bring the walk down to the water.

Horizontal & vertical movement
increase stimulation.

Connection to river.

Space off main track.

Area's of rest.

Place to take in the view.

Minimum disturbance to riverbed.

Different levels to compensate for
water rise and drop.

Fig 5.63: Key bridge attribute sketches

EXPERIENCE ENHANCE IDEAS

Fig 5.64: Bridge concept idea sketches

DESIGNING THE BRIDGE IN STAGES

STAGE 1
ENTER

STAGE 2
BANK DROPS

STAGE 3
WATER BELOW

Fig 5.65: Sections of bridge

STAGE 4
VIEW OF SITE 2

STAGE 5
VIEW DOWNSTREAM

WATER AND THE SENSES

STILL WATER

SLOW, PEACEFUL, QUIET, RELAXING

Fig 5.66: Still River Water

RUNNING WATER

FAST, LOUD, ENERGISING

Fig 5.67: Running River Water

CIRCULATION

Fig 5.68: Bridge Circulation options plan

Fig 5.69: Bridge Circulation options section

Fig 5.70: Bridge Section Sketch, Bringing people to water

CIRCULATION

Fig 5.71: Bridge Section Circulation Option diagrams

BREAK UP- MULTIPLE MATERIALS

Fig 5.72: Bridge material sketches

Fig 5.73: Seat perforation diagram for water rise

PALETTE

PERFORATED PANEL OF
SILVER GALVANIZED STEEL.

WHITE TINTED DOUBLE
CURVED GLASS

GALVANIZED STEEL PIPE.

Fig 5.74: Material Palette comparison to landscape features

HIGHLIGHTING PARTICULAR MOMENTS OVER THE WATER

Fig 5.76: Bridge highlighting natural features diagram

Fig 5.77: Bridge seat render

— Fig 5.78: Bridge Downstream Render

Fig 5.79: Bridge Stairs Render —

Fig 5.80: Bridge Entry Render

Fig. 5.81k Bridge Nighttime Render

EXPERIENTIAL CRITERIA

- Stimulated to think of ourselves or the setting in new ways, with new possibilities.
- Stimulated to rich images, fantasies, memories or feelings.
- Can do tasks we want to do, and do them well in the setting.
- Not degraded or destroyed by the process of being in the setting, and do not destroy it for others.
- Sense of being somewhere specific that has an identity and image.

1

2

3

4

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Fig 5.82: River experiential Reflection

ELEMENT CRITERIA

1

2

3

4

- Sense of movement
- Represents it's different states
- Make people feel differently
- Light and nimble yet deep impressed
- Allows rest but also energises
- Must provide an onward point for continuation on the journey
- An escape
- Blue silver
- Both heavy and light
- Constant flow in the same direction

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•	•	-	•

KEY:
 Achieves this. •
 Could Improve. -
 Important Criteria. **Bold Text**

Fig 5.83: River Elemental Reflection

REFLECTION

Moving through the four stages of design it has become clear that in a site like this, it is important provide a structure that supports people's connection to the water but not necessarily determine that interaction. Initial function of a hydrotherapy center provided the potential to benefit from glacial melt water. After reflecting on the design, it become apparent that such a heavy programme deters from the existing natural qualities of the river. This is something that is successful in the final design, drawing attention to the little things, such as the pace of the rivers flow or the pool that sits under a cove in the corner.

The river designs follow an interesting progression beginning by moving up the river towards the peak second site. But as the designs have progressed it has become more about moving across the river bringing the designs back to the purpose of the original bridge and less about moving up to the second site. Movement through the design is a key factor for this site, a sense of movement being a key criteria of water.

| Chapter 6.

THE PEAK

SITE 2

PHASE 1

The first stage of design showcases the opportunities of designing on a elevated site with a unique rock surface. Looking at the qualities of rock and the angles that are present on the site to create a facade that plays with the existing site qualities.

NZ KEY ALPINE HUTS

Fig 6.1: Key Alpine Huts in New Zealand

Scattered across the alpine ranges of New Zealand are a collection of alpine huts that exist in the extreme conditions that mountain peaks and ridges have to offer. In the South Island these huts are designed to host adventurers, seeking the challenge of tramping and backcountry skiing. But for the North Island only a handful are scattered on Whakapapa ski field, Turoa without any. These huts are typically older shelters that only provide basic needs for trampers well equip. With such scenic views, amazing sunsets and unique setting Turoa has an opportunity to host and educate people of the natural and cultural qualities of the place. “New Zealand is fast becoming a favorite R&R location for the world’s wealthy elite.” (NZ Tourism). Premium luxury lodge accommodation spend increased by 42 percent. (nz Tourism) Visitors with such high-net worth bring economic benefit not just for the tourism industry.

Premium luxury lodge
accommodation spend

Experience-led
Approach

7TH

NZ Rated in the world
for popular luxury travel

DESIGNING FOR VOLCANIC ROCK

Fig 6.2: Peak lodge concept watercolour

SUMMER VS. WINTER
COLOURS/ CONDITIONS

CIRCULAR PEAK

POSSIBLE OUTLOOKS

ACCESS

Fig 6.3: Summer vs. winter colours

Fig 6.4: Circular Shape sketches

Fig 6.5: Different view outlooks

Fig 6.6: Access on a cliff

Fig 6.7: Angled Rooms on cliff edge

Fig 6.8: Possible room section options

BLENDING INTO THE VOLCANIC ROCK

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Fig 6.8: Room Layout Proposal

Fig 6.7: Placement of Lodges/pods on peak face

FACADE THAT WRAPS AROUND THE PODS

Alternating angles of pods to get different views.

Fig 6.9: Pod directions and facade proposal

HIGHER PODS ARE HARDER TO ACCESS

Fig 6.10: Access to each pod, climbing the facade

Fig 6.12: Lodge on cliff Site Section

Fig 6.11: Pod Evening View Render

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Fig 6.13: Lodge in the landscape render

Fig 6.14: Lodge in the landscape front view

PHASE 2

Phase two develops understanding of a lodge and what specific programme size and circulation that might require. Researching movement through a vertical building and exploring different opportunities for accommodation but also facilities that host people skiing past and not necessarily staying overnight.

DRAWING FROM THE SITE

Fig 6.15: Taking lines from Girdlestone peak

Fig 6.16: Digital conceptual forms from Girdlestone lines

INDIVIDUAL LEVELS, ONE BUILDING

Fig 6.17: Lodge long layout concept

INDIVIDUAL PODS

Fig 6.18: Lodge individual pod layout concept

ONE LARGE BUILDING

Fig 6.19: Lodge slice layout concept

Fig 6.20: Triangle forms extruded from site

Fig 6.21: Girdlestone peak site front on

Fig 6.22: Summit area from above

Fig 6.23: Triangle forms extruded sketches

Fig 6.24: Collection of triangular extruded sketches

SINGLE ROOM

KANIN WINTER CABIN OFIS

JUVET LANDSCAPE HOTEL Jensen & Skodvin Architects

SHANGRI LA CABIN DRAA + Magdalena Besomi

Fig 6.25: Single room precedent analysis

HOTEL

BÜRGENSTOCK HOTEL Rüssli Architekten AG

HOTEL IN PIENINY MOUNTAINS KWK Promes

CLIMA HOTEL noa network of architecture

Fig 6.26: Hotel precedent analysis

SMALL LODGE

LINDIS LODGE Architecture Workshop

MONTE ROSA HUT Bearth & Deplazes Architekten

TRACUIT MOUNTAIN HUT Savioz Fabrizzi Architects

Fig 6.27: Small lodge precedent analysis

SCALE IN METERS
0 50 100 200

HOW SHOULD PEOPLE MOVE VERTICALLY?

Fig 6.27: Peak site analysis considered with programme

When people climb something, usually we don't tend to take the route straight up. These drawings create a climb up that is made of many different parts and a combination of unique moments. There are areas of compression and places of ease. This forms part of the challenge and makes the journey much more exciting.

POSSIBLE ROUTES

Fig 6.28: Triangular extrusion circulation

SIZE CONSIDERATIONS IN LANDSCAPE

15M WIDE X 15M DEEP

12M WIDE X 10M DEEP

Fig 6.29: Lodge size considerations amongst scene

FLOOR PLATE NEEDS TO MIMIC THE LANDSCAPE

Fig 6.30: Rethinking how lodge sits against the cliff

FITTING PROGRAMME AROUND FORM

Fig 6.31: Exploring triangular extrusion as building structure

Fig 6.32: 3D Lodge floor plate spatial layout

Fig 6.33: Phase 2 Lodge site section

— Fig 6.34: Walking up Lodge entrance stairs

Fig 6.35: Lodge sitting along the landscape

Fig 6.36: Lodge Open Bar

PHASE 3

Phase three refines the materiality of the place and tests different options for a form that has minimal impact visually. This phase is all about creating an intervention that essentially isn't there. In this case it hosts people who are willing to get to the site but doesn't encourage people to go there.

MATERIAL ANALYSIS

Fig 6.37: Workshop photos, me grinding materials

Fig 6.38: Knoll Ridge
Cafe amongst landscape

Using the angular qualities of the rock cliffs is a technique to blend the structure with the landscape. The textures and use of different shades that can be seen amongst the volcanic rock is also insightful.

Fig 6.39: Triangular Rock sketches become structure

METALS AND THE EARTH, A RELATIONSHIP OF DETERIORATION

Fig 6.40: Steel plate fixed directly to Natural Rock

There is a strong connection between metals and the volcanic rock. These elemental materials provide the texture that comes from the earth. The colour and wear over time give the material life like qualities that the earth contains. Below is a collection of different volcanic rocks from Ruapehu. Tests of how to connect vertical metal elements are considered to explore how lightly toughing the earth can be executed.

Fig 6.41: Volcanic rocks from Ruapehu with fixed steel rods

Fig 6.42: Triangular lookout platform sketch

Fig 6.43: Triangular lookout platform view

Fig 6.45: Triangular lookout platforms from side

Fig 6.44: Triangular lookout platforms from below

PHASE 4

The last phase give attention to the connection the lodge has to the site through foundations, exploring different options that will allow minimal disruption to the natural cliff. It focuses on circulation as an opportunity for understanding place and a heightened experience of a typical staircase.

DESIGN CRITERIA - OVERNIGHT LODGE

After analysing the previous design against the criteria from the literature review:

Currently mainly a challenge and need to be broken up by experiential moments to provide rest and keep people entertained.

Needs to reflect the surroundings more and open people up to the natural qualities of the rock in summer and ice/snow in winter.

Play with the form to take advantage of appearing submerged with the rock in summer and sit within the ice and snow in winter.

Explore the most unobtrusive foundations to tie the building onto the hill whilst sitting above the rock.

Fig 6.46: Girdlestone Peak from ski field

Fig 6.47: Girdlestone Peak
hazard zone map

Selecting an appropriate part of the peak
to build on is crucial to avoid areas of
danger from avalanches.

Fig 6.48: Girdlestone Peak Lodge foundation options

- Minimal points of contact with the ground.
- Deep foundation to hold building on such steep location.
- Tied in vertically and horizontally.

Fig 6.48: Girdlestone Peak
Lodge access track in section

Fig 6.49: Winter vs. Summer Access

Fig 6.50: Peak access slope steepness

WINTER CIRCULATION

SUMMER CIRCULATION

Fig 6.51: Lodge winter and summer circulation

SIZE CONSIDERATIONS

DESIGNING AROUND CIRCULATION

Fig 6.52: Lodge specific stair design

PROVIDING A LONGER RUN ON THE STAIRS TO CREATE A MORE LEISURELY CLIMB.

WHAT IF STAIRS WERE MORE THEN JUST A HASSLE FOR CIRCULATION?

MAKING IT A PLEASURE TO CLIMB 154 STAIRS

Fig 6.53: Lodge circulation experiential atmosphere

By adding experiences to entertain, it also provide people will a chance to have a rest and break from climbing.

STAIR PLAN ALTERNATIVES

As the staircase is the main form of circulation the width of this will be very wide and therefore placement of this is key to the layout of each floor. The challenge with the stairs in that the building is sloped on an angle therefore stairs will need to reflect the horizontal shift of the building. Each experience also requires a particular location on each floor. To gain maximum area in the luxury suites the best placement of stairs is crucial.

AGAINST BACK WALL

MIDDLE

U SHAPE BACK WALL

STRAIGHT UP SIDE

Fig 6.54: Stair configurations in plan

Fig 6.55: Stair configurations in section

Fig 6.56: Stair design handrail sketches

HIGHLIGHTING NATURAL FEATURES OF THE SITE

Using 5 different interventions in the journey up the stairs to the top of the lodge. The architecture will connect people to the natural features of the site from inside the building. Each intervention draws attention to different site qualities and has different levels of intensity and interaction with people.

EXPERIENCE 1

The first experience will alert people to the underside of the building that typically wouldn't be a focus of attention. In this case the ground of the site is a rare environment that should be brought to peoples attention, not covered up by walls of a building. The thrill of this glass panel is that it is sloped at the same angle of the hill. For people in the building to lie against the window you must lean at an angle giving the experience of almost falling into the rocks.

Fig 6.57: Lodge experience leaning into the cliff

EXPERIENCE 2

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Experience 2 is all about the connection Mt Ruapehu has with Mt Taranaki. The myth and legend of these two mountains is one of the rich cultural aspects of Ruapehu. Current facilities does nothing to educate people of this connection. This intervention alerts people of this including several architectural elements that point towards the mountain and a glass illustrated panel to teach people.

Fig 6.58: Battle of the mountains painting

Fig 6.59: Lodge experience 2 admiring Taranaki

Fig 6.60: Map of lodge connection to Taranaki

EXPERIENCE 3

Experience 3 is all about reminding people of the height and thrill that they are in a building placed on the edge of a cliff. It gives the alternative experience of the experience 1 which provides a close up perspective of the landscape underneath. This drop looks out from the front edge of the building which sits much further away from the cliff. The only outlook is down so people are forced to acknowledge a drop.

Fig 6.61: Lodge experience 3 Feeling the drop off

EXPERIENCE 4

Experience 4 is directly angled up at the top peak of the mountain. The frame which is extruded for people to lean on is also angled at the top peak. The frame will include writing about the significance of this peak for the local Maori. This will educate people of this unique landscape feature.

Fig 6.62: Lodge experience 4 Looking up at top peak

Fig 6.63: Lodge direct line view of top peak

EXPERIENCE 5

The last experience embraces the change in conditions of the site. It uses the natural conditions of ice freeze in the winter. By highlighting the structural feature of cables tying the building to the hill it also creates a visual feature. In winter ice freezes to the small cables creating the look of ice burgs. With enough of these cables an ice cave is created.

Fig 6.64: Lodge Experience 5, experiencing the icecave

Fig 6.65: Ice attached to rocks

Ice is an environmental condition that takes a form of its own on the mountain. Freezing on many surfaces at first touch it can grow and spread representing the state of an environment that can last months. Often these beautiful sculptures are banged off of operating facilities or just admired from afar. It is not often that structures are created to manipulate this art form.

Fig 6.66: Ice attached to different objects on the mountain

Fig 6.67: Lodge stairs

Fig 6.68: Lodge Beginning of stair climb

CAVING EXPERIENCE

To give people the atmosphere that they are submerged with the earth the interior qualities represent these qualities. Increasing the experience and connection to the site while being respectful and not physically digging into the rock.

Fig 6.69: Lodge stairs caving atmosphere

SHARDS OF LIGHT

Not only will the form represent the sharpness jagged qualities of rocks but so will the feature of light that the building emits in the night.

Fig 6.70: Lodge from outside at night

Fig 6.71: Lodge Stairs compression and release

Fig 6.72: Lodge foyer

EXPERIENTIAL CRITERIA

- Stimulated to think of ourselves or the setting in new ways, with new possibilities.
- Stimulated to rich images, fantasies, memories or feelings.
- Can do tasks we want to do, and do them well in the setting.
- Not degraded or destroyed by the process of being in the setting, and do not destroy it for others.
- Sense of being somewhere specific that has an identity and image.

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○	-	○	○
-	-	-	-
-	-	-	○
-	-	-	○

Fig 6.73: Lodge experiential analysis

ELEMENT CRITERIA

- Relation to human life
- Anguish, rough, aggressive
- Submerging with earth
- It creates a feeling in people, (Adventure and hurt)
- Reacts or has cohesion to the natural word
- Ground plane, (Above or below)
- Friction, collision, contact
- Browns, nude, yellows, grey
- Texture
- Moments of intensity
- Back and forth, rolling

1	2	3	4
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-	-	-	○
-	-	○	○
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-	○	○	○
-	○	○	○
○	○	-	○
○	-	-	-

KEY:
 Achieves this. ○
 Could Improve. -
 Important Criteria. **Bold Text**

Fig 6.74: Lodge elemental analysis

REFLECTION

The four stages of design on the peak have been the most similar out of all the sites in terms of programme. This has allowed for a more refined design within the selection of programme and circulation through the building.

Choosing to focus on the circulation of the lodge in the final stage has mean that the 5 key experiences were able to be explored in depth. The different experiences are a creative and informative way to educate people of the history and geological features of Ruapehu. The fully enclosed structure provides an exciting experience that brings features of the outside landscapes into the interior building atmosphere.

The biggest learning curve throughout the stage is how to tackle the concept of building of such a steep hill whilst trying not to interfere with the natural landform. After starting off with ideas of digging into the rock this soon became apparent that out of respect, as little damage to the cliff as possible was necessary.

| Chapter 7.

THE SUMMIT ZONE

SITE 3

Fig 7.0: Summit Area Watercolour

PHASE 1

The first design approach for this site involves the idea of wind as a force within fire and also the large environmental factor on this top site. The concept of a sauna located in the summit zone to use as a place of reflection. The feeling of safety enclosed in a layered building on such a hazardous site.

Fig 7.1: Wind/Fire physical model and sketches

Fig 7.2: Wind/Fire sketches with circulation

Fig 7.3: Plan layout, best qualities of wind circulation sketches

Fig 7.4: Plan layout, wind form with programme

Fig 7.4: Wind form layers of wall for protection

Fig 7.5: summit area site plan analysis replacement

Fig 7.6: Sauna amongst landscape

Fig 7.7: Sauna view site map

Fig 7.8: Sauna interior
lookout to lake

PHASE 2

Phase two considers the conflicting history and past of the site hosting many fatal accidents and incidents. Testing what it means to memorialise a place and host people who come to reflect the past. Trailing the concept of a larger intervention to guide people around such a large site.

IMMERSIVE APPEARANCE

Fig 7.9: Immersive appearance diagram

Fig 7.10: Immersive form sketch

Fig 7.11: Immersive form conceptual model

Fig 7.12: Rethinking proposed plan

MEMORIAL DESIGN

After further research on Ruapehu's summit zone it has become evident that there is a lot of history for such an inaccessible site. A lot of the history not necessarily good. Due to the extreme environment and rapidly changing conditions many people have lost their lives up there. Many people misjudging a climb and slipping into the crater lake and significant loss of lives in a group of army soldiers training. When blizzard came in a mere 100m walk back to dome shelter became impossible. These tragic events provide the need for people to take extra care at this environment. Providing a place for loved ones to reflect and for tourists who are unaware to be educated is necessary in a site that has such fatal qualities.

CREATING A CENTER/FOCAL POINT

USING REFLECTIONS TO REPRESENT THE ELEMENT OF FIRE

Fig 7.14: Summit sketches for layered walls

NATIONAL HOLOCAUST MONUMENT

Studio Libeskind

WAHAT AL KARAMA

bureau^proberts + Urban Art Projects

LAGUNA DEL TORO MEMORIAL

Valentina Ceballos Fuentealba

Fig 7.15: Large scale memorial analysis

NESHER MEMORIAL

SO Architecture

STEAMPUNK PAVILION

Gwyllim Jahn & Cameron Newnham +
Soomeen Hahm Design + Igor Pantic

SWIRLING CLOUD: BULLETIN PAVILION FOR BJFU GARDEN FESTIVAL

SUP Atelier

Fig 7.16: Small scale memorial analysis

LÖYLY
Avanto Architects

APPLESAUNA
noa network of architecture

JORDANBAD SAUNA VILLAGE
Jeschke Architektur&Planung

Fig 7.17: Urban scale memorial analysis

FILLING THE SPACE OF WIND

LOOKOUT/CONNECTION
TO WHAKAPAPA SKI FIELD

MEMORIAL BETWEEN
DOME & PARETETAITONGA

LAKE OBSERVATION

CONNECTION TO
TUROA SKI FIELD

SAUNA

EAST LOOKOUT

Fig 7.20: site programme planning

Fig 7.21: Wind
flow site path

Creating a structure that minimises contact with the ground but also holds the structure in extreme conditions is necessary for the site. Minimum disruption to the land is essential to respect the sacred qualities of the site. This is why a raised platform that sits above the site is used. Only at structural points does the platform become grounded. To help support the platform a steel space frame will be necessary underneath, allowing less columns to be used.

Fig 7.22: Construction under path to ground the structure

Fig 7.23: Site plan of summit urban concept

Fig 7.24: Walking along summing superstructure

Fig 7.25: Walking into sauna with visual opening to snow

PHASE 3

The third intervention considers the theme of not being noticeable in the landscape. Exploring how invisible architecture can still create an effect of place. Using the element of fire and wind, creating impact on the scene through manipulating the natural landscape features such as wind funnels and snow in the winter.

How to design a structure that isn't there?

MATERIALITY

Due to the extreme change in seasons at the summit. The colour conditions change with the seasons. This stop any possibility to use colours and textures to blend with the environment. Bringing a need for transparency.

Fig 7.26: Transparency panels

NO SNOW

SNOW

Fig 7.27: Two seasons in summit zone

PLACEMENT AND FORM OF FIRE

To reflect the element of Fire the qualities of wind must be part of the design. Although the structure cannot be seen, it doesn't mean that effects of the structure cannot be seen. Using the walls of this to manipulate the snow buildup in winter makes the structure visible. Placing the structure in a windy site is crucial for this.

Fig 7.28: Plan of glass panels with circulation and wind flow

Fig 7.29: Wind through summit design in a blizzard

Fig 7.30: Transparency of panels in landscape

Fig 7.31: Summit panels access in snow

PHASE 4

The final design approach involves a much more in depth analysis on site placement within such a large area. Focusing on a form that not only incorporates the features of fire and plays with wind but also represents what once stood at this summit, dome shelter. A structure that not only memorialises the past events but also past structure that have meaning and history also. The platform acts as a destination for people to go in summer and winter months once they climb. Acting as a final destination for many to discourage any further hazardous exploration but also discouraging people from reaching the most sacred peak of the mountain and instead framing it to educate people.

SPECIFIC SITE ANALYSIS

Fig 7.32: Summit Site with full wind flow paths

1.

STRENGTH

- View's of the bottom half of the North Island.
- Exposure to the wind being on the ridge line of the prevailing wind.

WEAKNESS

- Could be very harsh winds with exposure.
- Could be hard to hold a structure on a ridge with glacial snow.

OPPORTUNITY

- Could be very harsh winds with exposure.
- Closer to the Turoa side and journey.

THREAT

- Could ruin the view of the mountain from South being prominent.

2.

STRENGTH

- Good amount of wind... A funnel but also slightly sheltered from gale force.
- Located near the original dome shelter (on dome hill)
- Not covered with glacial snow all year round, easier to build.
- Good view of the crater lake with the opportunity to get close.
- Easy access from Whakapapa ski field side.

WEAKNESS

- Shaded at the bottom of the hill in the evening.
- Not on the side of the journey

OPPORTUNITY

- Interesting terrain with rocky hill
- View down below Cathedral Rocks

THREAT

3.

STRENGTH

- Not covered with glacial snow all year round, easier to build.
- Good view of the crater lake with raised view
- View down gully and along cathedral rocks

WEAKNESS

- Exposure on top of a ridge line
- Not close to either ski field
- Ridge could have many avalanche/slip issues

OPPORTUNITY

- View down below Cathedral Rocks
- Great views and connection to the Crater Lake

THREAT

- In danger zone of lahar flow
- Close proximity and exposure to Crater Lake for

Fig 7.33: Summit 3D zone locating building site

RE-THINKING PROGRAMME

Considering a more simple programme that hosts people with the basic needs of a shelter is necessary to reflect the history and significance of the site.

Considering only what is necessary is important, this includes.

- Lookout Deck with view of lake (Exposed to natural qualities of place while also providing a protective barrier against fast changing conditions).
- A bunker for shelter in unlikely event that the mountain erupts.
- A place for climbers, skiers and trampers to rest and admire the scenery.
- A place to educate people of the importance and history of the site.

Fig 7.34: Charcoal drawings to explore atmosphere of platform

QUALITIES

- Reflect previous shelter
- Create different levels of shelter
 - Play with the wind
 - Protect
- Take advantage of views
- Allow for snow drift and ice.

Fig 7.35: Site contour drawings exploring curve form

PAYING RESPECT TO THE ORIGINAL DOME SHELTER

The original shelter survived many eruptions in the past. Including one with two hikers inside who decided to stay in the hut for the night. During the night, when an eruption struck the two men were part of a horrible incident that meant William Pike, who was in the hut, lost a leg due to volcanic rock flying into the shelter. Luckily the shelter protected them from any other danger and William lives on, establishing the William Pike Challenge. The meaning of this site for him is only one situation among many that has a deep meaning to them. Creating a structure to pay tribute to these events is important as it forms the place that is, the summit region.

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FORM

Tunnels the wind

Form reflects the previous shelter but with curved features which reflects the fluidness of Fire.

Fig 7.37: Digital model shelter form explorations

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figure list for further details.’

Fig 7.38: Dome Shelter amongst the landscape

Fig 7.39: Wind play digital models

Fig 7.40: Wind platform

Fig 7.41: Wind platform concept options

SIMULATIONS

To test how different form options will interact with the wind, simulations have been tested. The outcome showed that for more wind disruption and wind tunneling a structure with more exposed elements was successful. Smaller gaps between structural elements also increases chances of whistling.

Fig 7.42: Wind platform simulation effects

CONSTRUCTION

HUT PROCUREMENT MANUAL & BUILDING CODE (BACKCOUNTRY HUTS)

Can be altered to suit conditions as it has a specific management regime due to the fact that it is a National Park, provided by the Recreation Opportunity Spectrum ROS.

1.3.2- Scope of project

Vegetation clearance and tree cutting

Hut platform excavation

Toilet supply and instillation

Track work

Existing features to be retained, removed or reused,
Such as a biv track, accessory buildings, and the like.

1.3.6 Water Supply Requirements

Water collection and tank required for site 2.

1.3.8 Other site specific issues or Hazards

Site 2- avalanche

Site 3- eruption, extreme wind, blizzard

1.7.3 Structural design loads

Floor load - 1.5kPa

Wind load - 3.0kPa

Snow load - 4/5kPa

Considerations

Discussing the issues with Ron Pynenburg from Pynenburg and Collins Architects who specialises in off the grid alpine architecture, below are the particular issues discussed.

Materials

Coloursteel and powder coated finishes, will benefit the harsh climate.

Will need plenty of flashing to protect surface connections.

Bunker

Will need ventilation for pressure. A grating area/lobby to drain wet weather gear (will also be necessary for lodge).

Chiller doors are best for access and use.

Foundations

Site on exposed bedrock. Deposited holstered steal plates into rock.

Steal frame on top of the plate drilled into rock to hold up a platform for paneled sections with weather tight conjunctions.

For lodge- Thermal bridging, PVC joinery for windows and doors (work better then aluminum).

Conditions

Wind can be around 280-300km/hr

Consider wind blowing snow load under building to help with foundation stability.

Ice- Corners and flashings, Ice damming,

Maintenance, durability under acidic conditions, If using timber will need a lot of coating, Not many days and access to carry out maintenance.

CONSTRUCTION DIAGRAM

Because the soil is not solid rock but instead andesite rubble it is not solid enough to directly fix a steel plate to the rock. Instead to minimise impact to the existing ground 2 deep foundations will be dug and this will hold a long steel plate that will be used to attach the steel frame. At each frame point a cable each side of the frame will be fixed into the ground for extra support against high winds. The most efficient way to place the frame on top is to prefabricate each section off-site and helicopter in each part and fix it to the frame.

Fig 7.43: Platform foundation plate diagram

1. PREPARE FOUNDATION BASEPLATE WORK

2. INSERT STEEL FRAME TO BASE PLATE

3. ATTACH BUNKER

“You can’t compare this experience to working in a normal landscape; there is a lot of consideration about how things can be made and how it can be made easier for the guys making them.” Harris Butt Architects

6. INSERT FRAME PANEL SECTIONS

Fig 7.44: Platform construction process stages 311

PLATFORM LENGTH EXPLORATIONS

Fig 7.45: Platform length considerations

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CASE STUDY: STEILNESET MEMORIAL BY PETER ZUMTHOR & LOUISE BOURGEOIS

100M LONG

After looking at this example I have considered that the length is very and come become repetitive. This pattern in such a glossy smooth environment like Ruapehu in the winter could potentially take away from the scene of the landscape. Considering the distance the platform will be view from being located in such an urban setting considerations for these different view shafts will need to be explored. It must also bear in mind what resources will be necessary without adding unnecessary material and disturbance to the landscape.

TIMBER BATTEN PATTERN

SIZE ITERATIONS

GAP ITERATIONS

Fig 7.47: Panel gap iteration sketches

200MM, 200 GAP

200MM, 1M GAP

200MM, 400 GAP

200MM, 2M GAP

CASE STUDIES

FISHING SQUARE INSTILLATION

SAINT LAUD TRAIN STATION FOOTBRIDGE

After looking into some case studies to examine the sizes between panels it became clear that the placement was too tight. To take advantage of the view, structural columns would need to be bigger and therefore a bigger gap.

CHANGING GAP

60 X180 PANELS TWICE GAP SIZE

Fig 7.49: Panel gap Fishing saquare

200 X 500 PANELS 5M GAP AVERAGE

Fig 7.50: Panel gap Saint Laud Train Station Footbridge

Fig 7.48: Panel gap iteration renders

WALL PROTECTION DESIGN

Fig 7.51: Platform protection wall options

DEPTH AND PLACEMENT

NEEDS TO BE FAR ENOUGH IN TO BE PROTECTED BY STRUCTURE ABOVE
BUT FAR ENOUGH OUT THAT IT WON'T GET SNOW LOAD BURYING IT.

Fig 7.52: Platform section to show placement of bunker

Fig 7.53: Shelter from afar, Turoa perspective

Fig 7.54: Shelter approaching from Whakapapa

Fig 7.55: Shelter bunker access

Fig 7.56: Shelter from front

Fig 7.57: Shelter looking out to Tahurangi

Fig 7.58: Shelter Entrance

EXPERIENTIAL CRITERIA

- Stimulated to think of ourselves or the setting in new ways, with new possibilities.
- Stimulated to rich images, fantasies, memories or feelings.
- Can do tasks we want to do, and do them well in the setting.
- Not degraded or destroyed by the process of being in the setting, and do not destroy it for others.
- Sense of being somewhere specific that has an identity and image.

1	2	3	4
●	●	●	●
-	●	●	-
●	●	-	●
-	-	-	●
-	-	●	●

Fig 7.59: Shelter Experiential Analysis

ELEMENT CRITERIA

- What is left behind (Oxidation)(Ash and Smoke)
- Uncontrollable
- Warm yet dangerous.. something that draws us in.
- Light and warm but people must be wary
- Can easily disappear/be taken away
- Orange, red, yellow, green, blue, brown, black, wood
- Constantly moving, upward
- Takes form of the wind

1	2	3	4
-	-	●	●
-	●	●	-
●	-	●	●
-	●	-	●
-	●	●	●
●	-	-	●
-	-	-	●
-	●	●	●
-	●	●	-

KEY:
 Achieves this. ●
 Could Improve. -
 Important Criteria. **Bold Text**

Fig 7.60: Shelter Elemental Analysis

REFLECTION

The Summit zone has proven to be the most challenging site of all three.

The dark history and rich cultural significance of the site has at many times questioned the appropriateness of putting any design up there. But after much research and design incentive the decision to explore design opportunities of such a significant site has proven itself a good idea. The many hikers that gather up there in the summer months is reason enough that such a special site should have the opportunity to share its stories with those who venture up.

The design explorations changed at every phase, constantly tweaking the programme until reaching a much more suitable size of platform. Form studies around the wind were a huge part of the design exploration.

Bringing in the element of fire to allude to the design features like frames that travel up, appearing as though constantly moving with the wind. Using layers for all stages of design was another important factor to make up the security of a safe place in case of an eruption.

| Chapter 8.

CONCLUSION

CRITICAL REFLECTION & FURTHER RESEARCH.

When I began this thesis, I thought a great deal about what it is about the mountain that compels me amongst many others to visit such an awe-inspiring destination. I considered what parts of Ruapehu in particular kept drawing me back to a specific spot – working out what made the experience unlike any other place in everyday life. Part of this was the feeling of escapism, the relief of a place that is separate from the fast pace of urban city environments. Another part was the connection through knowledge of that place which allowed me to push personal boundaries to uncover unique scenes and experiences that could not be accessed anywhere else. Bringing architecture into the equation brought on a whole lot of additional things to consider. How could I design to give people the same experience that continues to draw me in whilst respecting such a rare and meaningful place?

This thesis addresses the question, how do we engage visitors with such an extraordinary landscape, representing the unique place it is.

As a starting point for this thesis, I needed to reflect on the place that it is, drawing out all of its qualities and meanings to different people. Key ideas that were researched included ideas of place, cultural landscapes, therapeutic landscapes and meaningful experience. This research taught me to

reflect place educating people by using symbols and meanings to give them a deeper understanding of cultural significance of certain mountain features. Using all the senses to enhance atmosphere and providing meaningful experiences by mentally relating and connecting to place is key to successful designs. Exposing people to a range of different qualities of the unique site is also an important factor. Such a powerful place as Ruapehu, engulfs a large area of land needed to be approached with careful consideration of scale. This scale largely sets out the way that I approached design.

To capture the essential experience, I found that the selection of three sites was necessary to best showcase the quintessential moments as you move up the rugged terrain.

After looking into these three sites further, the importance of the natural elements was clear. The formation of these sites and the natural systems that connects each site to the other are linked through the key elements of fire and water.

“Here you may see the heart bared, see the process of the making and molding of the land by fire, ice and water. Mother-Earth reveals her inmost secrets here; she pulses with never ceasing, sometimes fiery, energy.” (James Cowan, 1927, p.23)

Fig 8.00: Final Shelter Deisgn

This prompted the need for additional research about the elements of fire ice and water, this time through the creative literature. This was used to form a criteria for each site's design, carrying the properties of the natural site through the architecture to peoples senses.

The River-

Acting as a starting point, it releases a sense of tranquility, being enclosed by natures offerings. Drawing attention to one element, the water.

The Peak-

Proposing a challenge, drawing out a sense of thrill in people. Providing a sense of achievement at the end while also bringing the security needed to help people push past their boundaries.

The Summit-

Providing the ultimate panicle of satisfaction and completion. A very special awe-inspiring energy is released from this destination.

Starting designs at a grand scale unraveled the ultimate possibilities and brought out potential for Ruapehu. As further design approaches were explored the general shift exploring smaller scale and simpler designs giving visitors more freedom. If further research were to be conducted this trend would continue to be refined. With potential to explore local iwi rituals and traditions more thoroughly incorporating this into design programme.

Each site contains four phases of designs that are a progression from one to the other. The first phase of all sites started at a grand scale and general reflections progressed to consider interventions that engage the context and surrounds more. The second phase established the exciting opportunities for grand activities at each site learning that smaller simpler interventions could also be more appropriate. This moved into the third phase where the opposite approach was taken and interventions that provided minimal programme and that appeared almost hidden are were explored. The fourth phase takes the stripped back approach adding facilities that were considered to be essential for the user's experience.

Each phase of design was a huge progression of learning for me. Understanding each time what my designs were lacking or how they didn't quite sit in unity with the natural systems of the land. Every phase broke down another layer, as I uncovered more history, cultural meaning and

environmental qualities both of each site separately but also as an overall place. This allowed me to incorporate this deeper knowledge into the designs. Progressively becoming more integrated into the natural setting in a positive way.

The final three design interventions present visitors with the opportunity to really engage with the landscape, through drawing their senses towards particular features special to each place, whether that be a natural quality, a historical pastime or a significant cultural attribute. These designs are merging a pathway of discovery, joining cultural and physical needs.

The designs incorporate not only physical features of the elements that consumes each site but also provide a programme that creates an experiential understanding of the qualities of the elements. This connection to these elements blends a stationary structure into a living scene.

The river provides a crossing, focusing on the element of water. The Peak allows security on a dangerous site giving a sense of achieving the ultimate but providing a sense of security. The summit gives a destination and final point.

Designed to express the wildness of the site.

Design features enhance people's senses to focus on therapeutic qualities of each site. This can be as simple as the

sound of water flowing at a calming pace. Or the framing of a particular scene at the right time to stimulate thrill. Cohesion with the landscape it is achieved by blending a structure into the place not only physically from afar but from within the structure also. Using particular materials, and atmosphere to feel like you are within the natural land.

The designs seek to address the significance of the site to local Maori iwi. With a priority for blending into the scenery and finding solutions to minimally impact on the ground. Not only do the designs focus on respect for the landscape they also use particular design features that focus on educating people how local Maori understand the mountain.

A respectful design not only encompasses the meaning of place but also gifts a meaningful experience, making people more aware of the place. Each design strives to provide people with more than a physical thing or mental picture. The design seeks to heal through engagement with a variety of therapeutic qualities- providing a unique experience pushing peoples boundaries and reminding people of the world outside everyday problems- offering perspective. It also seeks to engage people, making them feel part of a place, through education and understanding.

All of these factors make up a respectful and worthy design that reflect the place of Ruapehu.

Further possibilities of design could include the development of connection between sites. Using the unique landscape that connects each site and the movement of visitors moving through each site could be something to consider in the future. Not just providing three separate interventions connected visually but also connected physically.

As Ruapehu continues to develop it will be interesting to see how we choose to use the rare environments we are so proud of as a country. The current management plane sets a development strategy for the future years to come. Although this is a controlled development representing only the close foreseeable future, it is hoped that the entities that make these decisions on behalf of the people who cherish such extraordinary land will continue to strive for respect towards Ruapehu.

Mt Ruapehu is an incredibly unique site with so many important factors that are meaningful to people in a range of different ways. Deciding what to put in such a significant site can easily spark tension if not understood well enough. Tourism today asks for more than it ever has, with more people traveling domestically and internationally. New Zealand has a particular unique landscape, and in Mt Ruapehu's case this unique landscape carries the weight of a long history and cultural significance. This thesis opens a door for further considerations how special places can be represented through architecture.

Designing in unique environments requires full understanding of that place. From my standpoint, growing up beneath Ruapehu spending countless days exploring the mountain, I had my own meaning of this place. What I lacked was knowledge of what this place is to different groups of people. As a mountain gifted to the people, a design should reflect the place. But when a place has a lot of different meanings to different people, often at opposite extremes. Interpreting this becomes complicated. After looking more into this place that I consider so close to home for this thesis I realized that there was still so much I was unaware of. This only reinforces the importance of educating people of place through design.

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Fig 8.2: End of a good day on the mountain